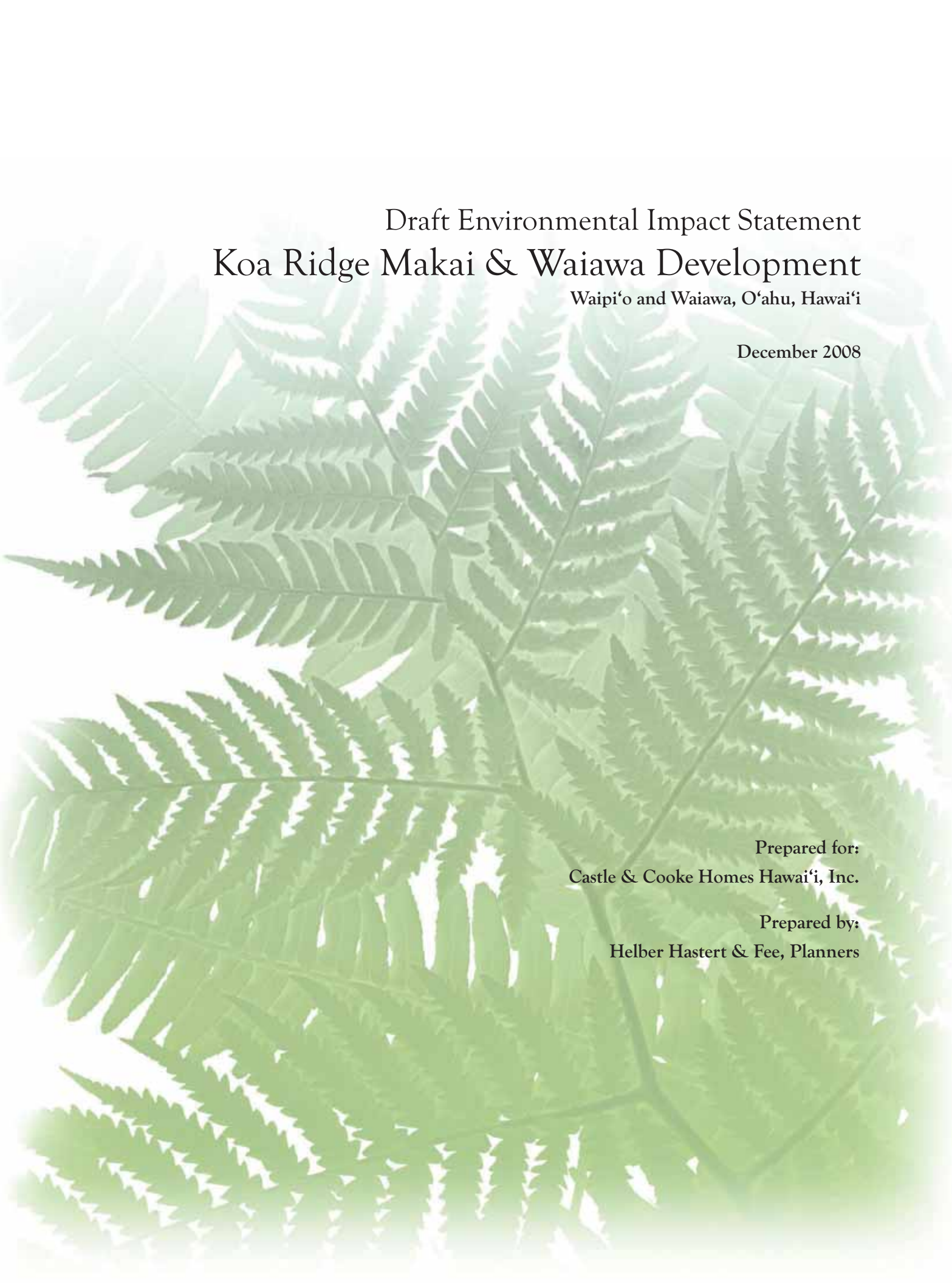
Draft Environmental Impact Statement

Koa Ridge Makai & Waiawa Development

Waipi‘o and Waiawa, O‘ahu, Hawai‘i

December 2008



Prepared for:
Castle & Cooke Homes Hawai‘i, Inc.

Prepared by:
Helber Hastert & Fee, Planners

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This draft environmental impact statement and all ancillary documents were prepared under my direction or supervision and the information submitted, to the best of my knowledge fully addresses document content requirements as set forth in Section 11-200-17, Hawaii Administrative Rules.

Laura Kodama
Director, Planning and Development
Castle & Cooke Homes Hawai'i, Inc.

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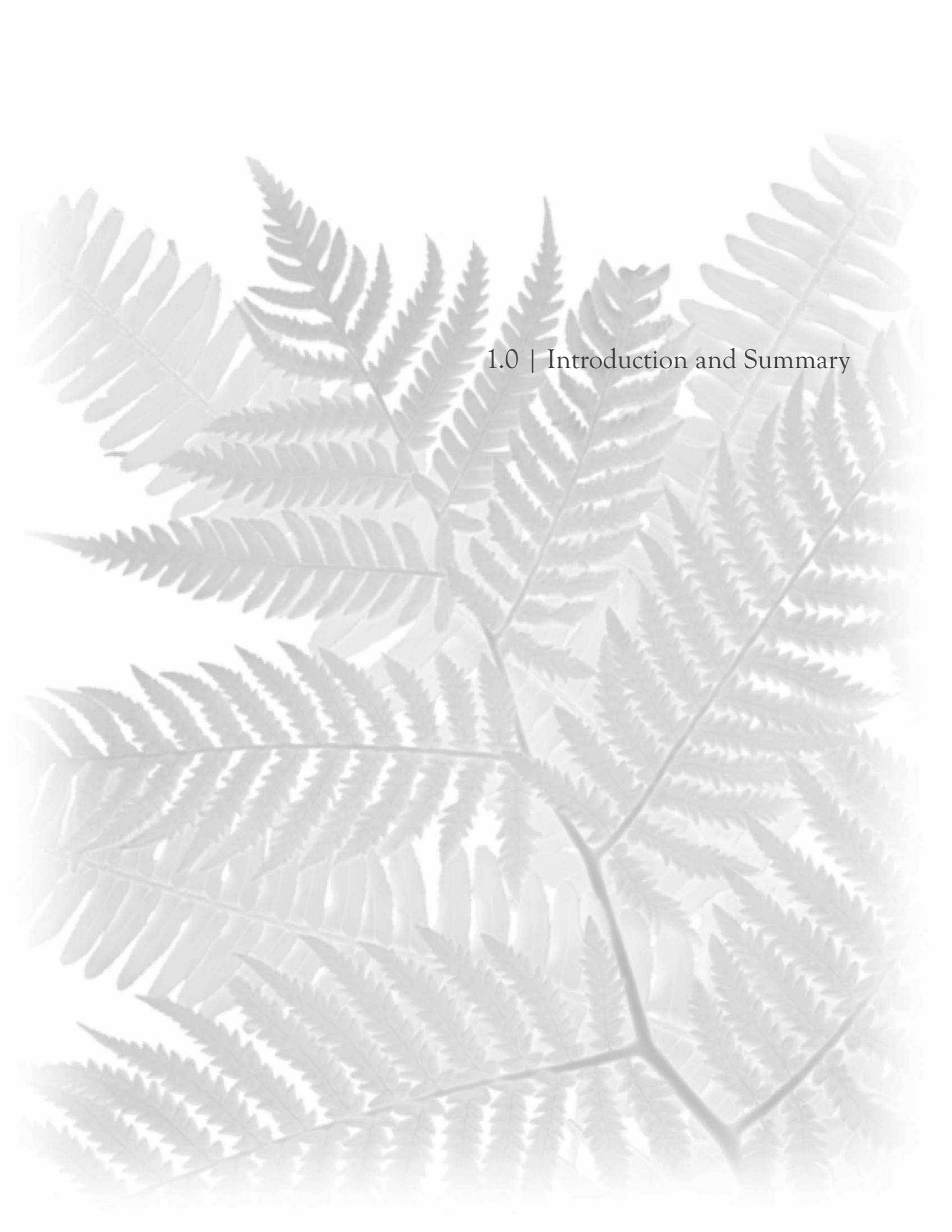
ACRONYMS AND ABBREVIATIONS

§	Section
AFB	Air Force Base
ALISH	Agricultural Lands of Importance to the State of Hawai‘i
BMP	Best Management Practices
BOE	Board of Education
BWS	Board of Water Supply
C	Community
CATV	Cable Television
CCH	City and County of Honolulu
CCHH	Castle & Cooke Homes Hawai‘i, Inc.
CFR	Code of Federal Regulations
cfs	cubic feet per second
CI	Commercial and Light Industrial
CORP	Central O‘ahu Regional Park
CO SCP	Central O‘ahu Sustainable Communities Plan
CWRM	Commission on Water Resource Management
CZM	Coastal Zone Management Program
DB	Detention Basin
dB	decibel
dBA	A-weighted decibels
DBEDT	Department of Business, Economic Development and Tourism
DLNR	Department of Land and Natural Resources
DOE	Department of Education
DOH	Department of Health
DP	Development Plan
DPA	Development Plan Area
DPP	Department of Planning and Permitting
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
°F	Fahrenheit
FEMA	Federal Emergency Management Agency
FHWA	U.S. Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTE	Full-Time Equivalent
GPM	gallons per minute
GIS	Geographic Information Systems
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company
HDR	High Density Residential
H-POWER	Honolulu Program of Waste Energy Recovery
HRS	Hawai‘i Revised Statutes
HTCO	Hawaiian Telcom
ITE	Institute of Transportation Engineers
LDR	Low Density Residential

Leq	Equivalent Sound Level
LEED	Leadership in Energy and Environmental Design
LSB	Land Study Bureau
kV	kilovolt
Ldn	Day-night equivalent sound level
LOS	Level of Service
LUC	Land Use Commission
LUO	Land Use Ordinance
M	Medical Center
MDR	Medium Density Residential
MG	million gallons
MGD	million gallons per day
msl	mean sea level
mW	megawatt
NB	Neighborhood Board
NPDES	National Pollutant Discharge Elimination System
NOI	Notice of Intent
OMPO	O‘ahu Metropolitan Planning Organization
ORTP	O‘ahu Regional Transportation Plan
OTWC	Oceanic Time Warner Cable
OS	Open Spaces
P	Parks
PCA	Potential Contaminating Activity
PHGMA	Pearl Harbor Groundwater Management Area
pn	persons
POL	petroleum, oils and lubricants
PUC	Primary Urban Center
REC	Recognized Environmental Condition
ROH	Revised Ordinances of Honolulu
S	School
SEER	Seasonal Energy Efficiency Ratio
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Places
SMA	Special Management Area
TDM	Transportation Demand Management
TIAR	Traffic Impact Analysis Report
TMDL	Total Maximum Daily Load
TMK	Tax Map Key
UCB	Urban Community Boundary
WRD LLC	Waiawa Ridge Development, LLC
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant



1.0 | Introduction and Summary

CHAPTER 1: INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This Draft Environmental Impact Statement (EIS) has been prepared in accordance with the provisions of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Title 11, Department of Health, Chapter 200. It supports a Petition for a State Land Use District Boundary Amendment filed by Castle & Cooke Homes Hawai'i, Inc. ("CCHH" and "Applicant" used interchangeably) to reclassify approximately 766 acres of land in Central O'ahu ("Petition Area") from the State Agricultural District to the State Urban District (Docket No. A07-775). When accepted by the State of Hawai'i Land Use Commission (LUC) (the "Accepting Authority")[1], the Final EIS for this project will also be used in support of a subsequent City and County of Honolulu Zone Change application to be filed following the State Land Use District boundary amendment process.

Section 343-5, HRS, establishes nine "triggers" that require compliance with these regulations. The specific trigger for environmental review of the proposed project is the use of public lands. The project's proposed off-site infrastructure improvements will require connections to and/or easements beneath or above State and/or County roadways or other property. The specific public lands affected are listed in Section 1.2 Project Summary. (Although their impacts are addressed in this EIS, the off-site infrastructure improvement areas are not required to be located on lands within the State Urban District, and, therefore, these areas are not included in the 766-acre Petition Area.) Based on the significance criteria set forth in Section 11-200-12 of the EIS Rules, the Land Use Commission (Accepting Authority) determined that the Proposed Action requires the preparation of an EIS.

1.2 PROJECT SUMMARY

Project Name:	Koa Ridge Makai and Waiawa Development
Project Location:	Waipi'o and Waiawa, O'ahu, Hawai'i ('Ewa Judicial District)
Applicant:	Castle & Cooke Homes Hawai'i, Inc. 100 Kahelu Avenue, 2nd Floor Mililani, Hawai'i 96789 Phone: (808) 548-4811 Ms. Laura Kodama, Director of Planning & Development

[1] In accordance with Chapter 343, HRS "[t]he authority to accept a final statement shall rest with the agency initially receiving an agreement to process the request for approval." A State Land Use District Boundary Amendment is required for this project. As such, the State Land Use Commission determined that the Proposed Action warrants the preparation of an EIS and agreed to be the accepting authority by its order dated July 14, 2008.

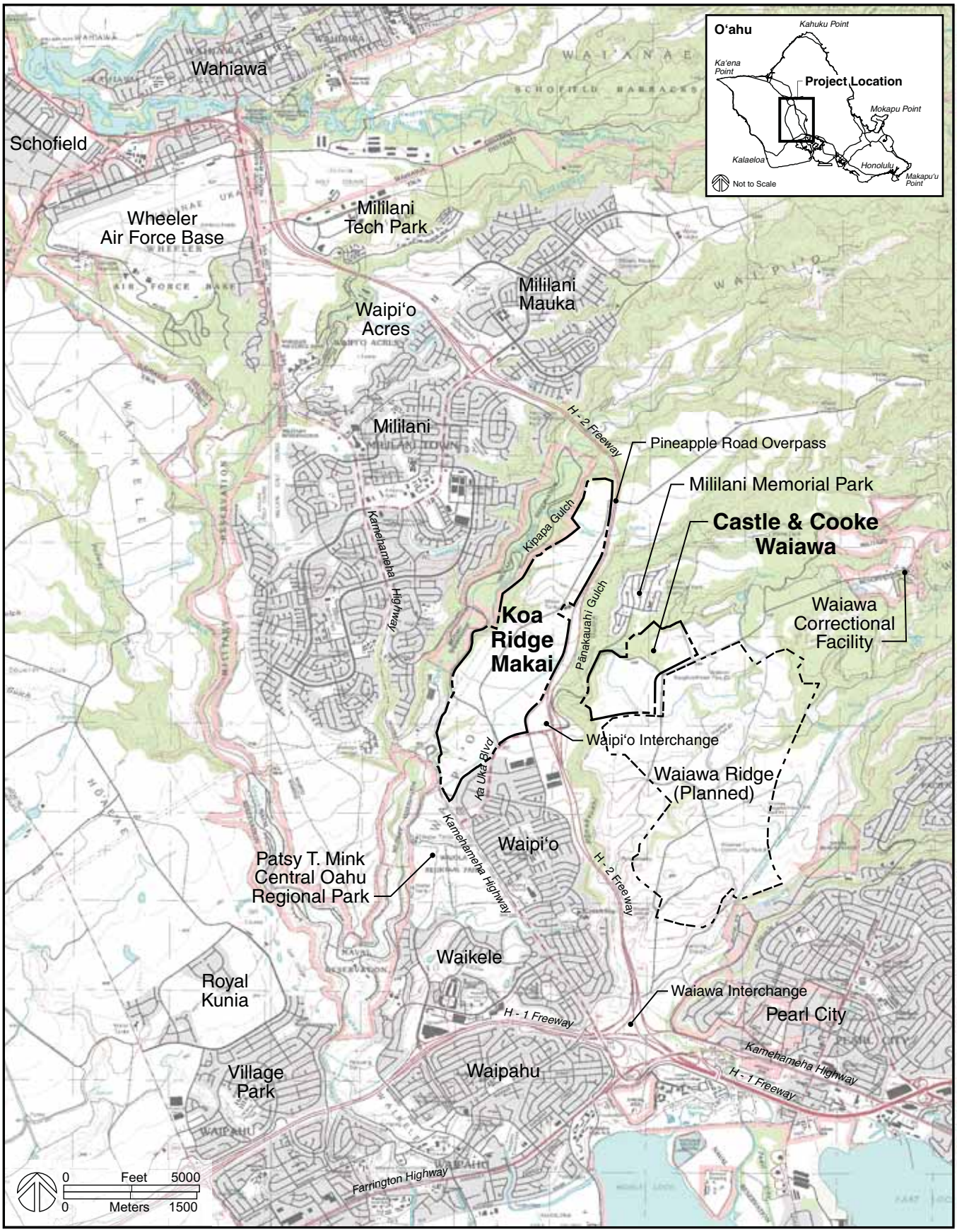
EIS Preparer:	Helber Hastert & Fee, Planners 733 Bishop Street, Suite 2590 Honolulu, Hawai'i 96813 Phone: (808) 545-2055 Tom Fee / Gail Renard
Accepting Authority:	State of Hawai'i Land Use Commission P.O. Box 2359 Honolulu, Hawai'i 96804 Phone: (808) 587-3822
Entitlement Request:	Reclassification of 766.327 acres of land from the Agricultural District to the Urban District (Koa Ridge Makai: 575.113 acres and Waiawa: 191.214 acres)
Proposed Action:	Development of master planned communities at Koa Ridge Makai and Castle & Cooke Waiawa to include low-, medium-, and high-density residential (5,000 total units), sites for parks, recreation centers, schools, and neighborhood and community commercial development to serve the residents and surrounding region. Koa Ridge Makai would also include an integrated mixed-use village center and substantial employment-generating uses such as commercial, light industrial, hotel, medical and health care components.
Petition Area Tax Map Keys:	Koa Ridge Makai: 9-4-06: 038, pors. 001, 002, 005, 039; and 9-5-03: pors. 001 and 004 Waiawa: 9-4-06: pors. 029 and 031; and 9-6-04: 021
Off-Site Infrastructure Tax Map Keys:	9-3-002: pors. 009 and 029; 9-4-002: por. 024; 9-4-005: pors. 006, 008, and 074; 9-4-006: pors. 003, 011, 028, 029, and 039; 9-4-007: por. 035; 9-4-096: por. 149; 9-4-127: por. 023; 9-5-002: por. 001; 9-5-003: pors. 001, 002, 004, 007, 011, and 014; 9-5-049: por. 031
Land Ownership Within Petition Area:	Castle & Cooke Homes Hawai'i, Inc. Waiawa Ridge Development LLC
Land Ownership of Off-site Infrastructure Areas[2]:	Castle & Cooke Homes Hawai'i, Inc. City and County of Honolulu United States of America Waiawa Ridge Development LLC Gentry, Thomas H Trust Amfac Property Inv Corp

[2] Source: City and County geographic information system data.

Public Lands Affected by the Proposed Action:	• H-2 Freeway, including new Koa Ridge Interchange at the Pineapple Road overpass and improvements to the Waipi‘o Interchange • New intersections and roadway improvements at Ka Uka Boulevard • New intersection and roadway improvements at Kamehameha Highway • New trunk sewer line from Koa Ridge Makai to the Waipahu Wastewater Pump Station (within or beneath Kamehameha Highway, Patsy T. Mink Central O‘ahu Regional Park, Paiwa Street, H-1 Freeway, Koaki Street, Kopake Street, Mokuola Street, Moloalo Street, Farrington Highway, and Waipahu Depot Road) • New water line crossing over H-2 Freeway at the Pineapple Road overpass • New storm water drain line crossing in Kamehameha Highway
Existing Land Uses:	Leased for cattle grazing and cultivation of diversified crops; vacant
State Land Use District:	Petition Area: Agricultural District
Central O‘ahu Sustainable Communities Plan:	Petition Area: Within the Urban Community Boundary
Zoning:	Petition Area: AG-1 Restricted Agricultural District
Special Management Area (SMA):	Petition Area is outside of the SMA. A portion of the offsite sewerline is within the SMA, but may be exempt as it is an underground utility located within a road right-of-way.

1.3 PROJECT LOCATION

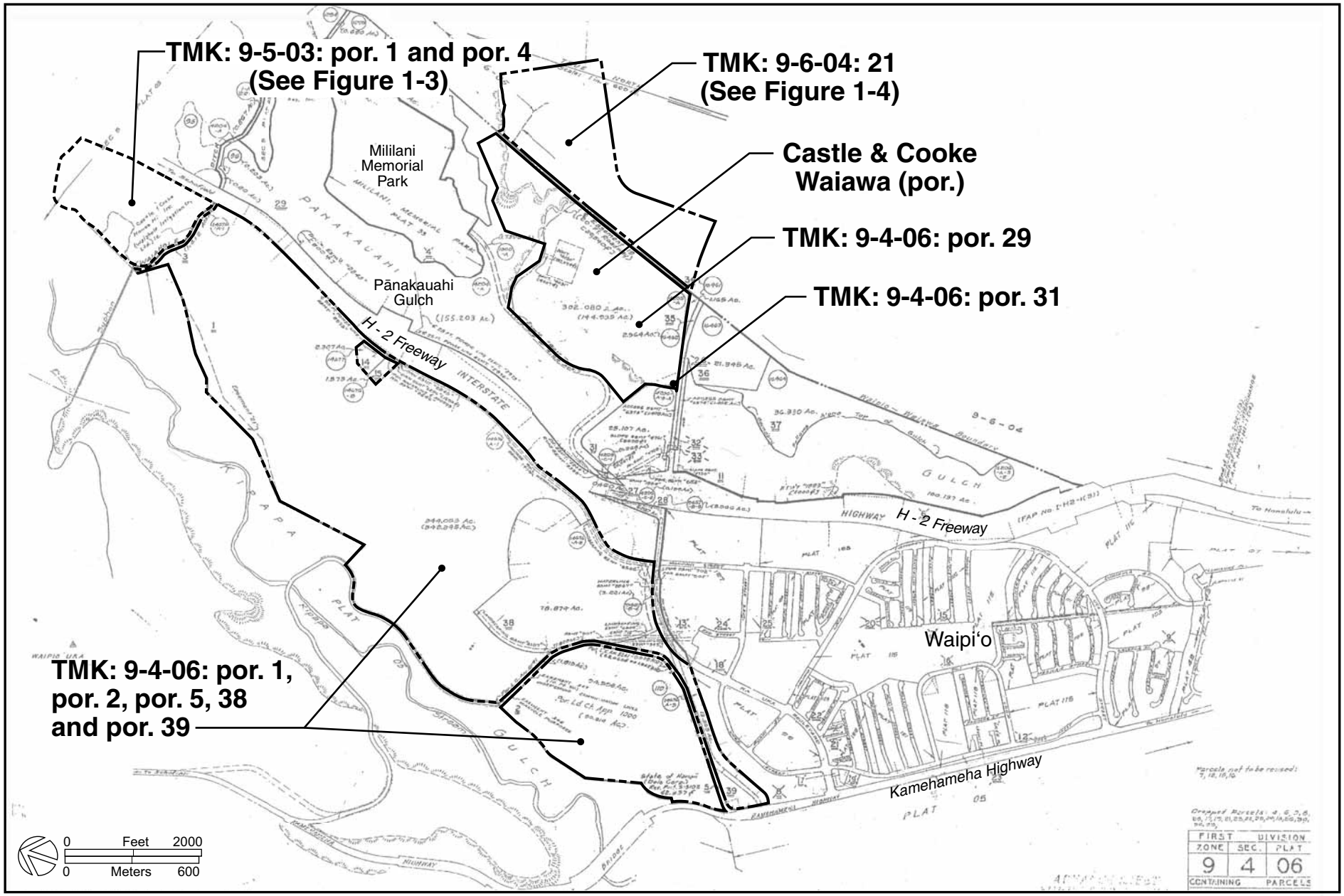
The Petition Area is located in Waipi‘o and Waiawa, O‘ahu (‘Ewa Judicial District), and consists of approximately 766 acres of land in two geographic areas referred to as Koa Ridge Makai and Castle & Cooke Waiawa (see Figure 1-1 for location map). The Koa Ridge Makai area is located north of the Waipio Gentry Business Park and west of the H-2 Freeway and is bordered on the west by Kīpapa Gulch. The Castle & Cooke Waiawa area is located east of the H-2 Freeway, east of the Waipi‘o Interchange, and adjacent to and northwest of the proposed Waiawa Ridge development. Figures 1-2, 1-3, and 1-4 show the Tax Map parcels of the Petition Area.



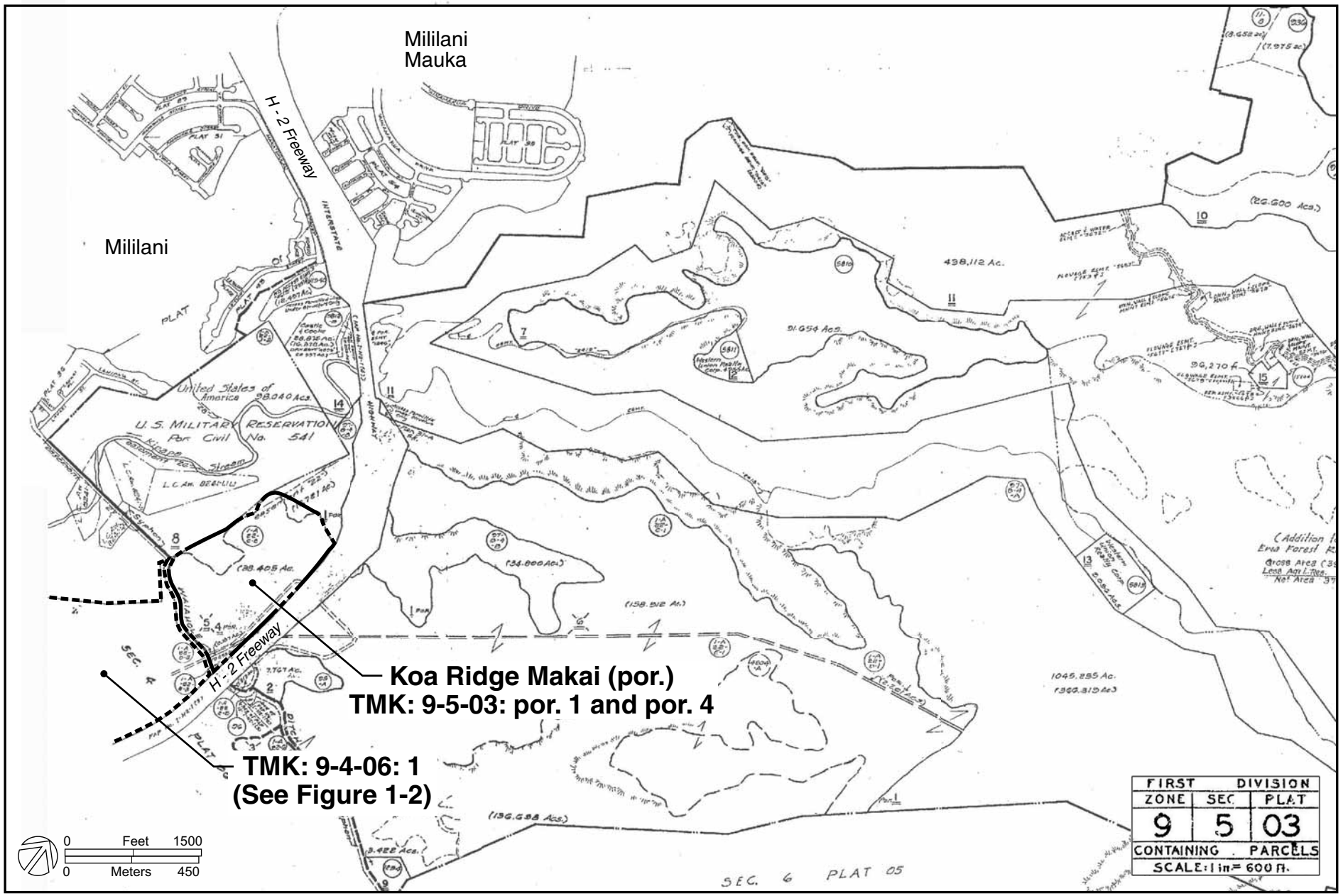
Location Map

Figure 1-1

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

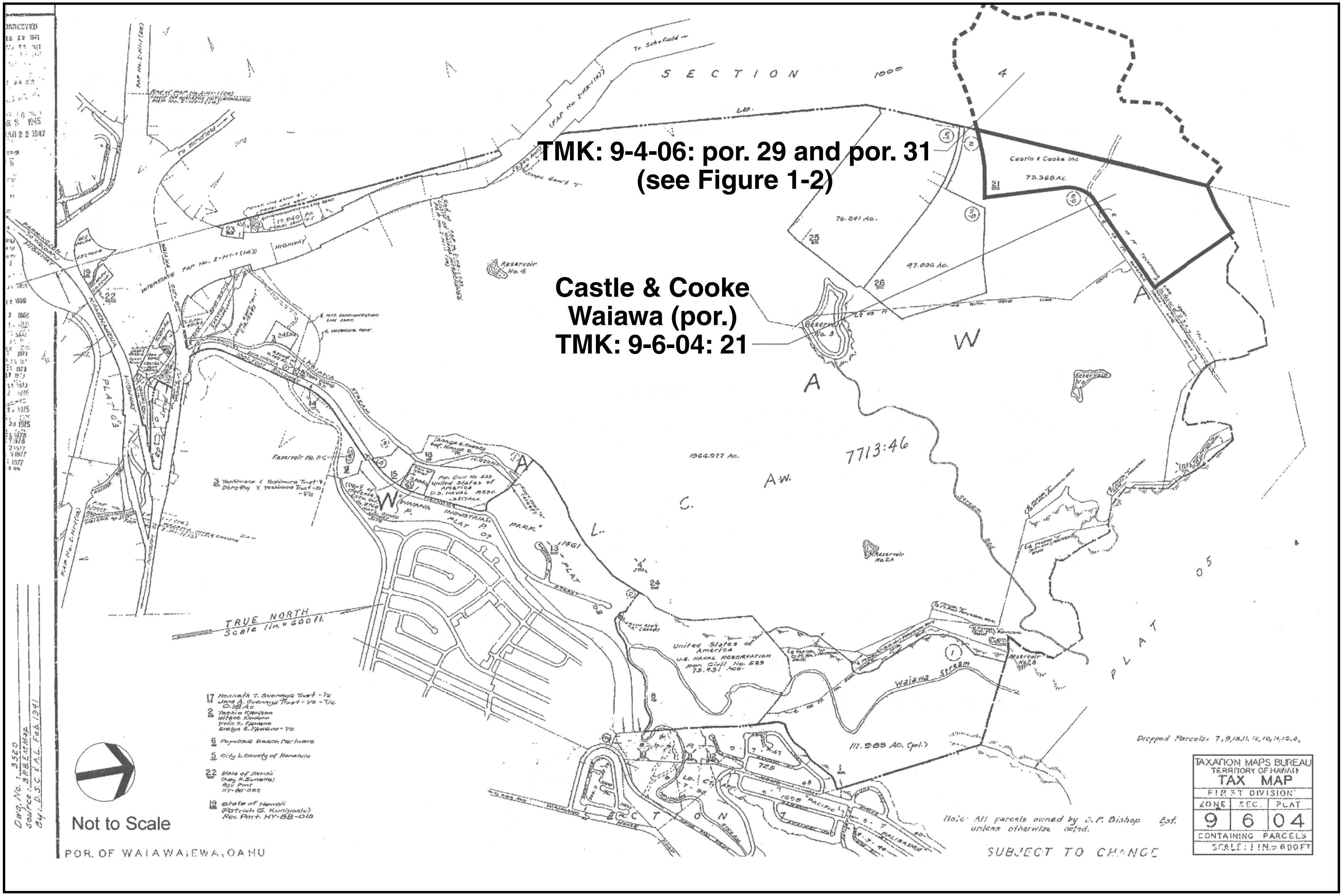


Tax Map Plat: 9-04-06 **Figure 1-2**



Tax Map Plat: 9-05-03 **Figure 1-3**

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.



Tax Map Plat: 9-06-04 **Figure 1-4**

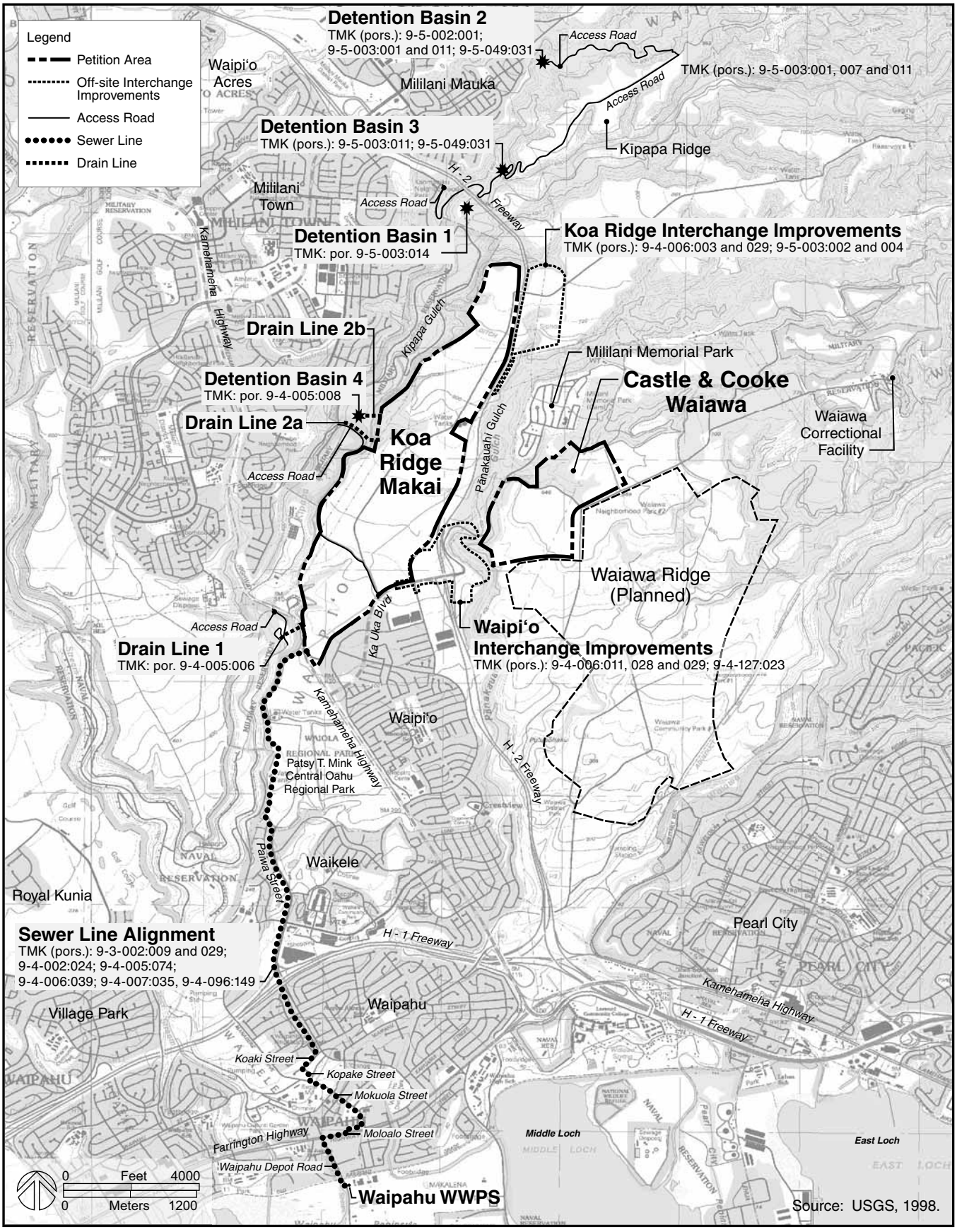
KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

The project also includes off-site infrastructure improvements which were not described in the EIS Preparation Notice but are evaluated in this Draft EIS for their environmental effects. They consist of:

- improvements to the existing H-2 Freeway Waipi‘o Interchange
- a new H-2 Freeway Interchange at the Pineapple Road overpass
- a new trunk sewer line extending from the south end of Koa Ridge Makai to the Waipahu Wastewater Pump Station (WWPS), which will be installed in primarily public roadway rights-of-way
- drain lines and drainage detention basins in Kīpapa Gulch, to the west and north of the Petition Area

Figure 1-5 shows the locations of the off-site infrastructure improvements and their associated Tax Map Keys (TMKs).

Note: This document uses the term “Project Area” when referring to both the Petition Area and off-site infrastructure areas together.



Off-Site Infrastructure Improvements

Figure 1-5

1.4 REQUIRED PERMITS AND APPROVALS

Table 1-1 summarizes the permits and approvals required for the proposed development.

Table 1-1
Required Permits and Approvals

Permit/Approval	Authority	Status (Estimated Submittal Date)
Easement for off-site drain lines	U.S. Department the Army	Application pending (April 2009)
Department of the Army Permit (Section 404 of the Clean Water Act)	U.S. Army Corps of Engineers	Application pending (April 2009)
State Land Use District Boundary Amendment	State Land Use Commission	Petition filed; processing will commence when Final EIS is accepted.
Water Use Permits	State Department of Land and Natural Resources, Commission on Water Resource Management	Application pending (July 2010)
Well Construction and Pump Installation Permit	State Department of Land and Natural Resources, Commission on Water Resource Management	Application pending (July 2010)
Stream Channel Alteration Permit	State Commission on Water Resource Management	Application pending (April 2009)
National Pollutant Discharge Elimination System (NPDES) Permit	State Department of Health	Application pending (January 2010)
Section 401 Water Quality Certification	State Department of Health	Application pending (April 2009)
Coastal Zone Management Consistency Certification	State Department of Business, Economic Development & Tourism, Office of Planning	Application pending (April 2009)
Zone Change	City and County of Honolulu, City Council	Application pending (October 2009)

Table 1-1 (continued) Required Permits and Approvals		
Plan Review Use (*for hospital use*)	City and County of Honolulu City Council	Application pending (2012)
Certificate of Need *(for medical facilities)*	State Health Planning and Development Agency	Application pending (2012)
Subdivision Approvals	City and County of Honolulu, Department of Planning and Permitting	Application pending (October 2009)
Grading Permits	City and County of Honolulu, Department of Planning and Permitting	Application pending (October 2009)
Building Permits	City and County of Honolulu, Department of Planning and Permitting	Application pending (April 2011)

1.5 SIGNIFICANT BENEFICIAL AND ADVERSE EFFECTS

Project implementation will result in impacts (discussed in Chapters 3 and 4), both beneficial and adverse, to the natural and human environments. Measures to mitigate potentially significant adverse impacts to non-significant levels will be included in project development. A summary of probable significant impacts and relevant mitigation measures is presented below.

1.5.1 Beneficial Effects

Anticipated beneficial impacts of the Proposed Action to Hawai‘i’s residents include the following:

- Provision of 5,000 single-family and multi-family homes in a live-work-play setting to meet islandwide housing needs in a variety of sizes, styles, and price ranges in a desirable location;
- Increased housing choices for Hawai‘i’s people;
- Provision of a master planned community featuring quality homes, commercial services, new schools, and recreational, open space and community facilities for its residents;
- Increased housing inventory to meet future demands and counter upward price pressure;
- Provision of additional medical facilities and services in Central O‘ahu;
- Support for some 2,460 direct full-time employment (FTE) project-related jobs in Central O‘ahu;
- Generation of $13.7 million per year in net additional operating revenues for the State of

Hawai‘i by 2025 (2008 dollars);

- Contribution of $11 million per year in net additional City & County of Honolulu revenues at its completion (2008 dollars);
- Planned growth in an area designated for urban growth by City & County of Honolulu polices and plans;
- Innovative use of utility and drainage corridors as community design elements such as landscaped amenities, water features and greenway linkages between neighborhoods, where appropriate;
- Regional traffic and infrastructure improvements; and
- Provision of a pedestrian, bicycle and transit--friendly community.

1.5.2 Potentially Significant Adverse Effects and Mitigation Measures

The project will transform the lands that are currently cultivated, used for pasture, or undeveloped into an integrated master planned community. For areas of environmental concern, the following summarizes the range of identified impacts and appropriate mitigation measures that are either recommended or planned to ensure that potential adverse impacts are minimized or mitigated to non-significant levels. Table 1-2 summarizes the resource areas by type of probable effect (i.e., beneficial, no impact, no significant adverse impact, no significant adverse impact with mitigation provided).

Topography, Slopes, and Soils. There will be temporary soil disturbance during project site preparation and construction. Best management practices, approved by the State Department of Health, will be implemented to minimize soil erosion. Grading will comply with City and County of Honolulu and State regulations and erosion control measures. A geotechnical engineering study will be conducted prior to project design and construction to verify the presence or absence of expansive soils and determine any need for stabilization measures.

Non-point source run-off from the project area into tributary streams will change in quantity and quality as the land use changes from agricultural to urban. In general, soils are stabilized when they are covered and/or landscaped, which results in less soil run-off. The project’s storm water facilities, such as the planned detention/retention basins, will be designed to meet City and County of Honolulu drainage design standards and will incorporate best management practices to control erosion and the transport of sediments and other pollutants to nearby streams.

Surface Water Resources. Construction of the on-site (Petition Area) and off-site infrastructure improvements has the potential to add pollutants or sediments to receiving waters during ground-disturbing activities. However, construction of the proposed project and its off-site infrastructure is not anticipated to significantly impact nearby surface or near shore coastal waters because the project will comply with all applicable Federal, State and City requirements and employ approved best management practices (BMPs) during construction. Stormwater quality at Koa Ridge Makai and Castle & Cooke Waiawa during the operational period will be addressed either

Table 1-2
Summary of Probable Impacts

Resource	Beneficial Impact	No Impact	No Significant Adverse Impact	No Significant Adverse Impact with Mitigation Provided
Natural Environment				
Climate		X		
Geology & Topography			X	
Soils			X	
Natural Hazards		X		
Surface Water			X	
Groundwater Resources			X	
Biological Resources			X	
Human Environment				
Historic, Cultural and Archaeological Resources				X
Population		X		
Economy & Employment	X			
Housing	X			
Agriculture			X	
Roadways & Traffic				X
Noise			X	
Air Quality			X	
Scenic and Visual Resources			X	
Water Supply			X	
Wastewater			X	
Drainage			X	
Power and Communications			X	
Solid Waste			X	
Hazardous & Regulated Materials			X	
Schools				X
Parks and Recreational Facilities			X	
Police, Fire Protection, Emergency Services			X	
Medical Services & Facilities	X			

through the use of dry-extended detention ponds or flow through-based treatment devices meeting City drainage requirements depending on the site specific flow, topography and site constraints.

Groundwater Resources. The Proposed Action will require approximately 2.006 million gallons per day (mgd) of potable water. Currently, the Waipahu-Waiawa Aquifer System has a sustainable yield of 104 mgd, of which about 85 mgd have been allocated to existing or proposed uses, leaving 19 mgd of unallocated supply. Of the 85 mgd of allocated supply, about 50 mgd

(2006) is actually being used at the present time. Based on the aquifer's sustainable yield and its present unallocated supply, the availability of potable water for the project appears adequate. Water use, well construction, and pump installation permits will be obtained from the State Commission on Water Resource Management prior to development of the resource.

The project lies below the 50-inch rainfall isohyet. It is generally accepted by hydrologists that areas in Hawai'i, receiving less than 50 inches average rainfall per year, do not contribute a significant amount of groundwater recharge from net rainfall infiltration. This is due to evapotranspiration equaling or exceeding the amount of rainfall in areas with less than 50 inches. Consequently, the proposed project is not expected to have a significant adverse impact on groundwater recharge or sustainable yield.

The proposed pumping units (wells), that will supply domestic water to the project, are not expected to adversely impact downgradient wells due to the modest pumpage rates distributed among wells with significant geographic spacing. During construction, BMPs will be implemented to prevent or reduce the risk of groundwater contamination. In the long term, the Applicant will comply with all applicable Federal and State environmental regulations related to groundwater quality in order to prevent or minimize groundwater contamination.

Biological Resources. The project will not impact any threatened or endangered species of flora or fauna. No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, (16 U.S.C. 1531-1543) or Chapter 107 HAR, were found within the project area.

Archaeological, Historic and Cultural Resources. Due to the historic long-term commercial agricultural use of the Petition Area, the Petition Area is relatively clear of significant historic sites, with the exception of Waiāhole Ditch which crosses the Petition Area. There are significant historic sites located within the off-site infrastructure improvements areas that may be adversely affected by the Proposed Action. Land-disturbing activities associated with the construction of the proposed improvements may potentially alter or remove the historic sites located in Kīpapa Gulch and an unnamed tributary gulch, depending on project design and engineering. Minor alterations to Waiāhole Ditch (State Inventory of Historic Places [SIHP] No. 50-80-08-2268) and the Oahu Sugar Company irrigation structures in Kīpapa Gulch (SIHP No. 50-80-09-9530) may be needed, depending on project engineering. Subsurface historic resources, including human burials, may be located within the proposed trunk sewer line alignment in the Waipahu area; these may be adversely affected by proposed sewer line construction. An archaeological data recovery plan would be prepared in accordance with in the event that significant historic sites are affected by the proposed project. The State Historic Preservation Division (SHPD) will be consulted on any significant historic sites requiring further archaeological work or documentation prior to future construction activities. A cultural resource preservation plan would be prepared to address buffer zones and identify protective measures for the historic sites recommended for preservation. Construction of the proposed sewer line alignment makai of the H-1 Freeway between Koaki Street to the Waipahu WWPS would proceed under an archaeological monitoring program to be reviewed and approved the SHPD. In the event that any significant archaeological resources are encountered during future construction activities, all work in the immediate area would be halted and consultation with the SHPD would

be sought in accordance with applicable regulations. The treatment of any remains or artifacts would be in accordance with procedures required by the O'ahu Burial Council and the SHPD. The cultural impact assessment for the off-site infrastructure improvements concluded that the proposed improvements would have minimal impact on Hawaiian culture, its practices and traditions. Cultural practitioners would be consulted to discuss the presence of species of ethnobotanical significance within the project area as the project proceeds.

Socio-Economic Characteristics. Because the project is expected to draw residents primarily from elsewhere on O'ahu, it will have negligible effects on the population of the island and the State. Based on the proposed unit counts, the Proposed Action is forecast to result in an average daily resident population of 15,590 persons at full build-out in 2025. The project will represent more of a population shift within the County rather than an influx of new residents to the State. The Proposed Action would generate significant, on-going economic and fiscal benefits for residents of the islands, as well as for the County and State governments. During its early years of infrastructure development, Koa Ridge Makai and Waiawa could generate employment for some 1,990 full-time equivalent (FTE) persons per year, through its direct, indirect and induced impacts. These jobs are expected to be associated with annual personal earnings of some $119 million (2009 to 2015) and $100 million (2016 to 2025) per year, at about $58,000 to $60,000 per FTE job. By the time of its expected completion in 2025, the Proposed Action could be expected to generate some 2,460 direct FTE jobs on-site at its retail, office, industrial, hotel, medical and school facilities, including 1,490 permanent, on-going FTE jobs that would not have existed had the project not been developed. Net fiscal benefits of the project for the City and State, therefore, are estimated at $10.1 million and $12.3 million, respectively, at project buildout in 2025--levels that exceed the new operating expenditures incurred by the City and State governments that can be associated with the Proposed Action. Koa Ridge Makai and Waiawa would have a beneficial impact on O'ahu's housing supply by addressing the critical need for new housing on O'ahu, and directing growth to an area identified by the City for future development. The Proposed Action would potentially provide 5,000 new housing units in Central O'ahu by 2025 towards the projected 2030 islandwide shortfall of 29,000 units. At least 30 percent of the project units will be developed as affordable in accordance with the City's affordable housing policies.

Agricultural Impacts. The Proposed Action is not expected to have a significant adverse impact on agricultural production in the State. In total, the Proposed Action would commit 565 acres of agricultural land to a non-agricultural use. In view of the available supply of farm land (160,000+ acres statewide and about 10,900 acres on O'ahu), the development of this agricultural land – combined with the other planned developments in Hawai'i – involves the loss of too little agricultural land to significantly affect either: 1) the growth of diversified crop farming (averaging about 160 acres per year in new acreage); or, 2) the relocation of farms that are being displaced or could be displaced from Central O'ahu, 'Ewa, and lower Kunia (about 3,600 acres). No significant impacts to existing cattle and agricultural operations or employment are expected as both the ranch operations on Castle & Cooke Waiawa Petition Area and the farming operation currently using the Koa Ridge Makai Petition Area will relocate to suitable replacement agricultural lands.

Roadways and Transportation. The project will increase traffic demands and congestion in the vicinity of the Petition Area. There would be increased traffic during peak hours at the intersection of Ka Uka Boulevard and the H-2 Freeway and with Kamehameha Highway. However, implementation of the intersection and roadway improvements as outlined in project traffic impact analysis report (TIAR) should accommodate the anticipated increases in traffic at the study intersections at acceptable levels of service. From the perspective of a commuter using the H-2/H-1 Freeway, commute time will increase due to the overall growth of traffic in the corridor (i.e., with or without the project). The H-1 and H-2 Freeways will continue to operate at Level of Service (LOS) F and morning peak period commute times between the Mililani Interchange with H-2 and the Kaahumanu Street Overpass of H-1 would increase from 8-16 minutes in the morning peak period (existing condition) to between 11-23 minutes (projected 2025 condition). New employment opportunities and transportation demand management strategies implemented within the Petition Area, expanded public bus service and the implementation of proposed rail service will expand the range of choices available to Central O‘ahu residents, indirectly mitigating the projected increase in longer commute trips for private vehicles.

Although recommended intersection and roadway improvements are expected to improve the surrounding roadways, they will operate at near capacity due to the anticipated development of major projects in the vicinity of the project. Therefore, consideration will be given to Transportation Demand Management (TDM) strategies, to further reduce traffic demands on the surrounding roadways, which serve the region and the rest of O‘ahu.

Noise. Temporary, short-term noise impacts will occur due to construction of the project by earth-moving equipment such as bulldozers and diesel-powered trucks. However, the project site is distant from existing residential or other noise-sensitive land uses such as schools, so no disruptive noise impacts are anticipated. State Department of Health noise regulations and conditions for construction activities will be complied with during project construction.

In the long term, increases in noise, associated with peak hour traffic generated by the project, should not impact noise-sensitive areas since it is predicted to be lower than the minimum change in noise levels normally perceptible to the average listener. Appropriate sound attenuation measures will be implemented to reduce noise impacts from the H-2 Freeway on neighboring Koa Ridge Makai residents to acceptable levels.

Air Quality. Construction of the project will produce short-term air quality impacts such as fugitive dust and exhaust emissions. Appropriate dust control measures will be employed during construction activities to minimize potential for fugitive dust. Long-term impacts include vehicular emissions from project generated traffic as well as indirect impacts associated with electrical power generation and solid waste incineration.

With regard to project generated vehicular emissions, the predicted worst-case carbon monoxide concentrations with the project are well within the national ambient air quality standards and the future “with project” worst-case concentrations are also likely to meet State standards.

Infrastructure and Utilities. The project is not expected to adversely affect infrastructure and utility systems. The Applicant will construct or contribute its fair share to the on- and offsite drinking water, wastewater, storm drainage, electrical power, and communications systems necessary to serve the project. All infrastructure and utility systems will meet applicable Federal, State and City requirements.

Public Facilities and Services. The project will generate the need for additional school facilities to serve its population. To satisfy State Department of Education (DOE) fair-share requirements for the project, the Applicant will contribute to the provision of public school facilities by providing a cash contribution to DOE based on residential units built and any in-lieu fees; and dedicating land to the DOE for two 12-acre elementary school sites in mutually agreed upon locations, as well as provide all necessary off-site infrastructure. The Proposed Action includes a total of 36 acres of public and private park space, which exceeds City Park Dedication Ordinance standards. The Applicant will submit a proposed master plan for park development to the City's Department of Parks and Recreation at a later stage in the development process when more detailed land use planning is completed. The Proposed Action may require increases in police staffing and modification and possibly expansion of existing police station facilities and would require fire protection services. These increases in police and fire protection services and/or facilities would presumably be funded out of property taxes generated by the project. The proposed project will increase the demand on the existing medical and emergency services in the Central O'ahu area. With the planned addition of Koa Ridge Medical Center facilities, the supply of medical services in the region (including emergency medical services) should be adequate to serve the project.

Mitigation. Mitigation is proposed for a range of resources and systems as summarized in Table 1-3 below. More detailed information on mitigation measures is described in Chapters 3 and 4.

Table 1-3
General Mitigation Summary

Resource	Mitigation Measure
Natural Environment	
Geography & Topography	Soils testing to verify slope stability.
Soils	Implement construction period erosion control best management practices.
Natural Hazards	Conduct slope stability analysis of the top of gulch areas prior to detailed design. Fund and construct civil defense sirens to serve the reclassified area.
Surface Water	Comply with applicable Federal, State and City water quality regulations and permit conditions; establish and implement BMPs. Construct storm water quality treatment facilities to meet City drainage requirements. Construct off-site drainage detention basins to attenuate the peak discharge into Kīpapa Stream.
Groundwater	Implement BMPs to prevent or reduce the risk of groundwater contamination. Comply with applicable Federal and State environmental regulations related to groundwater quality. Test proposed wells for water quality parameters required by the State DOH and BWS. If necessary, treat water system to remove agricultural chemicals from the groundwater.
Human Environment	
Historic, Cultural and Archaeological Resources	Prepare and implement cultural resource preservation plan and archaeological monitoring plan as required by SHPD and continue consultation with SHPD. Inform personnel involved in construction activities of the potential for inadvertent cultural finds or burials. In the event that any significant historic or cultural resources are discovered during construction, work would be halted and the proper authorities would be consulted. Consult with cultural practitioners on the presence of species of ethnobotanical significance within the project area.
Agriculture	Relocate existing tenants to suitable replacement lands.
Transportation	Although recommended intersection and roadway improvements are expected to improve the surrounding roadways, they will operate at near capacity due to the anticipated development of major projects in the vicinity of the project. Therefore, consideration will be given to Transportation Demand Management strategies, to further reduce traffic demands on the surrounding roadways, which serve the region and the rest of O‘ahu.

Resource	Mitigation Measure
Noise	Implement construction period controls to comply with State noise rules; implement sound attenuation measures to reduce impacts to residential areas adjacent to the H-2 Freeway.
Air Quality	Implement construction period controls to comply with State air pollution rules.
Scenic and Visual Resources	Provide landscaping and setbacks from H-2 Freeway at Koa Ridge Makai.
Water Supply	Construct infrastructure systems to support Proposed Action; provide dual water system if a suitable non-potable water source is available prior to commencement of site infrastructure.
Wastewater	Construct infrastructure systems to support Proposed Action.
Drainage	Construct infrastructure systems to support Proposed Action.
Solid Waste	Incorporate waste diversion and reduction facilities into project design and encourage recycling.
Power and Communications	Coordinate with HECO and Hawaiian Telcom, Inc.
Schools	Provide two elementary school sites and fair share contribution to DOE.
Parks and Recreational Facilities	Comply with County Park Dedication Rules.

1.6 Unavoidable Adverse Effects and Proposed Mitigation

This section describes the project's long-term adverse impacts that may be unavoidable and proposed mitigation.

Agriculture. The project will result in the loss of 766 acres of agricultural land which currently provides 34 diversified agriculture jobs (Koa Ridge Makai Petition Area) and a fraction on one ranch job (Castle & Cooke Waiawa Petition Area). In practice, however, the project will result in little or no loss of existing or potential agricultural employment since the Koa Ridge Makai Petition Area lessee (Aloun Farms) will transition to other comparable farmlands in the near future.

Views/Open Space. The Proposed Action will convert the project area from its current fallow agriculture/open space condition to urban forms. The project may obscure views of the lower sections of the Koʻolau and Waiʻanae Mountains from the H-2 Freeway, but views of the ridgelines are not expected to be adversely impacted. Some of the impacts will be offset by open space features along the east boundary of the Koa Ridge Makai Petition Area (i.e., a 19-acre community park), as well as landscaping along the residential developments bordering the H-2 Freeway.

Traffic. The Proposed Action will increase traffic demands and congestion in the vicinity and in the H-1/H-2 downstream corridor through the Year 2025 (full build out). Phased implementation of identified improvements to the Waipiʻo Interchange and intersections along Ka Uka Boulevard and Kamehameha Highway will maintain acceptable levels of service on these

facilities. The H-1/H-2 downstream corridor will continue to operate at over capacity conditions with longer delays projected. The City's proposed rail transit project and implementation of regional improvements identified in the O'ahu Regional Transportation Plan will provide mobility options and increase corridor capacity. New employment opportunities provided within the Petition Area will also provide commuting options for Central O'ahu residents. Implementation of the proposed mixed use development plan and identified TDM strategies will minimize the number of external trips generated by the Proposed Action.

1.7 Alternatives Considered

In addition to the Proposed Action, several alternatives were considered and evaluated in Chapter 6:

- No Action Alternative (i.e., the no-build plan)
- Alternative Land Uses for the Site
- Other Alternatives

The **No Action Alternative** assumes only uses permitted within the State Agricultural District would occur within the Petition Area. Urbanization of the Petition Area would be delayed until a future, undetermined date. The new homes that would be provided by the Proposed Action are assumed to be constructed elsewhere on O'ahu to meet market demands. Because most of the homes associated with the Proposed Action are assumed to be built elsewhere on O'ahu, many potential environmental effects would simply be shifted to other unidentified areas of the island. The No Action alternative would increase pressure to develop needed housing in other areas of O'ahu and significant employment opportunities would also be shifted to other parts of the island. The No Action alternative is not consistent with the City and County of Honolulu's ("City's") growth policy, which is to direct growth to areas within the Urban Community Boundary and in the context of the Central O'ahu Sustainable Communities Plan (CO SCP), to the Petition Area. Most importantly, the No Action alternative would not meet the project purpose and objectives and thus cannot be considered a "reasonable" alternative.

Alternative Land Uses for the Site were also considered, including "a small scale development that uses renewable energy, has more open space, additional bike and walking paths, and that maintains the most productive portions of the proposed project lands for agricultural use." A variation of this approach would be similar to the modern agricultural cluster development where urban-type uses are clustered together in a compact form and adjacent agricultural lands are either farmed by the homeowners or leased to professional farmers. Both these models are appropriate in a rural or agricultural context; however the Proposed Action seeks to establish an urban scale with a mix of land uses and densities to support a substantial population base and a city-like concentration of services. This is simply not achievable at a "small scale" given the significant infrastructure investments, protracted land use regulatory process, and pent up demand for housing and new jobs in the Central O'ahu region. Furthermore, large scale agricultural activities are often not compatible with suburban and urban residential uses.

Several other potential alternative uses were evaluated in Chapter 6 including:

- A "traditional" lower-density residential subdivision

- Replacing the medical/healthcare uses with regional or major commercial uses
- Incorporating an 18-hole golf course into the Koa Ridge Makai parcel
- Postponing the project pending further study
- Alternative locations for the project

For a variety of reasons explained in Chapter 6, these alternatives do not meet the purpose and objectives for the action. The Applicant has explored these and a wide range of other site configurations and options with its Community Vision Group, leading up to the selection of the proposed land use program and plan. The proposed configuration provides the optimal residential and commercial density, mix of housing and job types and mix of civic amenities to achieve the project purpose and objectives. Planning concepts such as "smart growth" and "sustainability" were carefully considered by the project planners and the Community Vision Group and have been woven into the plan. The compact nature and higher density of the Proposed Action preserves open space, prevents sprawl, capitalizes on infrastructure investments, reduces infrastructure maintenance costs, and improves the viability of neighborhood commercial uses.

1.8 Unresolved Issues

There are several issues that remain unresolved at the time of the preparation of this EIS. They include the following issues, which are expected to be resolved prior to commencement of the project.

Proposed Water Storage Tank. Since both the Castle & Cooke Waiawa development and the planned Waiawa Ridge development have potable water system requirements at the 785-foot water service zone, improvements must be coordinated. Storage facility requirement for the Waiawa Ridge development will require a 2.0 million gallon (mg) reservoir. The proposed project water demand will require 1.0 mg of storage. Depending on scheduling, either a single 3.0 mg storage tank will be constructed to serve both projects, or two smaller storage tanks will be constructed to serve each project independently.

Identification of Specific Regional Transportation Improvements. CCHH has committed to participate in the funding, design and construction of local and regional transportation improvements and programs necessitated by the proposed project, on a fair-share basis, as determined and approved by the State Department of Transportation and the City and County of Honolulu Department of Transportation Services. Regional improvements and programs have not yet been identified by these State and City and County agencies, but could specify roadway improvements, studies of regional transportation requirements, dedication of rights-of-way to the State and/or City and County at no cost; donation of lands for park-and-ride facilities; and establishment of bikeways and/or lanes.

New Access Point for Mililani Memorial Park Road. Access to Mililani Memorial Park is currently provided via a paved, private two-lane road that is connected to the eastern terminus of Ka Uka Boulevard. The existing Mililani Memorial Park Access Road may need to be relocated as part of the Ka Uka Boulevard extension and proposed improvements to the Waipi'o Interchange being undertaken by the Waiawa Ridge development. Should relocation be

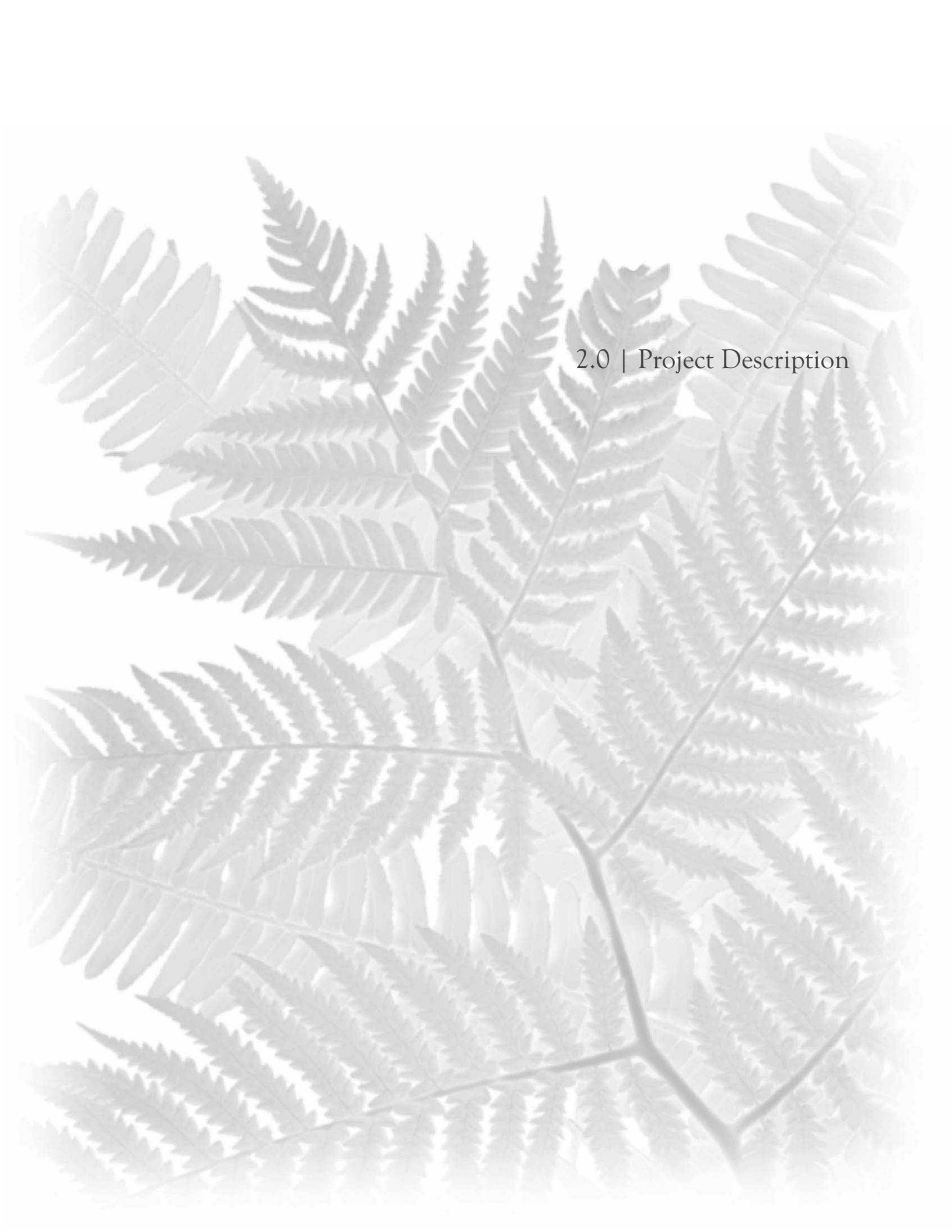
necessary, CCHH will assist the Waiawa Ridge development in its efforts to relocate the road. CCHH will discuss the relocation with operators of the Mililani Memorial Park to ensure that a new roadway connection will be satisfactory to their needs. Access points along the extension of Ka Uka Boulevard must also be coordinated with the Waiawa Ridge development and the City and County of Honolulu Department of Planning and Permitting (DPP).

Off-Site Drainage Improvements. Although four off-site drainage detention basins are evaluated in this EIS, only three are required to address the projected increases in the peak discharge into Kīpapa Stream for the 100-year, 24-hour design storm. The third basin will either be Detention Basin (DB) 3 on CCHH property or DB 4 on U.S. Army property. If DB 4 is determined to be needed, an easement or real estate transfer will be required. Two stormwater drainlines will also cross U.S. Army property to discharge into Kīpapa Stream from the Koa Ridge Makai Petition Area. These drainlines will also require easements from the U.S. Army.

Archaeological and Historic Resources. The archaeological inventory surveys and related work have been submitted to SHPD, and are currently pending SHPD review and approval. The project would preserve two sites recommended for preservation (SIHP No. 50-80-09-7053, the Old Kamehameha Highway alignment; and SIHP No. 50-80-09-7046, a plantation-era clearing platform that is significant to native Hawaiians). However, the extent of the impact that the Proposed Action will have on remaining archaeological and historic resources – including the number of sites that will be altered or removed, and the extent to which Waiāhole Ditch and the irrigation infrastructure in Kīpapa Gulch would be modified – is not known at this time because design and engineering of the infrastructure improvements are still in the preliminary stages. Ongoing discussions with SHPD to minimize impacts to archaeological and historic resources are expected to continue as more information becomes available. A cultural resources preservation plan would be prepared for SHPD approval following the preliminary engineering phase.

1.9 Compatibility with Land Use Plans and Policies

The Proposed Action is generally compatible with and supportive of relevant State and County land use policies, plans and controls, as described in Chapter 5. The City and County of Honolulu has identified Koa Ridge Makai and Waiawa for future urban development by its inclusion in its CO SCP Urban Community Boundary.



2.0 | Project Description

Chapter 2: PROJECT DESCRIPTION

2.1 BACKGROUND INFORMATION

2.1.1 History of Entitlement Requests and Processing

In February 2003, a Draft EIS based on a previous development concept was filed by the applicant, CCHH, with the City and County of Honolulu DPP in conjunction with a request to rezone land in Waiawa and Koa Ridge Makai. In September 2003, the State LUC's Decision & Order of June 2002 (Docket No. A00-734), which had reclassified land in Waiawa and Koa Ridge Makai from the State Land Use Agricultural District to the State Urban District, was vacated by the State of Hawai'i First Circuit Court's Order. The Circuit Court's Order was based upon the finding that an Environmental Assessment (EA) or EIS pursuant to Chapter 343, HRS, was required as a precursor to deliberations on the State Land Use District Boundary Amendment since the development proposes the use of State lands associated with infrastructure improvements proposed within public roadways (e.g., H-2 Freeway, H-1 Freeway, and Kamehameha Highway). The State Office of Planning appealed the Circuit Court's Order, and the Hawai'i Supreme Court affirmed the Circuit Court's Order in January 2006. As a result of this decision, the Applicant opted to withdraw its rezoning request and the previous Draft EIS for the development of Koa Ridge Makai and Waiawa.

In May 2007, the LUC dismissed without prejudice the previous petition for Land Use Boundary Amendment (Docket No. A00-734). This dismissal allowed for the filing of new petitions with the LUC for a land use district boundary amendment covering substantially the same land as had been previously approved.

In July 2007, a petition and EIS Preparation Notice was submitted by CCHH to the LUC for Castle & Cooke Waiawa, for the reclassification of lands from the State Agricultural District to the State Urban District (Docket No. A07-775). In November 2007, a Draft EIS for the Waiawa project alone was prepared and distributed for public review.

In May 2008, the Applicant entered into a new agreement with Wahiawa Hospital Association, which enabled the entitlement process to proceed for Koa Ridge Makai. Because the Draft EIS for the Castle & Cooke Waiawa project was still pending Final EIS action, CCHH decided to withdraw the Waiawa EIS in order to proceed with a combined application for both the Waiawa and Koa Ridge Makai developments to provide a comprehensive environmental review of both communities. An amended petition was submitted to the LUC with an EIS Preparation Notice for a combined EIS for the Koa Ridge Makai and Waiawa developments.

The environmental review of the project is due to the proposed use of public lands associated with infrastructure improvements within public roadways, including the H-2 Freeway, Ka Uka Boulevard, and Kamehameha Highway. The amended State Land Use District Boundary Amendment Petition and EIS Preparation Notice prepared for the project notes that due to the scope of the project, there may be significant effects on the environment to warrant the preparation of an EIS. The Petition also notes that the filing of an EIS with the LUC represents the earliest practical time to determine whether an EIS is warranted.

This EIS will also be used in support of a zone change application for the Koa Ridge Makai and Waiawa areas to be filed with the City and County of Honolulu following the State Land Use District boundary amendment process.

2.1.2 Location

The Petition Area is located in Waipi‘o and Waiawa, O‘ahu (‘Ewa Judicial District), and consists of approximately 766 acres of land in two geographic areas referred to as Koa Ridge Makai and Castle & Cooke Waiawa (see Figure 1-1 for location map). The Koa Ridge Makai area is located north of the Waipio Gentry Business Park and west of the H-2 Freeway and is bordered on the west by Kīpapa Gulch. The Castle & Cooke Waiawa area is located east of the H-2 Freeway, east of the Waipi‘o Interchange, and adjacent to and northwest of the proposed Waiawa Ridge development. (Note: The term “Project Area” is used in this document to describe the combined Petition Area and off-site infrastructure areas).

2.1.3 Land Ownership

The Petition Area is comprised of ten parcels, or portions thereof, for a total land area of 766.327 acres. Castle and Cooke Homes Hawai‘i, Inc. has fee simple ownership of all but one of the parcels. The Applicant is in the process of entering into a land exchange agreement with Waiawa Ridge Development LLC to obtain fee simple ownership of TMK 9-4-06: por. 31 (0.358 acres). The TMKs for the Petition Area are shown on Figures 1-2, 1-3, and 1-4.

2.1.4 Existing Use

Koa Ridge Makai: The majority of the 575-acre Koa Ridge Makai site, much of it previously in pineapple cultivation, consists of a mix of actively cultivated agriculture and fallow areas. Almost all of the land is currently being leased by Dole Food Company Hawaii and subleased to a tenant who cultivates a mix of diversified agricultural crops. Areas not under cultivation are vacant and predominantly vegetated with a mix of weedy species, open mixed scrub, and a variety of grasses. Approximately 3.5 acres at the southern end adjacent to the Waipio Business Park are leased to the Ironworkers Union for training. A portion of the Waiāhole Ditch system traverses in an east-west orientation across the northern portion of the Koa Ridge Makai site.

Waiawa: The 191-acre Castle & Cooke Waiawa site, much of it previously in pineapple cultivation, consists primarily of vacant, fallow land with an overgrowth of vegetation consisting of a mix of weedy species, open mixed scrub and trees, and a variety of grasses. Most of the site is currently leased for cattle grazing. About four acres are leased for a radio antenna site by the Broadcast Corporation of America. Mililani Memorial Park leases 0.690 acres for a filter bed and service yard. All leases are short-term or subject to termination on one year advance written notice. The State of Hawai‘i also retains a roadway access easement through the Castle & Cooke Waiawa Petition Area to the nearby Waiawa Correctional Facility. This easement will remain in place until such time that the access road can be relocated.

2.1.5 Surrounding Land Uses

Koa Ridge Makai: Land uses bordering the Koa Ridge Makai site include the H-2 Freeway to the east, Ka Uka Boulevard and the Gentry Waipio Business Park to the south, and the Patsy T. Mink Central O'ahu Regional Park (CORP), Kamehameha Highway, and Kīpapa Gulch to the west and north. Approximately four acres of land bordering the west side of the H-2 Freeway, in the middle of the site, are occupied by two City and County of Honolulu-owned water storage tanks (TMK 9-4-006:014 and 015).

Castle & Cooke Waiawa: Land uses bordering the Waiawa site include Pānakauahi Gulch to the west and northwest, and vacant, undeveloped former sugar cane cultivated lands to the east and south, which are part of the planned Waiawa Ridge development. This development encompasses approximately 3,600 acres (approximately 1,700 acres in Phase I) located adjacent to the project site. The first phase of development, encompassing presently entitled lands, will include 5,000 single- and multi-family residential units, a 90-acre commercial center, schools, parks, and recreation centers. The Waiawa Ridge development includes sites for up to three elementary schools, one middle school, and one high school.

Regional surrounding land uses include (Figure 1-1):

Mililani. Created in the mid-1960s as a master-planned residential community in Central O'ahu, the community of Mililani is located to the west and north of the proposed Waiawa and Koa Ridge Makai development, across from Kīpapa Gulch. The community is comprised of Mililani Town (first occupied in 1968) located west of the H-2 Freeway, and Mililani Mauka (first occupied in 1990, with residential development recently completed) located to the east of the H-2 Freeway. Mililani includes numerous supporting commercial, recreational, and community facilities.

Wahiawā/Schofield Barracks/Wheeler Army Airfield. The town of Wahiawā is located approximately 3.4 miles north of the proposed Waiawa and Koa Ridge Makai development and north of the community of Mililani. Wahiawā is a civilian community that supports the nearby Schofield Barracks and Wheeler Army Airfield.

Located to the west and south of Wahiawā, Schofield Barracks/Wheeler Army Airfield supports the U.S. Army's 25th Infantry Division. Schofield Barracks is the largest military base in Hawai'i in terms of land area, with most of its rugged, open terrain dedicated to military training grounds. The eastern portion of the base adjacent to Wahiawā includes residential, commercial, recreational, and semi-industrial uses.

Mililani Technology Park. Located east of Wheeler Army Airfield, across from the H-2 Freeway, Mililani Technology Park is an area where high technology firms combine with office, commercial, and light industrial uses in a low-density, campus-like setting.

Mililani Memorial Park/Waiawa Correctional Facility. The Mililani Memorial Park cemetery is located immediately north of the planned Waiawa development, east of the H-2 Freeway. The State's minimum security Waiawa Correctional Facility is located to the east of the Mililani

Memorial Park. A roadway access easement that runs through the project site is granted to the State of Hawai‘i for access to this correctional facility. The easement will remain in place until such time that the access road can be relocated.

Waipio Acres. Located along the northern border of Mililani, Waipio Acres consists of an older residential community. Newer development in the form of townhomes and apartments has occurred in the northern portion of the area.

Waipahu/Village Park/Royal Kunia. Waipahu is an established community located within south-central O‘ahu, makai of the proposed development. Initially developed as a plantation town around Oahu Sugar Company’s former sugar mill operations, the Waipahu area is primarily an older residential community which is experiencing recent development of light industrial and community facilities within the former sugar mill site. The newer residential communities of Village Park and Royal Kunia are located north of Waipahu, mauka of the H-1 Freeway.

Waipi‘o/Waikele. Located on former sugar cane and pineapple fields south of the Waiawa and Koa Ridge Makai site and north of Waipahu, Waipi‘o includes the residential communities of Seaview, Crestview and Gentry Waipio. The Gentry Waipio Business Park, located adjacent to the southern boundary of the Koa Ridge Makai area, consists of approximately 100 acres of light industrial uses, including the big box retailer Costco. The newer Waikele development, located to the west of Waipi‘o, includes residential and retail development. The City’s CORP is located mauka of Waikele and west of Waipi‘o.

2.2 PROJECT PURPOSE AND NEED

2.2.1 Project Purpose and Objectives

The purpose of the Koa Ridge Makai and Waiawa developments is to create high quality, integrated master planned communities in Central O‘ahu, consisting of approximately 5,000 total homes, that provide a variety of housing types, commercial and residential support services, school facilities, community amenities, and outdoor recreational opportunities. The project is designed to support non-automotive travel (key elements of the City’s CO SCP [City and County of Honolulu 2002]). Project objectives include developing quality health care facilities in Central O‘ahu that provide a range of health care services along with medical and health care employment opportunities and creating additional opportunities for on-site employment in retail, commercial, and light industrial developments located in Koa Ridge Makai to reduce peak hour traffic impacts and provide higher quality of life for project residents.

2.2.2 Project Need

The project’s two development areas, Koa Ridge Makai and Waiawa, have been identified for urban development in State and City planning policies within a 25-year planning horizon.

Along with State and City projections, a recent study undertaken for the project, indicate there is an existing pent-up housing demand on O‘ahu of 21,000 units which is estimated to rise to 78,000 units by 2030 (Mikiko August 2008). Even if planned developments that are currently

entitled (or exempted from entitlement) are constructed within this timeframe, there would be an islandwide shortfall of approximately 29,000 units by 2030. The project will address a portion of the shortfall by creating master-planned residential communities. The project's market study also forecasts a continuing need and demand for additional commercial facilities in Central O'ahu. The project area is directly accessible from major regional transportation facilities, highly desirable for residential use, and adjacent to urbanized areas.

2.3 DETAILED PROJECT DESCRIPTION

2.3.1 Conceptual Master Plan

The proposed Koa Ridge Makai and Castle & Cooke Waiawa development will be an integrated mixed-use community with a unique sense of place, where residents can live, work, and play in proximity to retail, services, health care, and community amenities. The development will feature generous landscaping and open space. The new community will be one that is safe, modern, walkable, and bicycle-friendly, where residents can live, work, and recreate in a vibrant and healthy master-planned, sustainable community encompassing principles consistent with "smart growth."

Vision. The values and principles shaping the project design grew out of a community visioning process that began in 2003 and included representatives of 53 community organizations and constituencies in Central O'ahu (Section 2.4.1 summarizes the community visioning process). Through this process, the following core values and guiding principles for Koa Ridge Makai and Castle & Cooke Waiawa emerged:

- A distinct focal point, or gathering place, where residents frequently come together to celebrate life in their community.
- A safe and secure community focused on health and wellness and encouraging active lifestyles.
- A multi-generational community with facilities and activities to cater to all ages.
- Reduced dependence on the automobile by providing local serving retail, services, recreation, and schools within walking distance of the majority of residents.
- A balance between residents and jobs to reduce the need to commute by private auto.
- Carefully planned bus transit routes to allow efficient public transit service.
- A broad mix of residential types for all ages, cultures, and incomes with opportunities for shopping, services, education, recreation, and employment.
- A "green" sustainable community--one that recognizes and preserves the important environmental characteristics of the site, provides enhanced pedestrian and bicycle routes, conserves energy and resources, and locates active and passive open space and parks in close proximity to residents.
- A major emphasis on alternative forms of transportation to reduce reliance on the private automobile, conserve energy, decrease pollution, and provide safe accommodation for their users. This includes reducing the length of the trips out of the home, providing alternative transportation modes for these shorter trips, and reducing the number of private automobiles on regional transportation routes.

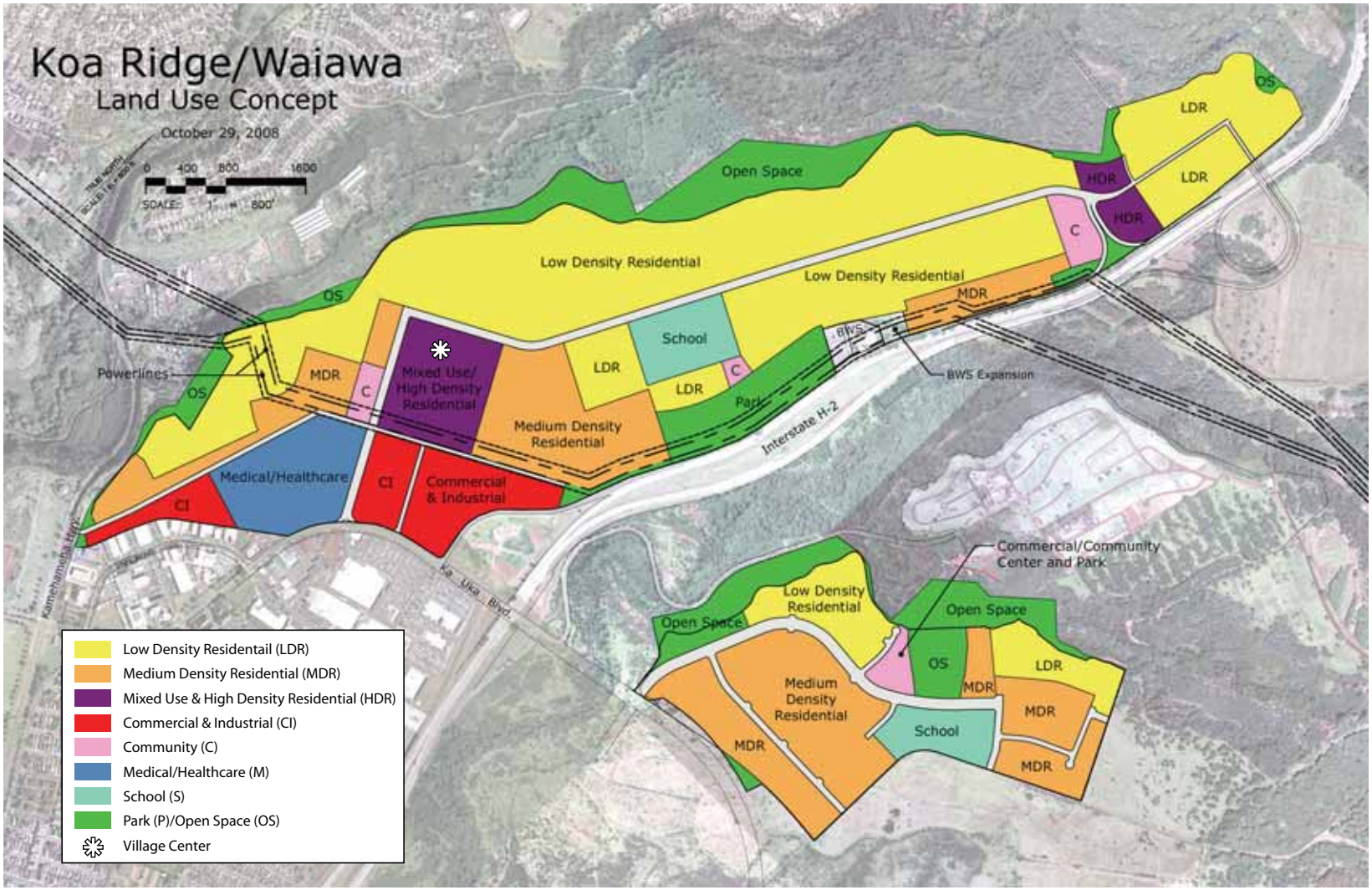
To achieve the community's vision for the new communities, a conceptual land use plan was formulated that provides for an integrated mixed-use community that incorporates the core values and guiding principles. Figure 2-1 illustrates the proposed land use plan for Koa Ridge Makai and Waiawa. Table 2-1 summarizes proposed land uses, acreages, and dwelling units in both communities.

Both the Koa Ridge Makai and Castle & Cooke Waiawa communities share common goals for providing a variety of housing types, elevating the place of pedestrians and bicyclists, creating on-site employment opportunities, and employing development practices that minimize adverse environmental impacts. In addition, Koa Ridge Makai and Castle & Cooke Waiawa will each have distinctive features designed to embody the project's core values and guiding principles (described in Sections 2.3.2 and 2.3.3).

Table 2-1
Project Land Use Summary

	Koa Ridge Makai	Waiawa		Koa Ridge Makai	Waiawa	
Land Use	**Acres**		**Total**	**Units**		**Total**
Multi-family Residential	105	78	183	2,446	1,318	3,764
Single-family Residential	155	26	181	1,054	182	1,236
Commercial	55	*	55	--	--	--
Parks	32	4*	36	--	--	--
Elementary School	12	12	24	--	--	--
Open Space / Gulch	40	32	72	--	--	--
Detention Basin / Open Space	--	9	9	--	--	--
Medical / Healthcare	28	--	28	--	--	--
Churches / Recreation Centers	8	*	8	--	--	--
Roadways / Other	140	30	170	--	--	--
Total	**575**	**191**	**766**	**3,500**	**1,500**	**5,000**

* Combined in a four-acre central commercial/community center/park complex .



0 Feet 1600
0 Meters 500

Source: Castle & Cooke Homes, Hawai'i, October 2008.

Master Land Use Plan

Figure 2-1

2.3.2 Koa Ridge Makai Concept and Land Use Allocation

The Koa Ridge Makai development encompasses 575 acres and will consist of 3,500 residential units, a mixed use higher density Village Center, a 28-acre medical center complex, commercial and light industrial uses, an elementary school, churches and community centers, and neighborhood and community parks.

Koa Ridge Makai will offer a range of housing styles and densities to accommodate residents of all ages and life stages. Locating neighborhood parks, recreation centers, and pedestrian-oriented shopping and entertainment centers within easy walking distances of higher densities of residential populations will reduce dependence on automobile use. The project will include bike lanes on major streets, pedestrian paths linking residential areas with community and commercial facilities, and streets designed to accommodate City buses—all features that will encourage alternative transportation modes for shorter trips within the community and promote active lifestyles. The proposed medical complex, commercial, and light industrial areas provide substantial opportunities for on-site employment that offset the need for some residents to commute to metro Honolulu for work or health care.

Access. There will be three primary access ways to the Koa Ridge Makai project site: Ka Uka Boulevard (two points of ingress/egress), a new Koa Ridge Interchange at the mauka end of the site at the Pineapple Road bridge, and a full service intersection at Kamehameha Highway on the south side of the property across from the CORP. The main road through the project site is the Koa Ridge Parkway, which will extend through the site and connect Ka Uka Boulevard with the Koa Ridge Interchange at the mauka end of the site. The Koa Ridge Medical Center will have frontage on the Parkway and the connector road to Kamehameha Highway, with an emergency vehicle access also anticipated from Ka Uka Boulevard.

Village Center. The focus of activity in Koa Ridge Makai will be the Village Center, which supports higher density housing developments and mixed-use buildings. The Village Center is envisioned to be the social heart of the community providing day-to-day shopping, dining, entertainment, recreation, and learning within a unique, enhanced pedestrian environment. The Village Green will be an open landscaped area extending through the Village Center, providing a place for gathering and community activities. The Village Center may also include a church, community center, and a 150-room extended-stay hotel. An on-site bus transit station will provide convenient access to bus lines and the future rail system.

Building heights in the Village Center are expected to be four stories or up to 60 feet high with the height stepping down to the surrounding residential neighborhoods and the community retail uses. The medical center complex is expected to have the tallest buildings with a possible height of four to five stories or up to 75 feet. The existing 138 kilovolt (kV) power lines that now cross the site will be relocated through the Village Center and then along the east side of the site along the H-2 Freeway.

Housing densities transition from greater intensity in the Village Center area to lower density, single family homes to the north. A significant open space and pedestrian/bicycle trail network provides a wide variety of recreational opportunities for residents and other members of the

Central O‘ahu community. A network of “green streets” (i.e., wider rights-of-way to accommodate pedestrians and bicyclists, wider sidewalks, and enhanced landscaping) and a continuous bicycle and pedestrian system (portions of which will pass along the edge of Kīpapa Gulch) will link the neighborhoods and activity areas. Near the proposed Koa Ridge Interchange, a small area of commercial use will be integrated with a mixed use development to serve the residential community at the mauka end of the site.

Land Use Allocation. The general land use allocation illustrated on the Master Land Use Plan (Figure 2-1) is described below:

Low Density Residential (LDR)
These are primarily single family detached homes on varying lot sizes. Densities range from six to nine dwelling units per acre. These areas will also include neighborhood parks and private common area parks that serve as focal points and activity centers of the community.

Medium Density Residential (MDR)
Planned to be adjacent to the Village Center and other retail and commercial uses, these medium density districts would include townhouses, row houses, stacked flats, and live-work residential units. Densities could range from 14 to 25 dwelling units per acre.

Mixed Use & High Density Residential (HDR)
Mixed Use and High Density Residential uses are planned within the Village Center. Mixed Use districts could include commercial and retail uses with office or residential uses above ground floor businesses. High Density Residential areas include elevator served multi-family buildings of up to four stories. Residential densities could range from 25 to 45 dwelling units per acre.

Commercial and Light Industrial (CI)
Retail, commercial, and light industrial districts are included to serve the neighborhoods and surrounding communities and to provide a variety of employment opportunities within Koa Ridge Makai. These Retail and Commercial uses are located to be conveniently accessed from the regional transportation corridors.

Community (C)
Community amenities, such as community centers and churches, will be included within Koa Ridge Makai to help fulfill the core values of creating gathering places and providing for a multi-generational community.

Medical Center (M)
The Koa Ridge Medical Center Complex is intended to provide comprehensive primary and secondary care medical services to residents of Central O‘ahu and North Shore. It could also incorporate and build upon the acute care services at Wahiawa General Hospital at a site that is accessible to regional transportation corridors, population, and employment centers.

The planning horizon for the health services component is 2015 for initial opening, with continued growth and development planned through 2025 and beyond. Long range forecasts indicate a need for the Koa Ridge Medical Center complex to maintain capacity for future growth as the health services mature and its service population continues to grow and age.

The programs listed below represent a comprehensive range of Koa Ridge Medical Center services that are supported by health services demand forecasts. Although all of the services and facilities listed may not ultimately be developed at Koa Ridge, they are described here and addressed in this EIS to disclose the maximum potential impacts of the medical center complex. Some of the uses are subject to a State Certificate of Need approval.

- 100-bed acute care hospital, with site capacity to expand to 120+ beds to accommodate future growth through 2025.
- Inpatient and outpatient ambulatory care services which can include emergency services, diagnostic imaging, inpatient and ambulatory surgery, endoscopy and minor procedures, and other diagnostic and treatment services required for a full service hospital, including lab, rehabilitation, pulmonary function, cardiac testing, etc.
- Medical office building to house 40-60 physicians, with the site capacity to expand as demand grows.
- Skilled nursing facility with 100 to 150 beds.

Parks (P)
A Community Park of approximately 19 acres is located on the eastern edge of Koa Ridge Makai and will include active ball fields, play courts, comfort station, and parking areas. The Community Park site will be dedicated to the City and County of Honolulu. Integral to the establishment and identity of neighborhoods, a variety of smaller parks of approximately 1/2 to 1-1/2 acres in size are planned (not depicted in Figure 2-1). A neighborhood park will be located within walking distance of most residents.

School (S)
A site for a 12-acre elementary school is centrally located within Koa Ridge Makai.

Open Spaces / Buffers (OS)
A variety of open space areas are planned along the edges of the site, both along the H-2 Freeway and the western property boundary. Pedestrian and bikeways will connect these open spaces--which also provide a buffer to the freeway--with the surrounding neighborhoods.

2.3.3 Castle & Cooke Waiawa Concept and Land Use Allocation

The proposed Castle & Cooke Waiawa development is a 191-acre master planned community with approximately 1,500 single-family homes and multi-family units, a neighborhood commercial site, an elementary school site, a community recreational center, and neighborhood parks (Figure 2-1). The project will feature generous landscaping and open space and encompass principles consistent with "smart growth" and sustainable development, such as compact, higher density development, streets and grade-separated paths designed for the needs of bicyclists and pedestrians, and incorporating natural features into the project design.

The project will be a distinctive, environmentally sound, and residential neighborhood adjacent to the larger Waiawa Ridge community being developed adjacent to the south by Waiawa Ridge Development, LLC (WRD LLC). Four roadway connections will provide connectivity with the

planned Ka Uka Boulevard extension and the future Waiawa Ridge development. The Castle & Cooke Waiawa development will utilize the secondary access planned by the adjacent Waiawa Ridge development. The planned community will have a compact design offering a wide variety of housing types designed around centrally located commercial and community facilities. The project will be completely walkable with pedestrian and bike trails winding through neighborhoods, connecting neighborhood parks, open space, the community center, and school. The cooler, higher elevations characterizing the project's gently rising slopes will facilitate sustainable development by favoring natural ventilation where appropriate. The site borders Pānakauahi Gulch, where open space and dramatic views of the gulch and the mauka lands will be preserved and shared with all of the neighborhood residents. Continuous trails through the community will connect with internal paths to create an interconnected pedestrian and bicycle system with scenic overlooks that will make non-automotive travel accessible and enjoyable within the community, and promote active lifestyles.

Access. Primary access to the project site will be provided via a proposed extension eastward of Ka Uka Boulevard, to be constructed by the Waiawa Ridge development, developers of the adjacent Waiawa Ridge project. This extension road will closely parallel the southernmost boundary of the project site, providing a primary access point to the project. Connectivity to the Waiawa Ridge development will also be provided at the mauka end of the collector road extending through the project site. The Castle & Cooke Waiawa community will also utilize water and sewer systems being constructed by the Waiawa Ridge development. The development schedule of Castle & Cooke Waiawa will be dependent upon the progress of infrastructure improvements at the planned Waiawa Ridge development that will serve both projects.

Land Use Allocation. The planned community will have a compact design offering a wide variety of housing types designed around centrally located commercial and community facilities, as shown in Figure 2-1.

Low Density Residential
Similar to Koa Ridge Makai, this housing type will feature single family detached homes on varying lot sizes, with densities ranging from six to nine dwelling units per acre.

Medium Density Residential
This type of housing product would encompass three times the land area as the low-density residential uses (78 acres versus 26 acres). Densities could range from 14 to 25 dwelling units per acre.

Commercial/Community Center/Park
A centrally located four-acre commercial/community center/park complex will provide convenient services for area residents and also serve as a place for community and social gatherings.

Park
Castle & Cooke Waiawa will include neighborhood parks (not depicted in Figure 2-1) in addition to the public park area in the commercial/community center/park complex. These smaller,

private neighborhood parks will offer opportunities for passive recreation and play areas for younger children located within easy walking distance of homes. Having gathering places in close proximity to homes will encourage residents to meet and enjoy healthy lifestyles and social interchange. The many neighborhood parks will be linked with each other and the central community facilities by tree-lined sidewalks and bike paths.

School
A new elementary school will be located adjacent to a neighborhood park and community center to provide a focus for community life.

Detention Basin/Open Spaces/Gulch
A large detention basin, required for drainage infrastructure, will occupy a natural depression in the central part of the project site that could be transformed into a pleasant water feature and focus for passive recreation. The site borders Pānakauahi Gulch, where open space and dramatic views of the gulch and the mauka lands will be preserved and shared with all of the neighborhood residents.

2.3.4 Off-Site Infrastructure Improvements

In addition to the Koa Ridge Makai and Waiawa land use proposals described above, the project includes several off-site infrastructure improvements: a new sewer line from Koa Ridge Makai to the Waipahu WWPS, H-2 Freeway interchange improvements, and drainage improvements in Kīpapa Gulch. See Figure 1-5 for their locations and additional discussion in Sections 4.5 (Traffic and Roadways) and 4.9.3 (Drainage).

Trunk Sewer Line. A new 36-inch trunk sewer is planned to convey wastewater flows from Koa Ridge Makai and will extend approximately 3.6 miles to the Waipahu WWPS (see Figure 1-5 for alignment). The off-site sewer line will connect to the onsite sewer system for Koa Ridge Makai and cross under Kamehameha Highway and into the CORP. The line will run south through CORP along the Kīpapa Gulch perimeter to Paiwa Street in Waikele. The line continues south along Paiwa Street, under the H-1 Freeway and onto Castle & Cooke-owned land adjacent to Paiwa Street on the west. The line will continue south through Waipahu on Koaki Street, Kopake Street, and Mokuola Street to Moloalo Street, where it will turn to the west. At the end of Moloalo Street, it will extend under Farrington Highway and continue west to Waipahu Depot Road, where it will turn south and terminate at the Waipahu WWPS. In general, the line will run within an approximately 10-foot wide easement.

H-2 Interchange Improvements. A new interchange is proposed at the north end of Koa Ridge Makai, in the vicinity of the existing Pineapple Road bridge that crosses the H-2 Freeway. This interchange includes an H-2 northbound off-ramp to Koa Ridge Makai and a northbound loop on-ramp to H-2. Both the northbound on- and off-ramps will be located on the east side of the H-2 Freeway. The potential alignments of the Koa Ridge (Pineapple Road) Interchange ramps are shown in Figure 2-1 and Figure 4-6. Potential improvements to the Waipi‘o Interchange are shown in Figure 4-3.

Drainage Improvements. Stormwater detention basins located in Kīpapa Gulch are also included in the project. Three are located on property owned by CCHH (DB 1, 2, and 3). An alternate basin is located on U.S. Army property in Kīpapa Gulch, in the event one of the three on CCHH-owned land is unsuitable. The basins will have impounded volumes less than 50 acre-feet with maximum downstream berm heights of 25 feet. Berms will be constructed from compacted soil with typical fill slopes of 3:1 (horizontal:vertical). Each basin will require access during construction as well as permanent access for maintenance. Generally, access to DB 1, 2 and 3 is from the eastern edge of Mililani Town through an existing unpaved road that provides access for Kīpapa Gulch farmers. A potential alternate access road would be from Mililani Mauka via an existing Board of Water Supply maintenance road. Access to DB 4 is from the old Kamehameha Highway alignment within Kīpapa Gulch (now a U.S. Government-owned road that is accessible from Koa Ridge Makai). The existing access road would extend along an existing unpaved road along Kīpapa Ridge. From the mauka end of Kīpapa Ridge, access to DB 2 will be provided in a dry stream bed along the gulch floor. The access roads will be about 20 feet wide and likely be of crushed rock construction. In addition to on-site detention basins that were discussed in the project's EIS Preparation Notice, the off-site basins will attenuate the peak discharge from a 100-year storm event into Kīpapa Stream so the net impact of the project will be no increase in discharge into Kīpapa Stream at the point of the project's stormwater runoff contribution. The proposed drainage system will be privately-owned by a community association of owners and not connect to NPDES-regulated municipal systems serving the area.

Stormwater runoff collected on-site at Koa Ridge Makai will be conveyed and discharged to Kīpapa Stream through box culverts and outlet works located on U.S. Army property in Kīpapa Gulch (see Drain Lines 1, 2a and 2b in Figure 1-5. Drain Lines 2a and 2b indicate potential alternate alignments of a single box culvert from Koa Ridge Makai to Kīpapa Stream).

2.4 COMMUNITY MEETINGS AND INVOLVEMENT

2.4.1 Community Visioning Process

Beginning in March 2003, CCHH organized a series of community visioning workshops where participants provided their input and contributed their ideas to the creation and refinement of a specific vision for Castle & Cooke Waiawa and Koa Ridge Makai. Representatives of over 50 Central O'ahu and Leeward community organizations and area residents met to review site information, identify community values and attributes, participate in a site tour, develop planning concepts based on site characteristics and qualities of good communities, review alternatives and a draft preferred planning concept produced by CCHH's planners, and provide feedback to refine the planning concept. CCHH reviewed the draft preferred planning concept with appropriate government agencies (State: Department of Transportation, Department of Education; City and County of Honolulu: Department of Planning and Permitting, Department of Parks and Recreation) before further refining and presenting the preferred planning concept to the visioning participants. As of November 2008, 15 Koa Ridge Makai and Waiawa visioning workshops had been held, which were attended by between 17 and 37 community members. Meetings were held on March 4, 2003, April 8, 2003, May 13, 2003, June 12, 2003, July 29, 2003, October 14, 2004, May 3, 2006, November 15, 2006, May 16, 2007, July 17, 2007, November 15, 2007, February 21, 2008, June 19, 2008, July 17, 2008, and September 18, 2008.

The 53 community organizations that participated in the Koa Ridge Makai and Waiawa visioning process between 2003 and 2008 are listed below.

Aiea-Pearl City Business Association	Pearl City Community Association
American Youth Soccer Org. - Ewa/Waipahu/Waipio	Pearl City Elementary School
American Youth Soccer Organization - Pearl City	Pearl City High School
Boy Scouts of America	Pearl City Makule Club
Central Oahu Youth Baseball League	Pearl City Neighborhood Board No. 21
Cornerstone Fellowship Mililani Mauka	Royal Kunia Community Association
Filipino Community Center	St. Joseph Catholic Church
Gentry Business Park Association	St. Joseph School
Girl Scouts	Trinity United Methodist Church Pearl City
Hawaii Bicycling League	Wahiawa Community & Business Assoc.
Hawaii United Okinawa Association	Wahiawa Hawaiian Civic Club
Hope Chapel West Oahu	Wahiawa Hospital Association
Kanoelani Elementary, SCBM Council	Wahiawa Master Plan Committee
Leeward Central Communities for Responsible Transportation	Wahiawa Neighborhood Board No. 26
Leilehua High School	Wahiawa Rainbows
Makua Alii Softball League	Waikele Elementary School
Mililani Community Church	Waipahu Community Association
Mililani High School, SCBM Council	Waipahu High School
Mililani Mauka/Launani Valley Neighborhood Board No. 35	Waipahu Intermediate School
Mililani Town Anti Drug Committee	Waipahu Neighborhood Board No. 22
Mililani Town Association	Waipahu United Church of Christ
Mililani/Waipio/Melemanu N.B. No. 25	Waipio Community Baptist Church
Mililani Waena Elementary School	Waipio Little League Baseball
New Hope Pearl City	Waipio Gentry Community Association
Oahu Arts Center	YMCA Leeward Branch
Oahu Resource Conservation & Development Council	YMCA Mililani Branch
Olaloa Retirement Community	

2.4.2 Public Presentations

The proposed project is an outgrowth of many years of planning. In addition to the community visioning process, there have been numerous opportunities for public involvement, input, and review. Since 2003, CCHH conducted presentations at several Neighborhood Board (NB) meetings in the surrounding communities. Table 2-2 lists the 2007 and 2008 NB meetings at which the project was presented, along with the issues raised.

Table 2-2
Recent Neighborhood Board Meetings Regarding Project

Mtg. Date	Neighborhood Board	Issues Raised
7/10/07	Mililani/Waipio/Melemanu NB #25 Mililani Mauka/Laulani Valley NB #35 Wahiawa-Whitmore Village NB #26 Pearl City NB #21 Waipahu NB #22	• Traffic • Sewer • Transit link • Draft EIS schedule
8/22/07	Mililani/Waipio/Melemanu NB #25	• Affordability of homes • Traffic impacts, access points • Interchange improvements • Sewer adequacy • School - when available? • Coordination with DOE • Fire and police facilities • Correctional facility access • Pacific Health Center • Sustainability program
9/17/07	Wahiawa-Whitmore Village NB #26	• Traffic Impacts – H1/H-2 Merge • School capacity • Garage capacity and street parking • Hospital at Koa Ridge?
9/18/07	Pearl City NB #21 – Sub-Committee Meeting	• H-2 Freeway Improvements • Transit Center and Park & Ride • Senior housing • Affordable housing • Provision of elementary school, school impact fees • Capacity at Honouliuli WWTP • Number of parks • Funding for recreation center
9/25/07	Pearl City NB #21	• High-tech amenities to reduce commuting • Physical connection to Koa Ridge Makai • Project phasing and school attendance

Table 2-2
Recent Neighborhood Board Meetings Regarding Project (continued)

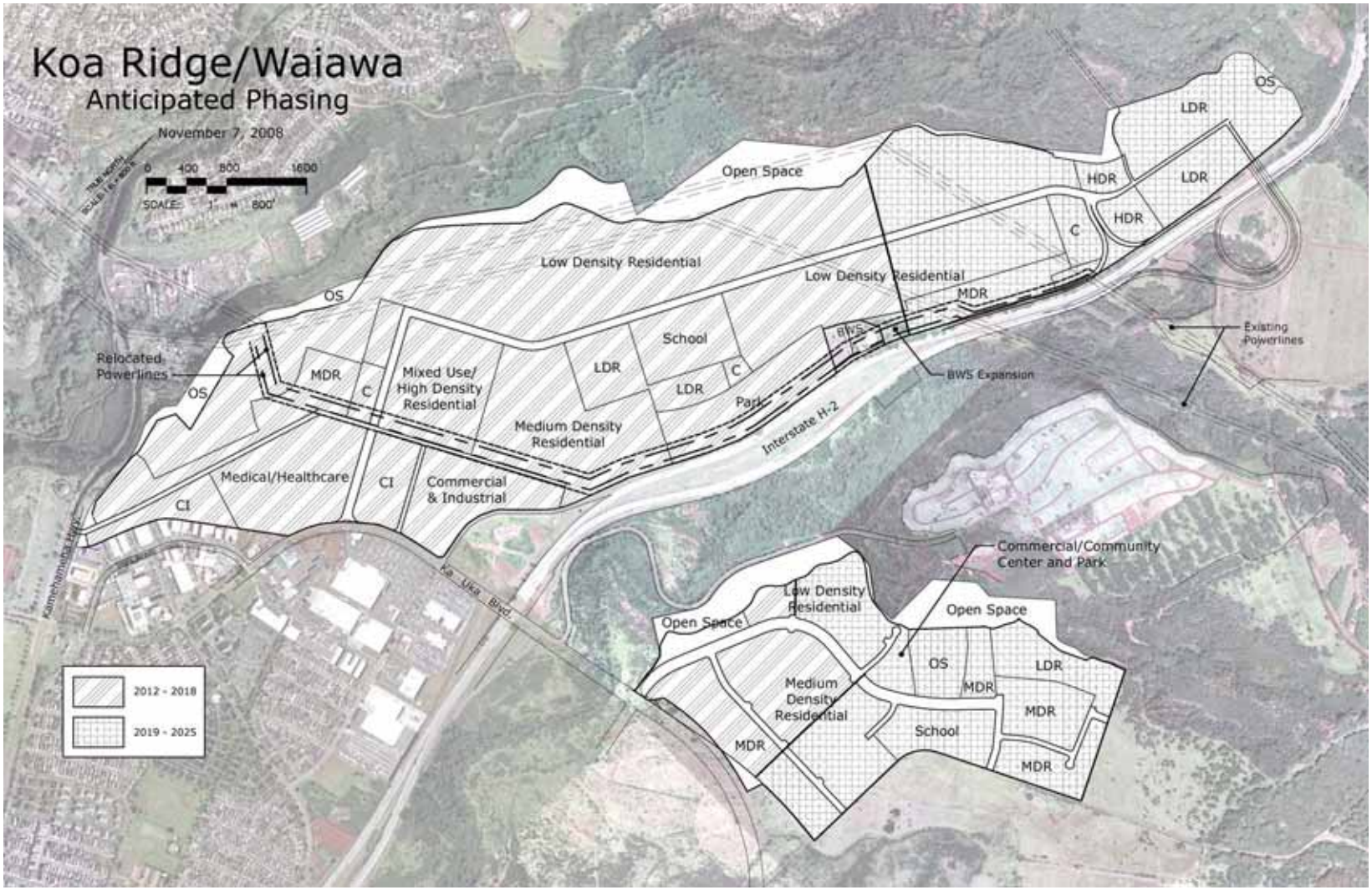
Mtg. Date	Neighborhood Board	Issues Raised
10/16/07	Mililani Mauka/Laulani Valley NB #35	• Affordability • Area schools Long-range plan Number and location of schools Impact fees dollar amount, target of appropriation When does school construction begin (phasing) Will school district line be redrawn Will students be bussed • Prisoner transport through residential area • Increased sewage • Traffic improvements by Castle & Cooke • Central Mauka Road
11/15/07	Waipahu NB #22	• Cost of homes/no. affordable • Why Mauka eliminated • Prior use of Koa Ridge Makai
11/28/07	Mililani NB #25	• Traffic study concerns: commuter travel time, secondary and cumulative impacts, ORTP 2030 Plan projects, Waiawa Interchange/regional impacts • No schools in early stage of development
12/12/07	Wahiawa NB #26	• Waiawa Ridge access/bridge development • Delivery schedule • No. jobs to be created? • Traffic congestion • Water supply
1/15/08	Mililani Mauka NB #35	• Draft EIS summary • Traffic mitigation
2/27/08	Waipio Gentry Association	• Development schedule • Bikepath connection to Koa Ridge • Senior housing availability
4/15/08	Mililani Mauka NB #35	• Coordination with Waiawa Ridge Dev. • Kamehameha Hwy widening project • H-2 Median Park & Ride

Table 2-2
Recent Neighborhood Board Meetings Regarding Project (continued)

Mtg. Date	Neighborhood Board	Issues Raised
4/23/08	Mililani NB #25	• Traffic study concerns • Waiawa EIS inadequacy
6/16/08	Wahiawa NB #26	• Wahiawa Hospital plans • Traffic congestion, regional impacts • No schools • Can accommodate production studio? • No. residents projected
6/17/08	Mililani Mauka NB #35	• Development schedule
6/24/08	Pearl City NB #21	• Traffic impacts – H-1/H-2 merge • Infrastructure plans/impacts • Water availability
7/23/08	Mililani NB #25	• Intent to file petition to intervene
11/26/08	Mililani NB #25	• Terms of Wahiawa Hospital settlement? • City's commitment for bus service for Koa Ridge? • Access to the medical center • Total number of homes that will be built in the area, including Waiawa Ridge development? • Approved ORTP projects • H-1 Freeway widening?

2.5 DEVELOPMENT TIMETABLE AND PHASING

Development of the project is anticipated to commence with the construction of off-site infrastructure improvements in 2009. Completion of the first residential products in Koa Ridge Makai and Castle & Cooke Waiawa is scheduled for 2012 and 2015, respectively. Development at Koa Ridge Makai will begin in the southern portion of the site and proceed northward. Development at Castle & Cooke Waiawa will also begin in the south at Ka Uka Boulevard and move northward. Implementation of Castle & Cooke Waiawa is dependent on the progress of infrastructure construction by the neighboring Waiawa Ridge development. Full build-out of the two communities is projected by 2025, but could be as early as 2022 if market conditions allow. There will be substantial completion of major backbone infrastructure systems to serve the project by 2020. Figure 2-2 shows the anticipated project phasing over two six-year development periods (2012-2018 and 2019-2025). Phasing and build-out of the project will be dependent on the progress of competing projects in Central O'ahu, real estate market conditions, and the general economy.



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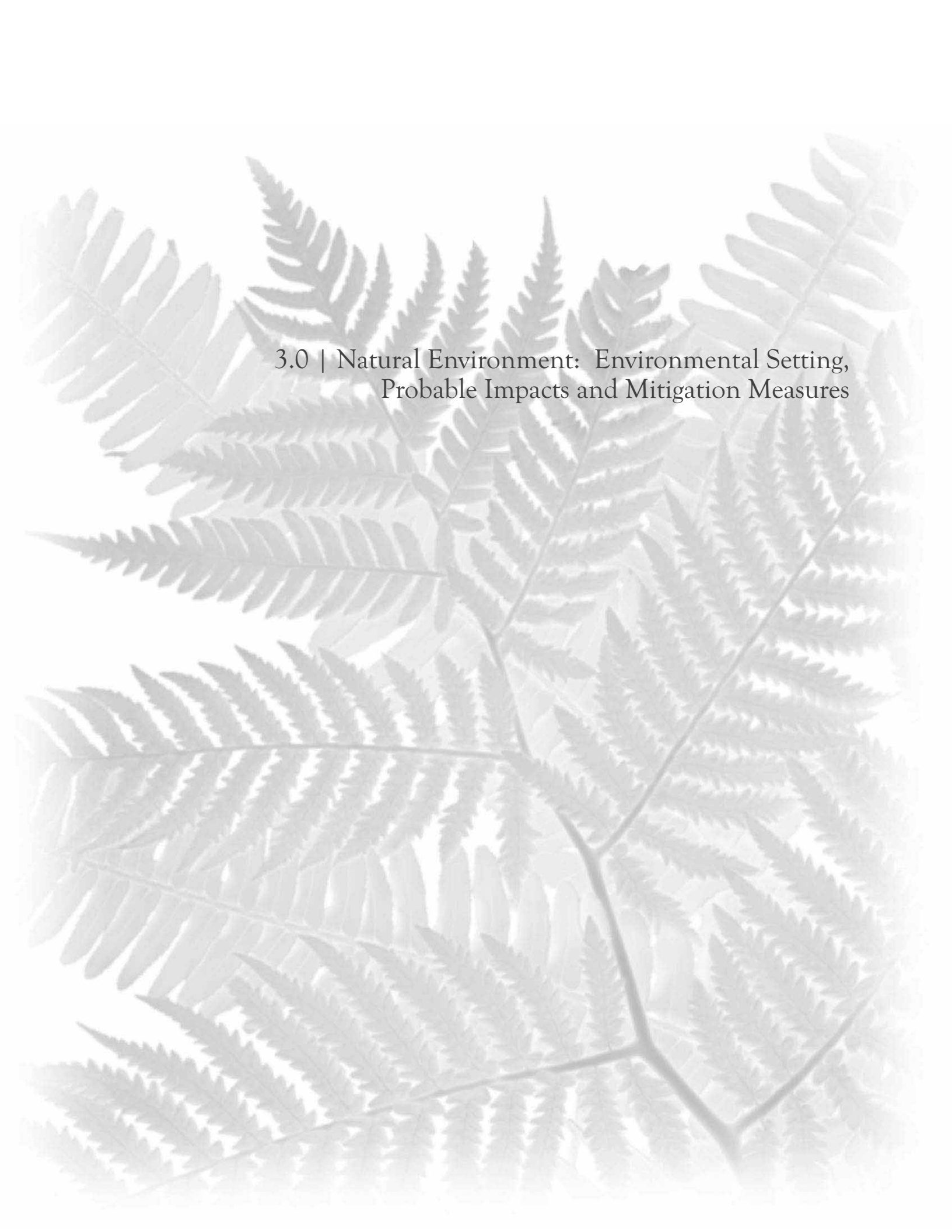
Source: Castle & Cooke Homes, Hawai'i, October 2008.

Anticipated Phasing

Figure 2-2

2.6 USE OF PUBLIC FUNDS OR LANDS

The project will require improvements associated with roadways and infrastructure within or beneath the H-2 Freeway, Ka Uka Boulevard, H-1 Freeway, and other public rights-of-way. CCHH is working with the appropriate public agencies to identify required improvements and contribute its fair share to fund and implement improvements.



3.0 | Natural Environment: Environmental Setting, Probable Impacts and Mitigation Measures

Chapter 3: NATURAL ENVIRONMENT: ENVIRONMENTAL SETTING, PROBABLE IMPACTS AND MITIGATION MEASURES

This chapter describes the existing natural environment, provides an assessment of probable impacts to natural resources, and, where warranted, describes proposed measures to mitigate or minimize potential adverse impacts resulting from development of the Proposed Action.

3.1 CLIMATE

3.1.1 Affected Environment

Temperatures in the O‘ahu area leeward of the Ko‘olau Range, where the project site is located, are generally very moderate with average daily temperatures ranging from about 65 degrees Fahrenheit (°F) to about 85° F. Rainfall in the vicinity of the project site is relatively moderate with an average of about 50 inches per year.

Wind data for the former Barbers Point Naval Air Station, located approximately 13 miles southeast of the project site, shows that the annual prevailing wind direction for this area of O‘ahu is east-northeast. Winds from the south are infrequent, occurring only a few days during the year and mostly in winter in association with Kona storms. Wind speeds average about 12 miles per hour and mostly vary between about 6 and 17 miles per hour. Surface winds at the project site are likely somewhat similar to those recorded at the former Barbers Point Naval Air Station, but speeds are probably lower on the average and directions more likely southeasterly due to terrain effects.

3.1.2 Probable Impacts

The proposed project will not impact climatic conditions and no mitigation is warranted.

3.2 GEOLOGY AND TOPOGRAPHY

3.2.1 Affected Environment

The Island of O‘ahu is a volcanic doublet, formed of the Wai‘anae Range on the west and the younger Ko‘olau Range on the east. Both are the eroded remnants of great shield volcanoes. Lava flows from the Ko‘olau volcano banked against the already-eroded slope of the Wai‘anae volcano to form the gently sloping surface of the Schofield Plateau.

The project is located on the southern slope of the Schofield Plateau. This plateau was built up by many successive lava flows originating from the Ko‘olau shield volcano. This rock unit is comprised of firm to very hard volcanic rocks which form bedrock in the project area and vicinity. The soils in this area are typically residual, derived from the weathering of basic igneous rock.

Overall elevations within Koa Ridge Makai range from approximately 435 to 730 feet above mean sea level (MSL) from the south to north. At the Castle & Cooke Waiawa site, elevations

range from 450 to 600 feet above MSL. Terrain at both sites is gently sloped with an average slope of 3%. There are steeper sections near the edges of the adjacent gulches.

3.2.2 Probable Impacts

The proposed project will involve clearing and grading to create level building surfaces. Since the proposed Petition Areas have minimal slope (generally less than five percent), the project will not require extensive alteration of the existing landforms. Minor fill work may take place at the heads of a few gulches and in the central portion of the Castle & Cooke Waiawa site where there is a natural depression.

3.2.3 Mitigation

If necessary, slope stability can be maintained along the gulches to protect from slides and rock falls by keeping development setback from the gulch edges and possible use of geotextiles if necessary. Soils testing in site specific areas prior to construction will provide baseline data for further evaluation of slope stability.

3.3 SOILS

3.3.1 Affected Environment

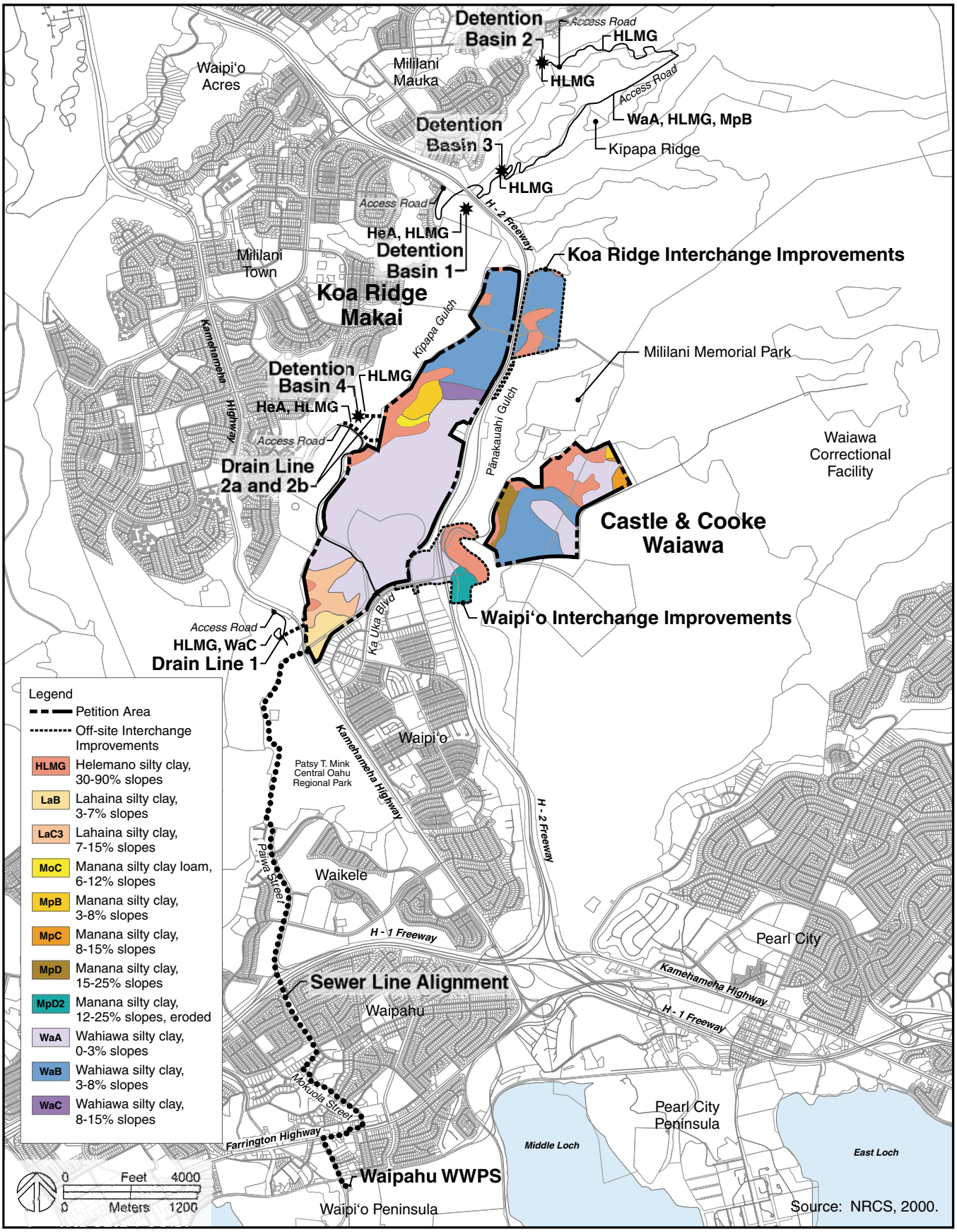
3.3.1.1 Soil Classification

The U.S. Department of Agriculture Natural Resources Conservation Service (formerly Soil Conservation Service) classifies the soils within the project site as follows (see Figure 3-1):

Haleiwa silty clay, 0-2% slopes (HeA). The Haleiwa series consists of well drained soils on fans and in drainageways along coastal plains. They developed in alluvium derived from basic igneous materials. Haleiwa silty clay 0-2% slopes soil occurs as large areas on alluvial fans or as long, narrow areas in drainageways. This soil has moderate permeability, slow runoff, and low erosion hazard. It is found in Kīpapa Gulch at the site of DB 4 and along the access road to DB 2, DB 3, and DB 4.

Helemano silty clay, 30-90% slopes (HLMG). The Helemano series consists of well-drained soils on alluvial fans and colluvial slopes on the sides of gulches. This soil is found on the sides of V-shaped gulches. The surface layer is dark reddish-brown silty clay about 10 inches thick. Permeability is moderately rapid. Runoff is medium to very rapid, and the erosion hazard is severe to very severe. These soils are found along the eastern boundaries of Koa Ridge Makai, north-central portion of Castle & Cooke Waiawa, at all the proposed off-site drainage detention basin and access road sites, and in the gully areas encompassed by both H-2 Interchange improvement areas.

Lahaina silty clay, 3-7% slopes (LaB). The Lahaina series consists of well-drained soils on uplands. These soils developed in material weathered from basic igneous rock. This subseries is found on smooth uplands. The substratum is soft, weathered basic igneous rock. These soils are



Natural Resources Conservation Service Soils — Figure 3-1

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

medium acid in the surface layer and slightly acid to medium acid in the subsoil. Permeability is moderate. Runoff is slow, and the erosion hazard is slight. This soil is found on the Koa Ridge Makai Petition Area.

Lahaina silty clay, 7-15% slopes, severely eroded (LaC3). This soil has a profile similar to that of Lahaina silty clay, 3 to 7% slopes, except that most of the surface layer and, in place, part of the subsoil have been removed by erosion. Runoff is medium, and the erosion hazard is severe. This soil is found on the Koa Ridge Makai Petition Area.

Manana silty clay loam, 6-12% slopes (MoC). This soil is on smooth slopes in the uplands of O‘ahu. The surface layer is dark reddish-brown silty clay loam about 8 inches thick. The substratum is soft, weathered basic igneous rock. The soil is strongly acid in the surface layer and very strongly acid to extremely acid in the subsoil. On the 6 to 12% slope soils, found at Koa Ridge Makai, permeability is moderately rapid above the pan and moderate below. Runoff is medium, and the erosion hazard is moderate.

Manana silty clay, 3-8% slopes (MpB), 8-15% slopes (MpC) and 15-25% slopes (MpD). The Manana series consists of well-drained soils on the uplands of O‘ahu, on elevations ranging from 500 to 1,200 feet. These soils developed in material weathered from basic igneous rock. Runoff is slow on the 3 to 8% soil type, with erosion hazard slight. The depth of soil to the panlike sheet is 30 to 50 inches. On the steeper soils, 15 to 25% slopes, runoff is medium, and the erosion hazard is moderate. The MpB soil is found on the Koa Ridge Makai and Castle & Cooke Waiawa sites and along the access road to DB-2 on Kīpapa Ridge; MpC soil is found on the Waiawa site; and the MpD soil on the Waiawa site.

Manana silty clay, 12-25% slopes, eroded (MpD2). This soil is similar to Manana silty clay loam, 6 to 12% slopes (MoC) except that it is moderately steep, eroded and has a silty clay texture. Runoff is rapid and the erosion hazard severe. This soil is found in the Waipi‘o Interchange improvement area.

Wahiawa silty clay, 0-3% slopes (WaA), 3-8% slopes (WaB) and 8-15% slopes (WaC). The Wahiawa series consists of well-drained soils on O‘ahu’s uplands. These soils developed in residuum and old alluvium derived from basic igneous rock. This subseries occurs on smooth, broad interfluves. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight on the slopes of up to 8%. On the 8 to 15% slopes, runoff is medium and the erosion hazard is moderate. The WaA and WaB soils are found on both the Koa Ridge Makai and Waiawa Petition Areas, the proposed access road to DB-2, and both H-2 Freeway interchange improvement areas. The WaC soils are found on the Koa Ridge Makai site and in the vicinity of the off-site drain line (Drain Line 1) on the west side of Kamehameha Highway.

3.3.1.2 Agricultural Productivity

The *Detailed Land Classification - Island of Oahu* published by the University of Hawaii Land Study Bureau (LSB), evaluates the quality or productive capacity of certain lands on the Island for selected crops and overall suitability in agricultural use. A five-class productivity rating system was established with “A” representing the class of highest productivity and “E” the

lowest. Within the Koa Ridge Makai site, class "B" soils are predominant, while at the Castle & Cooke Waiawa site, Class A soils are predominant. Less productive soil types are found on the peripheries these sites. The off-site drainage improvement areas and their associated access roads are located on soils with LSB classifications ranging from A to E. The H-2 Interchange improvement areas are on soils classified as B and E. The LSB classifications are shown in Figure 3-2.

3.3.1.3 Agricultural Lands of Importance to the State of Hawaii (ALISH)

The *Agricultural Lands of Importance in the State of Hawaii* (ALISH) land classification system was developed by the State Department of Agriculture in 1977. The majority of both the Koa Ridge Makai and Castle & Cooke Waiawa sites are designated as "Prime" agricultural land, with small portions along the peripheries designated as "Other Important Agricultural Land" or unclassified (gulches). The off-site drainage improvement areas are located on lands classified by the ALISH system as Prime, Unique, or Unclassified (see Figure 3-3).

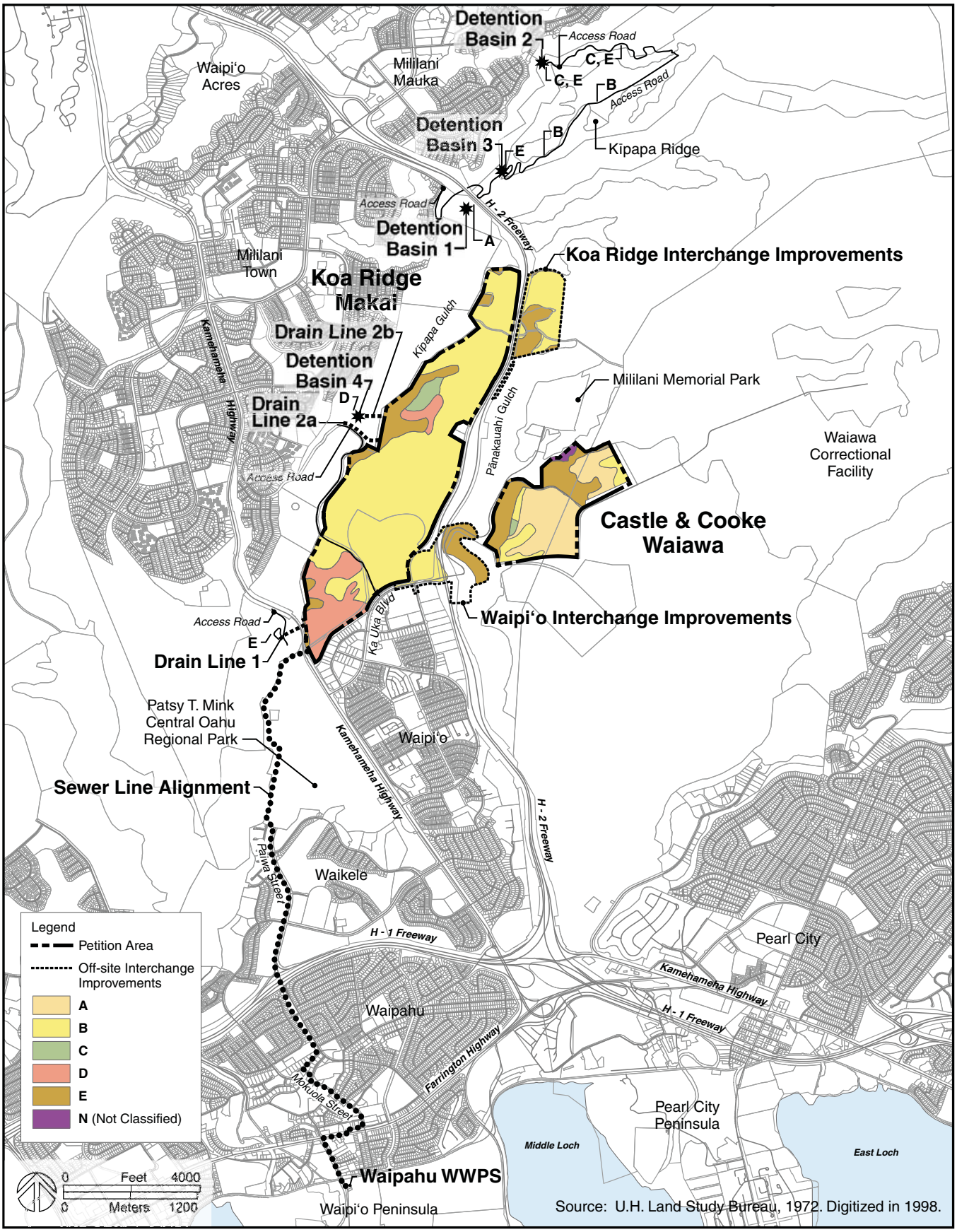
3.3.2 Probable Impacts

No significant impacts on soils within the project site are anticipated as a result of the construction of the proposed project. Appropriate erosion and sediment controls will be instituted during project grading operations and construction site work activities in compliance with the City and County of Honolulu's grading ordinance and the State Department of Health National Pollutant Discharge Elimination System (NPDES) permit program. Mitigation measures will be instituted following site-specific assessments, incorporating structural and non-structural BMPs such as minimizing time of exposure between construction and replanting, and implementing erosion control measures such as silt fences and sediment basins.

Following construction, erosion is anticipated to decrease since the soils will have been built over, paved over, or landscaped. In addition, storm water runoff from the Petition Area will be conveyed either to stormwater quality treatment facilities prior to discharge into Pānakauahi Gulch or Kīpapa Gulch or an on-site detention basin. The proposed off-site drainage detention basins will attenuate peak flows from developed and undeveloped areas upstream from Koa Ridge Makai, thereby reducing erosion associated with flashy stormwater flows. These drainage improvements are described further in Section 4.9.1.

The three soil-rating systems discussed above indicate that most of the project site has soils that are good for cultivating crops. However, in view of the available supply of farm land (160,000+ acres statewide and about 12,700 acres on O'ahu), the development of this agricultural land, combined with the other planned developments in Hawai'i, involves the loss of too little agricultural land to significantly affect either 1) the growth of diversified crop farming (averaging about 160 acres per year in new acreage), or 2) the relocation of farms that are being displaced or could be displaced from Central O'ahu, 'Ewa, and lower Kunia (about 3,600 acres). See Section 4.4 for a discussion of agricultural impacts.

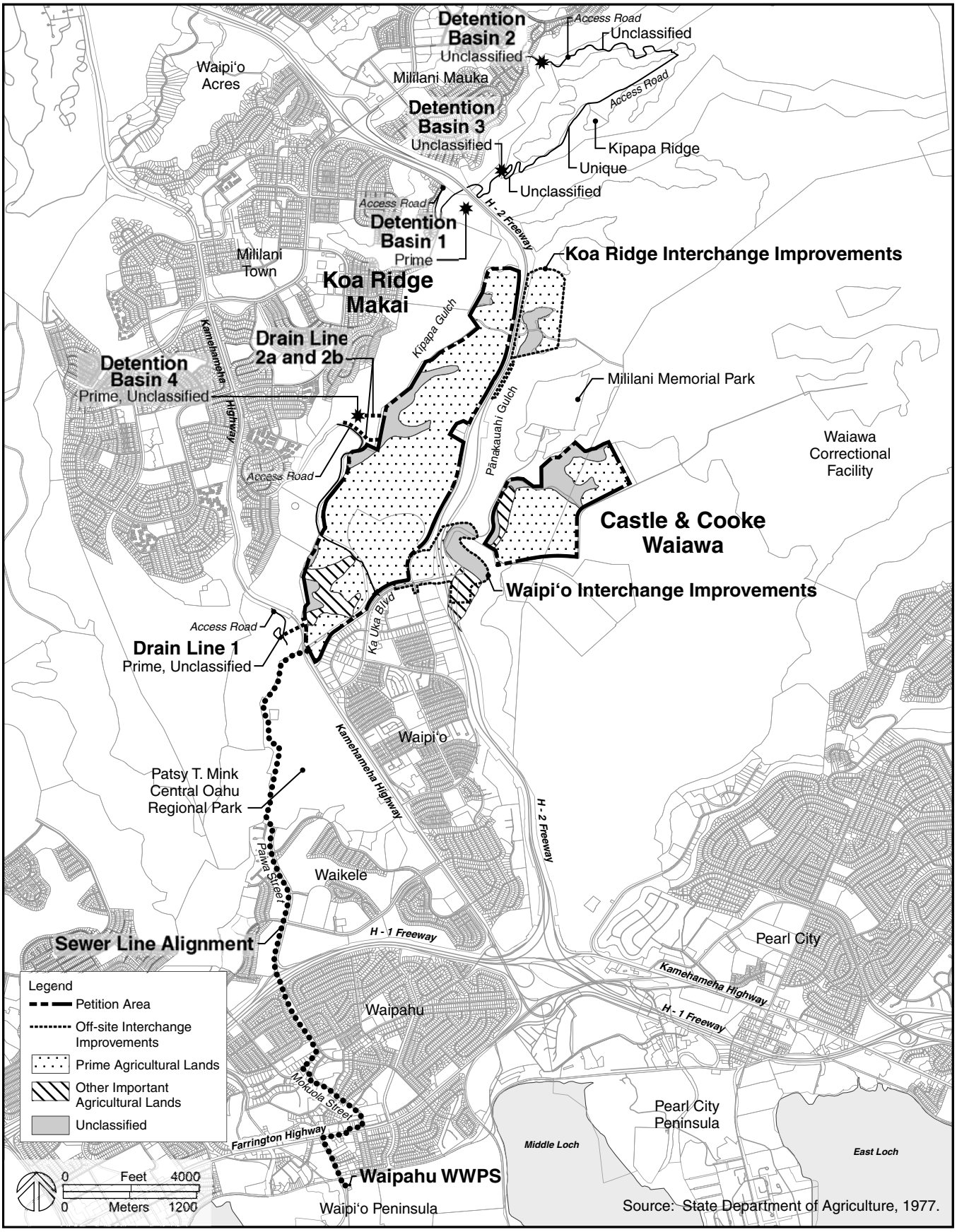
Because the alternate off-site detention basin (DB 4) is located on Federal property on lands designated as "important farmland," a U.S. Department of Agriculture Farmland Impact



Land Study Bureau Soil Classification

Figure 3-2

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.



Agricultural Lands of Importance to the State of Hawai'i (ALISH) Figure 3-3

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

Conversion Rating form (AD-1006) may be required for the project. If it is determined at a later time that Federal lands or funds will be used in the proposed action, (e.g., for off-site drainage facilities and/or freeway interchange improvements), CCHH will submit Form AD-1006 and coordinate with the appropriate Federal agencies, as appropriate.

3.3.3 Mitigation

In a later stage of the development process, a geotechnical engineer will conduct an extensive geotechnical exploration of the project site to analyze soil samples collected from borings at various locations within the site. Results of the testing along with soils recommendations will be documented in a report to provide design parameters for the proposed improvements.

3.4 NATURAL HAZARDS

3.4.1 Affected Environment

The Koa Ridge Makai and Waiawa Petition Areas and most of the off-site infrastructure improvement areas are designated Zone D on the Flood Insurance Rate Map (FIRM) Panel Numbers 15003C0228F, 15003C0229F, 15003C0237F, and 15003C0240F, prepared by the Federal Emergency Management Agency (FEMA). Zone D is defined as, "Areas in which flood hazards are undetermined, but possible." Although most of its alignment is within Zone D, the proposed trunk sewer line also traverses Zones AE (subject to inundation by the100-year flood), AEF (floodway areas in Zone AE), X (areas outside the 0.2% annual chance floodplain), and XS (areas of 0.2% chance flood) in lower Waipahu. The development and off-site improvement areas are located outside of the tsunami evacuation zones.

3.4.2 Probable Impacts

Due to their location and elevation, the Petition Areas are not subject to a disproportionately greater likelihood of natural hazards such as flooding or a tsunami. Construction of the proposed project or its off-site infrastructure improvements is not anticipated to result in increasing the risk of flooding at the project site or surrounding properties. The planned on- and off-site drainage improvements will attenuate peak discharge from the site and from existing runoff in the upper reaches of the Kīpapa Stream drainage basin so the total does not exceed pre-development conditions. The new trunk sewer will be located underground and not affect existing floodways.

3.4.3 Mitigation

A geotechnical engineer will perform a slope stability analysis of the top of gulch areas adjacent to Kīpapa Gulch prior to detailed design. Most of the lands between the Koa Ridge Makai parcel and Kīpapa Stream are undeveloped and therefore, pose no risk to downslope improvements. The only exception is the cluster of about ten homes in Kipapa Acres adjacent to Kamehameha Highway. The geotechnical engineer will evaluate the necessity for and appropriateness of various mitigative measures in this area.

All structures will be designed by a license structural engineer and will conform to the accepted building code requirements for the locality, which includes consideration for wind loads.

The applicant will fund and construct adequate civil defense measures (sirens) to serve the reclassified area as required by the State of Hawai‘i Department of Defense, Office of Civil Defense.

3.5 SURFACE WATER RESOURCES

3.5.1 Affected Environment

3.5.1.1 General

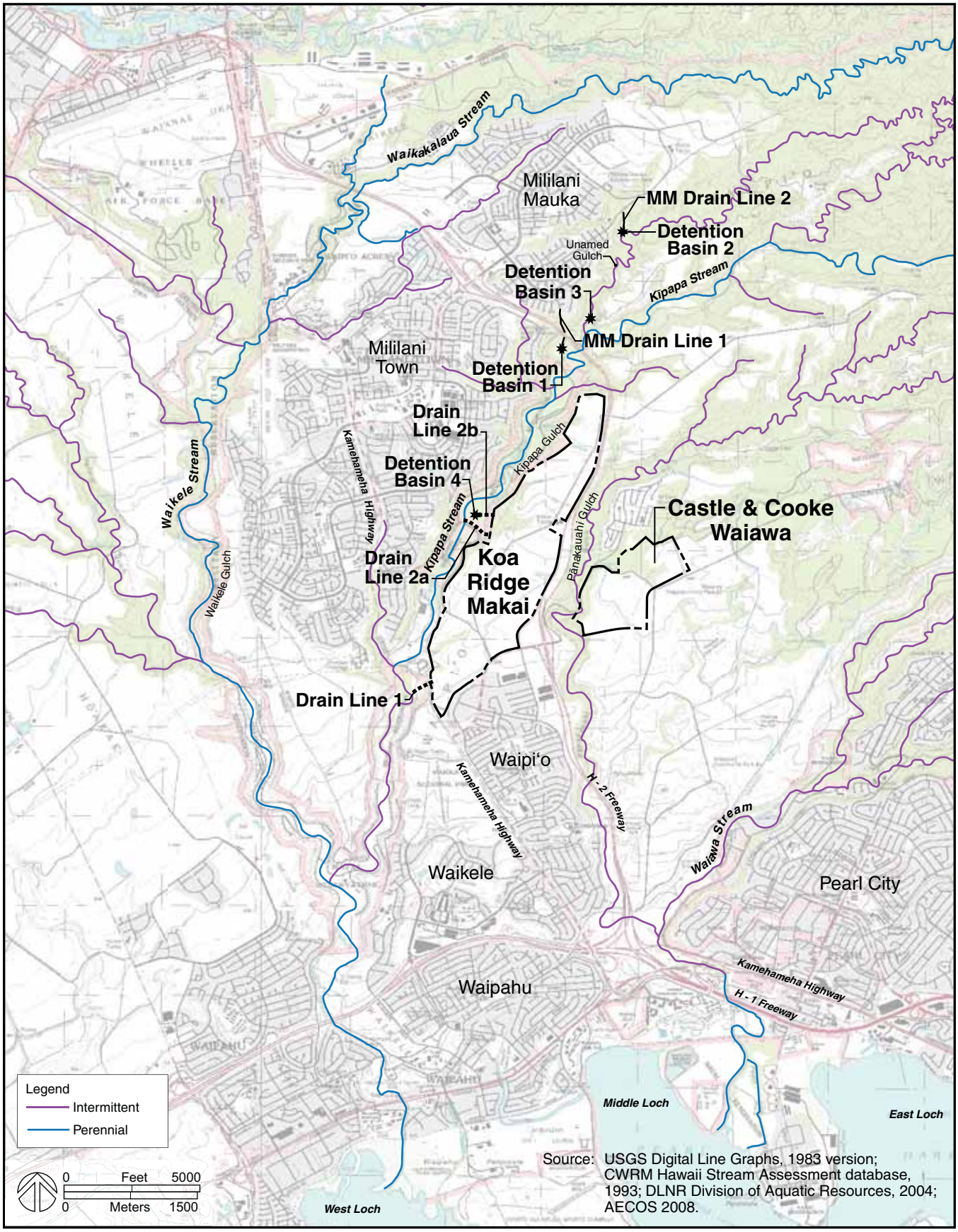
An assessment of the project's potential impacts on stream resources was prepared for the by AECOS Inc. The report's findings are summarized here and the full report included as Appendix A.

Koa Ridge Makai is located in the Kīpapa Gulch subwatershed of the Waikele Stream system. Stormwater runoff from this area currently sheet flows toward Kīpapa Gulch or collects in localized gullies that drain into Kīpapa Stream in Kīpapa Gulch. Kīpapa Gulch and Stream eventually join Waikele Gulch and Waikele Stream. Waikele Stream travels through developed areas in Waipahu before discharging into Pearl Harbor West Loch (see Figure 3-4).

The Castle & Cooke Waiawa Petition Area is located in a tributary watershed of Waiawa Stream. Storm runoff from the project site sheet flows over land and discharges into Pānakauahi Gulch just east of the H-2 Freeway. The current drainage pattern at Castle & Cooke Waiawa consists of two distinct drainage areas; a northeastern portion and a southwestern portion. In the northeast, runoff flows toward a small gully branching off Pānakauahi Gulch. In the southwest section, runoff drains directly into Pānakauahi Gulch. In the project area, Pānakauahi Gulch has an intermittent stream[1] that is tributary to Waiawa Stream near the Kamehameha Highway on-ramp to the H-2 Freeway. From this confluence, Waiawa Stream flows beneath Kamehameha Highway and the H-1 Freeway and discharges into Pearl Harbor's Middle Loch.

The nearest coastal waters are Pearl Harbor's Middle Loch and West Loch, located about three miles to the south. The waters of Pearl Harbor are classified by the State Department of Health (DOH) as an inland estuary, Class 2. The objective of Class 2 water is to protect their use for recreational purposes, propagation of fish and other aquatic life, and agricultural and industrial water supplies, shipping, navigation, and propagation of shellfish. Discharges into Class 2 waters must receive the best degree of treatment or control compatible with the criteria established for this class (State DOH 2004). The Pearl Harbor estuary has been identified by DOH as a "Water Quality Limited Segment," one of a number of O‘ahu water bodies where water quality chronically does not meet the State's water quality standards.

[1] An intermittent stream is one which flows only at certain times of the year when it receives water from springs or from some surface source (Langbein and Iseri 2005).



Waikele and Waiawa Stream Systems **Figure 3-4**

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

The off-site drainage improvements will be located in Kīpapa Gulch and in an unnamed tributary gulch that branches off Kīpapa Gulch a short distance upstream from where the H-2 Freeway crosses the gulch (see Figure 3-4 for drainage improvements locations). The off-site drainage improvements include three detention basins located on CCHH property. A fourth, DB 4, is located on U.S. Army property in Kīpapa Gulch and is included in the analysis as an alternate location in the event the site for DB 3 is not suitable for development as a basin. These basins will detain flows generated from the fully developed subdivisions of Mililani Mauka and from the undeveloped tributary areas of Kīpapa Stream. Their locations within the specific survey areas are described in the sections below, and additional details provided in Section 4.9.1.

3.5.1.2 Affected Streams and Gulches

Upper Kīpapa Stream. There are numerous tributaries in narrow, steep-sided gulches draining forested lands that contribute to the upper reaches of Kīpapa Stream. Kīpapa Stream is an "interrupted" stream (i.e., flowing only part of the time) from about the 700-ft elevation to and beyond the confluence with Waikele Stream.

Unnamed Gulch. This gulch branches off of Kīpapa Gulch just upstream from the H-2 Freeway viaduct, and separates the Mililani Mauka development from Kīpapa Ridge. This gulch has several branches and extends about 2.5 miles from its intersection with Kīpapa Gulch. Detention Basins 2 and 3 will be located in lower one-third of this feature, which is a broad, flat bottomed gulch with steep sides rising 200 feet to the plateaus of Mililani Mauka and the former pineapple fields at Kīpapa Ridge. Stormwater runoff from Mililani Mauka is conducted through a box culvert to an outlet (MM Drain Line 2) where it is discharged at the bottom of the unnamed gulch, and flows southward to Kīpapa Gulch (see Figure 3-4 for location). Above this point, the gulch bottom is generally flat, with vague signs of water flow (i.e., a stream bed is not present). Downstream of this stormwater discharge point, the gulch has evidence of a stream bed with rounded boulders and debris lines.

Kīpapa Gulch. Kīpapa Gulch downslope from the unnamed gulch forms the western boundary of Koa Ridge Makai, which is about 250 feet higher than the gulch floor. Detention Basin 1 (DB 1) is proposed for a location above the right bank (facing downstream) of Kīpapa Stream just downstream of the H-2 Kīpapa Gulch viaduct. This basin would receive runoff from Mililani Mauka via an existing drain (MM Drain Line 1) (see Figure 3-4). From the mouth of the unnamed gulch to its confluence with Waikele Stream, the stream is an interrupted stream[2], which is a type of perennial stream. This stream is designated a Class 2 Inland Water by the State DOH.

The proposed alternate detention basin (DB 4) is located downstream at about the 350-foot elevation on property controlled by the U.S. Army. Upstream of the area proposed for DB 4, Kīpapa Stream is a wide, boulder strewn bed, with (at the time of the survey) a few isolated pools of water. Several existing drain pipes occur above the right bank. Erosion of the stream banks is particularly evident where the channel narrows or debris dams have built up. Kīpapa Stream channel in the vicinity of DB 4 is about 45 ft across and incised 18 ft into the gulch floor.

[2] Streams that are perennial (constantly flowing) in the wetter highlands, but seasonally dry in the lowlands are called interrupted streams (Timbol and Maciolek 1978 in AECOS 2008).

The streambed consists of boulders, cobble, and gravel. Finer sediments are not as prominent as observed further upstream around DB 1. At the time of the survey, several large, isolated pools were present, with no obvious water flow moving between them.

Pānakauahi Gulch. This gulch parallels Kīpapa Gulch, though the stream drains a much smaller basin area. This gulch contains an intermittent stream and is essentially a dry stream bed most of the time. Stormwater runoff from Castle & Cooke Waiawa will be collected from two drainage areas and directed to either an on-site detention basin or flow-through stormwater quality treatment facility prior to being discharged into the gulch.

3.5.1.3 Water Quality

Water quality in Kīpapa Stream adjacent to the project site and Waikele Stream downstream from the project has been monitored by various programs for over three decades. The earliest data set by U.S. Geological Survey showed a decrease in nutrient (compounds of nitrogen and phosphorus that promote algae and plant growth) concentrations in the stream water after 1985, an improvement of unknown cause. Nutrient values obtained since 1984 continue to exceed State of Hawai‘i water quality standards in the lower reach of Waikele Stream, but are within the standards in Kīpapa Stream. Samples collected and analyzed for the 2008 AECOS stream assessment came from isolated pools in the stream bed and are thus not representative of water quality of flowing water. The results are generally consistent with expectations for stagnant water and useful for characterizing conditions under which the extant aquatic fauna must live.

During periods of high surface runoff into Kīpapa Stream, marked increases in suspended solids (sediment and organic matter carried by the stream) occur. Both the Waikele and Waiawa stream systems—which Kīpapa and Pānakauahi are, respectively, branches of—are listed as impaired with respect to water quality by the State DOH's *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*. Waikele Stream is listed as not meeting State standards for total nitrogen and turbidity; Waiawa is listed for not meeting the nutrient standards (nitrate + nitrite, total nitrogen, total phosphorus), turbidity, and "trash." Both stream systems are currently completing development of Total Maximum Daily Load (TMDL) calculations to guide allocation of pollutant loadings between point-sources regulated by NPDES permits, natural runoff from undeveloped lands, and non-point sources from developed lands. Dedicated storm water drainage systems come under the City's Separate Storm Sewer NPDES Permit, and the discharge into State waters is subject to the permit compliance requirements and eventually could be subjected to more specific State DOH requirements for pollutant reduction under a TMDL program. Presently, City standards require that storm drainage systems incorporate best management practices that address both runoff quantity (flood control) and water quality.

3.5.1.4 Stream Biota

The project area streams are depauparate in native aquatic fauna and no aquatic species protected by State or Federal statute were observed in the streams directly affected by the project.

Unnamed Gulch. Detention Basin 2 would be located in this gulch, downstream from an existing storm drainage outlet from Mililani Mauka (MM Drain Line 2 on Figure 3-4). There

were several pools of water present near the drain line outlet, which supported some green alga (*Oedogonium* or *Spyrogyra*), and small populations of a physid snail (*Physa virgata*), a thiarid snail (*Melanoides tuberculata*), and an unidentified chironomid (fly) larva. No fishes were observed in the small pools, but the presence of this minimal aquatic fauna suggests the pools are semi-permanent.

In the vicinity of DB 3, several pools were present during the survey, and there was evidence of flows in the past (mud and debris marks up, dried mud in the bed with dried algae). Aquatic fauna here consisted of a physid snail, an unidentified leech, and a green filamentous alga.

Kīpapa Stream. Detention Basin 1 is proposed for a location above the right bank of Kīpapa Stream just downstream of the H-2 Kīpapa Gulch viaduct. This basin would receive runoff from Mililani Mauka via an existing drain (MM Drain Line 1). Nearby, Kīpapa Stream was flowing slowly at this location, and a green alga, a physid snail, and Mexican molly (*Poecilia mexicana*) were observed. Fish and snail were abundant. A large pool is present under the H-2 viaduct a short distance upstream of the location proposed for DB-1. This pool is about 3 feet deep and both smallmouth bass (*Micropterus dolomieu*) and *ʻoʻopu nakea* (*Awaous guamensis*) were observed present. No poeciliids were observed in the pool, but armored catfish (*Ancistrus cf. temminckii*) and bullfrog (*Rana catsebeiana*) were seen in small numbers.

According to the project stream assessment, earlier surveys reported *ʻoʻopu nakea* as present in Kīpapa Stream at elevations where water flow is perennial (above 1,250 ft). This native goby is amphidromous; i.e., during its life cycle, each fish migrates to and from the sea. Migration seaward involves only hatchlings. The larval stages develop in marine waters and, as post-larvae called *hinana*, ascend freshwater streams to populate these and grow to adults. Thus, populations of *ʻoʻopu nakea* in the upper reaches of Kīpapa are utilizing aquatic habitat in Kīpapa and Waikele gulches to complete this migration, and a number of individuals were observed "trapped" in pools within the gulch. Presumably, these fish would continue their upstream migration as flow is re-established in the wet season.

Pānakauahi Gulch. No previous studies of biota inhabiting Pānakauahi Gulch were located and none was conducted for this project. No aquatic biota was found during the 2008 survey of the stream in this gulch, which is intermittent and usually dry.

3.5.2 Probable Impacts

Construction Period. Construction of the proposed project and its off-site infrastructure is not anticipated to significantly impact nearby surface or near shore coastal waters because the project will comply with all applicable Federal, State and City requirements and employ BMPs during construction (described in Section 3.5.3 Mitigation).

Operational Period. The proposed action is not expected to have a significant adverse effect on stream biota or surface water quality during the operational period. The project area streams are depauparate in native aquatic fauna and no aquatic species protected by State or Federal statute would be impacted adversely by the project. Channel modifications can impact native stream biota that migrate upstream to habitats in the uplands if they impede access; however, the project

does not involve channel modifications to Kīpapa Stream, with the exception of minor protective hardening as required to prevent erosion at detention basin and drain line outlets. These minor alterations to the stream bed and banks will not have an adverse impact on stream biota (native or non-native). With the exception of DB 3, the project's drainage facilities will be located above the stream banks and will not adversely affect migratory patterns of the native aquatic fauna. At DB 3, where the structure will be located within the intermittent stream bed in the unnamed gulch, no habitat exists upstream suitable for migratory aquatic fauna.

The new land uses at the Petition Area and the new on- and off-site drainage improvements have the potential to directly and indirectly affect surface water quality and associated biota, as well as the potential to mitigate or minimize these effects. Impacts on aquatic environments and stream ecology from land developments are generally a consequence of changes in the nature of runoff from the land, as well as changes in the distribution of flow with time. A change in land use from active agriculture, fallow, and grazing land to urban uses alters the way the land surface handles rainfall inputs as well as the quality of the runoff, as urban lands have a greater proportion of impermeable surfaces. These hard surfaces decrease the amount of rain that is infiltrated and stormwater runoff occurs more rapidly on developed land. Chemicals such as fertilizer and pesticides associated with agricultural operations that may be transported into aquatic environments could be replaced by heavy metals, petroleum residues, and man-made debris from roads, yards and other urban sites. According to studies cited in the stream assessment, there are known associations between trace metal content and particulates (suspended solids) as well as between organic toxicants and particulates in runoff and stream flow (i.e., higher particulate loads correspond with higher trace metal and organic toxicant levels).

3.5.3 Mitigation

Construction Period. Potential water quality impacts during construction of the project will be minimized by compliance with Federal, State and City water quality regulations, as well as conditions imposed by the permits required for construction and operation (e.g., U.S. Army Corps of Engineers Clean Water Act Section 404 permit, Commission on Water Resources Management [CWRM] Stream Channel Alteration Permit, DOH NPDES permit and Section 401 Water Quality Certification). The City and County of Honolulu's grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil disturbing activities in grading, grubbing and stockpiling. Construction-period erosion controls are regulated under the City's Rules Relating to Soil Erosion Standards and Guidelines. As part of the construction permitting process, drainage and erosion control plans are prepared by the developer and approved and monitored by the City and County of Honolulu. The objective of these plans is to limit soil loss from the site during the construction period to acceptable levels. Best management practices may include measures such as minimizing the time of exposure between construction and replanting, retaining perimeter vegetation and landscaping, and implementing erosion control measures such as silt fences, graveled construction entrances, inlet protectors, and sediment basins. A NPDES Notice of Intent (NOI) Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges.

Operational Period. Stormwater quality at Koa Ridge Makai and Castle & Cooke Waiawa will be addressed either through the use of dry-extended detention ponds or flow through-based treatment devices meeting City drainage requirements depending on the site specific flow, topography and site constraints. These facilities will mitigate the potential adverse effects of the change in land use from agriculture/grazing/fallow to urban development by detaining off-site flows and allowing particulates they may contain--and the pollutants associated with them--to settle out of the water column.

The off-site drainage detention basins in Kīpapa Gulch will serve to attenuate the peak discharge into Kīpapa Stream that is presently being contributed by developed and undeveloped lands upstream of Koa Ridge Makai. When implemented, the detention basins will either result in no net increase or a net reduction from existing flows in design storm conditions (i.e., 100-year storm) at points downstream of Koa Ridge Makai. This would mitigate flood impacts. Impacts to nearshore coastal waters (located about three miles away) from changes in the quantity and quality of runoff generated on-site will be minimized by proposed drainage improvements (detention basins and water quality treatment facilities) designed to comply with the City standards requiring storm drainage systems to incorporate BMPs that address both runoff quantity (flood control) and water quality.

TMDLs have not yet been established for the project's stormwater receiving waters; however, the project will comply with applicable TMDL requirements once they are established prior to approval of State DOH permits. The project will require NPDES and Clean Water Act, Section 401 Water Quality Certification from State DOH.

3.6 GROUNDWATER

3.6.1 Affected Environment

The availability of drinking water for the proposed project and the project's impacts to groundwater supply are addressed in a report prepared by Water Resources Associates, which is part of the project's infrastructure report (see Appendix B).

The project is located within the Waipahu-Waiawa Aquifer System. High-level groundwater in the Koʻolau Range of Central Oʻahu spills and leaks into both the Wahiawa Aquifer to the north, and into the Waipahu-Waiawa Aquifer. Most of the Wahiawa Aquifer water moves southward into the Waipahu-Waiawa and Ewa-Kunia Aquifers. Groundwater movement in the Waipahu-Waiawa Aquifer is predominantly southwestward from the Koʻolau Range and ultimately discharges into Pearl Harbor and the ʻEwa coast.

The Waipahu-Waiawa Aquifer System is one of four aquifer systems that comprise the Pearl Harbor Groundwater Management Area (PHGMA). Water development and groundwater use within the PHGMA is regulated by the CWRM through the issuance of three (3) types of permits: water use, well construction, and pump installation. These permits from CWRM will be required before groundwater can be developed as a source of supply for the project. The CWRM issues these permits based on various criteria, including: (1) water availability for allocation at the time an application is filed (i.e., total allocations including the requested amount of water use

will not exceed the aquifer's sustainable yield), (2) the requested use will not interfere with other legally permitted uses, and (3) the requested use will not adversely impact the quality and permitted use of existing wells.

There are approximately 28 geographically distributed, major well sources (not all in production) located in the Waipahu-Waiawa Aquifer. The majority of these sources are owned by the Board of Water Supply (BWS). The existing well sources of particular interest are the BWS's Waipio Heights I, II, and III and Waipahu I, II, and III sources which are located generally and hydrologically downgradient of the new wells proposed for the Koa Ridge Makai and Castle & Cooke Waiawa developments (see Section 4.9.1 for discussion of drinking water).

3.6.1.1 Groundwater Availability

The sustainable yield for the Waipahu-Waiawa Aquifer System is presently 104 MGD as established by the CWRM. Existing water use or withdrawal from the Waipahu-Waiawa aquifer averaged 50.404 MGD in 2006. Of this amount, the BWS pumped 68%, the U.S. Navy 25%, and the remaining 7% was pumped by various other well owners for business and irrigation purposes. During the past eight years (1999-2006), annual water use from the Waipahu-Waiawa Aquifer has ranged from a low of 43.46 MGD to a high of 54.87 MGD.

As of June 20, 2007, the CWRM has issued water use permits for a total of 84.856 MGD or 81.59% of the 104 MGD sustainable yield it has established for the Waipahu-Waiawa Aquifer. Thus, the remaining balance of 19.144 MGD represents the unallocated amount of groundwater available in the Waipahu-Waiawa Aquifer to meet the area's water requirements.

3.6.1.2 Groundwater Quality

According to the BWS, the project site is located within the State DOH's proposed well head protection area. The water quality of the Waipahu–Waiawa Aquifer has been affected in the past by the prior use of herbicides and pesticides on former pineapple cultivated lands. Based on the State DOH's Groundwater Contamination Maps for 2005, agricultural herbicides and pesticides continue to be present in a number of wells in the Waipahu-Waiawa Aquifer.

The State DOH established a source water assessment program to meet U.S. Environmental Protection Agency requirements. The State program is required to (1) delineate the boundaries of areas providing source waters for public water systems, and (2) identify the origins of regulated and unregulated contaminants in the delineated area to determine the susceptibility of public water systems to such contaminants. Three entities (U.S. Navy, BWS, and Kipapa Acres) own drinking water sources that have delineated areas that may cross the Koa Ridge Makai or Waiawa Petition Areas.

3.6.2 Probable Impacts

3.6.2.1 Groundwater Availability

The proposed action will not have a significant impact on the availability of potable groundwater in Central O‘ahu. Koa Ridge Makai will require an average of 2.006 MGD and Castle & Cooke

Waiawa will require an average of 0.704 MGD for a total project average daily demand of 2.71 MGD. As shown in Table 3-1, it appears that the current unallocated supply is sufficient to meet the project's average daily water demand without exceeding the Waipahu-Waiawa Aquifer's sustainable yield.

Table 3-1
Waipahu-Waiawa Aquifer: Existing and Proposed Water Use

Estimated Drinking Water Sustainable Yield	104.000 MGD
Current Regional Use (2006)	50.404 MGD
Permitted Use	84.856 MGD
Current Unallocated Supply (not permitted)	19.144 MGD
Proposed Project Use	2.710 MGD
Remaining Available Supply	16.434 MGD

Because no municipal water supply is available to serve the project, new wells, along with storage reservoirs and transmission/distribution pipelines will be needed to serve the Koa Ridge Makai development in two pressure zones. One zone will be below the 595-ft elevation and the other below the 820-ft zone. The 595-ft service zone will be served by a new well source consisting of two 790 GPM wells located adjacent to the existing BWS Waipio Heights III well and reservoir site. The 820-ft service zone will be served by a second well source consisting of three 780 GPM wells (including one standby) at a site approximately 1.6 miles away and 0.7 miles east of the H-2 Freeway.

Castle & Cooke Waiawa's drinking water needs are expected to be provided from existing wells drilled but not yet developed at the 785-foot elevation northeast of the project site.

The proposed Koa Ridge Makai and Castle & Cooke Waiawa Petition Areas lie below the 50-inch rainfall isohyet, similar to other nearby suburban areas. It is generally accepted by Hawai'i hydrologists that areas in Hawai'i receiving less than an average 50 inches of rainfall a year do not contribute a significant amount of groundwater recharge from net rainfall infiltration. This is due to evapotranspiration equaling or exceeding the amount of rainfall in areas with less than 50 inches. Consequently, the proposed Koa Ridge Makai and Castle & Cooke Waiawa developments are not expected to adversely impact groundwater recharge or sustainable yield. Nevertheless, some reduction in recharge may occur as a result of an increase in impervious surfaces due to land development.

The proposed developments will have design goals that encourage water conservation efforts, such as: (1) low-flow water fixtures (toilets, shower heads, front-load washers, etc.), (2) drought-tolerant and low water-use landscaping, and (3) water-efficient irrigation systems that utilize drip irrigation and electronic controls (moisture sensors) where feasible to minimize drinking water usage. The Applicant is also considering other means to reduce water consumption, including those eligible under Leadership in Energy and Environmental Design (LEED) certification. The project will include a dual water system (i.e., both potable and non-potable water) if a suitable non-potable water source is available.

3.6.2.2 Groundwater Quality

Due to the robust nature of this aquifer, development of new wells for the project is also not expected to impact any existing wells in the area. The two wells proposed to serve Koa Ridge Makai are located 1.6 miles apart and not expected to adversely impact the salinity of existing upgradient or downgradient wells. There are two existing well sources that lie hydrologically downgradient of the proposed well, between three and four miles away. Another two existing well sources that are planned for future use by the planned development at Waiawa are located within a one-mile radius of the proposed well. None of these wells are expected to be adversely impacted.

In its Source Water Assessment Program, the State DOH identified potential contaminating activities that could affect public drinking water sources. A potential contaminating activity (PCA) is defined as a facility or activity that: 1) stores, transmits, uses, or produces contaminants, chemicals or by-products; and 2) has the potential to release contaminants that may impact quality of the source water. These PCAs include a wide range of land uses and activities that have varying potentials for contamination. A few examples include: chemical/petroleum storage, gas stations, pineapple cultivation, feral animals, auto body shops, sewer lines, utility stations, reclaimed water irrigation, grazing, golf courses, diversified agriculture, car washes, and parks (Water Resources Research Center 2004). Because many of these activities are associated with urban development, the proposed action may result in PCAs on the Petition Area, which have the potential to impact the drinking water sources that have areas delineated by the State DOH as providing source waters for public water systems under its Source Water Assessment/Protection Plan.

3.6.3 Mitigation

During construction, BMPs will be implemented to prevent or reduce the risk of groundwater contamination. In the long term, the Applicant will comply with all applicable Federal and State environmental regulations related to groundwater quality in order to prevent or minimize groundwater contamination. Stormwater quality will be addressed either through the use of dry-extended detention ponds or flow through based treatment devices depending on the site specific flow, topography and site constraints.

The proposed wells will be tested for various water quality parameters as required by the State DOH and BWS for new drinking water sources and the results will be evaluated for necessary action. If necessary, the water system will receive granular activated carbon treatment to remove agricultural chemicals from the groundwater.

A system of eight deep monitor wells installed by the BWS and CWRM will provide baseline records on the long-term effects of withdrawal from the aquifer.

3.7 BIOLOGICAL RESOURCES

3.7.1 Flora

3.7.1.1 Affected Environment

A survey of botanical resources in the Koa Ridge Makai and Waiawa Petition Areas was conducted by Botanical Consultants in January 1996. The Petition Areas were resurveyed in November 1999, verified in 2002, and most recently resurveyed by Isle Botanica in July 2007. The off-site infrastructure areas were surveyed by Isle Botanica in February 2008 (Waipi'o Interchange improvement area) and July, August and September 2008 (off-site drainage improvements, sewer line, and Koa Ridge Interchange areas) (see Botanical Survey, Appendix C).

Koa Ridge Makai. In the Koa Ridge Makai Petition Area, three types of vegetation are currently found: (1) Managed Land Vegetation; (2) Guinea Grass Grasslands; and (3) Alien-Dominated Species. No wetlands or sensitive or native types of vegetation were observed during the latest survey.

Managed Land Vegetation occurs on areas that are under periodic or frequent management, such as roadsides and cultivated areas. Within this site, the roadsides are dominated by Guinea grass (*Panicum maximum*), while cultivated or fallow lands comprise the dominant types of Managed Land Vegetation, particularly fallow land. Pineapple is no longer cultivated, and it only occurred at the northern end of the study site, where it was residual in a ruderal area now overrun with weeds.

Guinea Grass Grasslands vegetation is dominated by Guinea grass (*Panicum maximum*). It occurs along the edges of the cultivated and fallow land on areas that may have once been cultivated, but not for a long time. The most common trees found in this grassland are koa haole (*Leucaena leucocephala*) and albizzia (*Paraserianthes falcataria*), and, to a lesser extent, Formosan koa (*Acacia confusa*). No native species were recorded in this type of vegetation.

Alien-Dominated Forest is the woodland dominated by alien tree species. It occurs on the slopes and bottoms of gullies, and in several places around the periphery of the Koa Ridge Makai site. The woodlands at the study are heterogeneous, and at least four kinds were distinguished: 1) A woodland dominated by albizzia (*Paraserianthes falcataria*), under which a dense matrix of Guinea grass dominates the ground; 2) a woodland typically dominated by koa haole (*Leucaena leucocephala*) found on the slopes of gullies and on some flat areas on the margin of the fallow and cultivated land that covers the center of the study site; 3) a woodland entirely dominated by ironwood (*Casuarina equisetifolia*); and 4) a denser forest woodland found in gullies, where soil water is naturally more plentiful, with the dominant species of Java plum (*Syzygium cumini*), African tulip tree (*Spathodea campanulata*), and *Macaranga tanarius* (no common name), with lesser amounts of gunpowder tree (*Trema orientalis*), Chinese banyan (*Ficus microcarpa*), *Chrysophyllum* cf. *mexicanum* (no common name), and Koidzumi's firethorn (*Pyracantha* cf. *koidzumii*).

Three native species were observed during the 2007 survey (popolo (*Solanum americanum*), ʻuhaloa (*Waltheria indica*), paʻu-o-Hiʻiaka (*Jacquemontia ovalifolia*)) all of which are wide-ranging and common indigenous species.

During the 2007 survey, 129 plant species were recorded. A previous botanical survey in 1996 recorded 123 species. Forty-nine of the species in the 1996 survey were not found during the present study. Several reasons may account for this, the main one perhaps being a change in habitat (from pineapple cultivation to other types of cultivation and the spread of grassland dominated by Guinea grass). This makes a total of 178 species recorded from the site. Only five of the 178 species are native: popolo (*Solanum americanum*), ʻuhaloa (*Waltheria indica*), paʻu-o-Hiʻiaka (*Jacquemontia ovalifolia*), ʻilima (*Sida fallax*), and koa (*Acacia koa*). The first four of these are wide-ranging and common indigenous species. Only the koa is endemic, but it was not found during the present survey, and is likely to have comprised cultivated individuals, since koa is not usually found in the habitats present at the study site. No federally listed threatened or endangered species have been recorded from the area.

Castle & Cooke Waiawa. In the Castle & Cooke Waiawa Petition Area, the project site consists of former pineapple fields or gulches adjoining former pineapple fields that have been fallow since 1993 and subsequently leased for grazing cattle. Due to a fire that occurred on the project site in 1998, the fire-resistant Guinea grass (*Panicum maximum Jacq.)* now entirely dominates the open areas of the site. Grasslands on the northern portion of the project site are currently used as pasture for cattle. Five vegetation types can currently be found at the project site, as categorized by the most recent survey: Managed Land Vegetation, Wooded Guinea Grass Pasture, Guinea Grass Grassland, Albizzia Woodland, and Alien-Dominated Forest.

At the Castle & Cooke Waiawa Petition Area, the dominant species in the Managed Land Vegetation category are alien weedy grasses such as stink grass (*Eragrostis cilianensis*), dropseed (*Sporobolus diander*), goose grass (*Eleusine indica*), swollen fingergrass (*Chloris barbata*), and Bermuda grass (*Cyndon dactylon*).

The Wooded Guinea Grass Pasture category covers the northeastern third of the Castle & Cooke Waiawa Petition Area and is entirely dominated by Guinea grass that was being actively grazed at the time of the survey. A few tree species and herbaceous species are scattered throughout the pasture.

The third type of vegetation, Guinea Grass Grassland, covers areas that were probably once in cultivation. Where no grazing is evident, the grass forms thickets up to eight feet in height with few competing species. The densest area covers the southwest quarter of the project site, whereas a much lower type of grassland covers most of the southeast and south-central portion of the project site.

The Albizzia Woodland vegetation type does not occur on the project site but is the dominant vegetation along the northern half of the proposed road access route to the site of the water wells and storage reservoir planned for the project. The huge, spaced albizzia trees (*Paraserianthes falcataria*) form a high, thin canopy interspersed with a few koa haole (*Leucaena leucocephala*)

and strawberry guava (*Psidium cattleianum*). The understory is equally mono-dominant, again covered with a dense growth of Guinea grass.

The Alien-Dominated Forest occurs in gullies in the center of the project site, along the southern end of the proposed new road corridor, and along the edges of the pastures. One area just to the south of the road that bisects the project site going west to east is dominated by silk oak (*Grevillea robusta*) aligned in rows. Across from this stand, to the north, is a second area of forest that is not uniform, but is dominated in some places by ironwood trees (*Casuarina equisetifolia*). Other species here include Koidzumi's firethorn (*Pyracantha* cf. *koidzumii*), tropical ash (*Fraxinus uhdei*), Formosan koa (*Acacia confusa*), kukui (*Aleurites moluccana*), and paperbark (*Melaleuca quinquenervia*). A third major area of forest occurs in gullies along the southern end of the proposed new road route. This area is dominated by large individuals of koa haole and Christmas berry, along with lesser amounts of *Chrysophyllum* cf. *mexicanum, Macaranga tanarius*, and Koidzumi's firethorn.

A total of 116 plant species were recorded during the field survey of the project site, which also included a proposed drinking water tank site at the 785-foot elevation level and access road. Previous botanical surveys had been carried out in 1996 with a follow-up survey update in 1999. The 1996 survey recorded 110 species present. The follow-up survey, which took place after a major fire in the area, recorded far fewer species. Thirty-six of the species from the 1996 survey were not found during the present study. Several reasons may account for this, the main one perhaps being a change in habitat (from cultivated to abandoned land and subsequent dominance by Guinea grass). This makes a total of 152 species recorded at the site in both surveys. Only 2 of the 152 species are native; popolo (*Solanum americanum*) and ʻuhaloa (*Waltheria indica*). Both of these are wide-ranging and common indigenous species and were found in both surveys. No federally listed threatened or endangered species have been recorded in the area.

Off-Site Infrastructure Improvement Areas. Four basic types of vegetation were observed on the off-site drainage improvement areas, Koa Ridge Interchange area, and sewer line alignment: (1) Managed Land Vegetation; (2) Guinea Grass Grassland; (3) Alien-Dominated Forests; and (4) Riparian Vegetation. The latter category can be divided into several types, based upon which species dominate the canopy and forest floor. All these vegetation types and their subtypes are classified as "disturbed vegetation," and native species are nearly absent.

Managed Land Vegetation is found at the Koa Ridge Interchange area as active pastureland, at the DB 1 site, and along the proposed sewer line alignment. Very few native species, especially endemic ones, are found on managed land. The few exceptions are the common ʻuhaloa (*Waltheria indica*), popolo (*Solanum americanum*), and kowali (*Ipomoea indica*), all of them indigenous rather than endemic.

Guinea Grass Grassland vegetation is dominated by Guinea grass (*Panicum maximum*) and mostly comprises land that was once under cultivation (pineapple). It also occurs on roadsides that are not managed. The guinea grass forms a nearly pure association, probably with over 98% of the biomass, since few other species are able to grow in the dense clumps of grass that may be up to 6 ft or more in height. No native species were recorded in this type of vegetation, and the overall number of alien species is small, due to the pervasive nature of Guinea grass.

Alien-Dominated Forest occurs mostly on the slopes and bottoms of gullies, but also on the Koa Ridge plateau and on the flat areas above some of the gullies. At the study sites, this vegetation is heterogeneous, and at least six subtypes can be distinguished, which often blend into each other.

One subtype is a forest dominated by albizzia (*Paraserianthes falcataria*), under which a dense matrix of Guinea grass (*Panicum maximum*) dominates the ground. This subtype occurs on the slopes leading down from Mililani Mauka to the proposed DB 2 site. This woodland is entirely dominated by a high canopy of albizzia, with few other trees present. A second subtype of forest occurs in grasslands where albizzia is less common, and other species such as koa haole (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*), African tulip tree (*Spathodea campanulata*), or silk oak (*Grevillea robusta*) may be common. The forest in Kīpapa Gulch, near the stream, fits into this category.

A third subtype of forest is largely dominated by koa haole, as found on the slopes of the Drain Line 1 site, across Kamehameha Highway from Koa Ridge Makai. In this area, the ground cover is mostly scattered Guinea grass, probably inhibited by the dry soil of the slope.

A fourth subtype of Alien-dominated Forest is found along streams, particularly at the Drain Line 1 site. The dominant species here are Java plum (*Syzygium cumini*), koa haole, *Macaranga tanarius* (no common name), and monkeypod (*Samanea saman*), along with several other less common alien tree species.

A fifth subtype of forest is found in the damper portions of the site, especially in the canyon just south of Mililani Mauka. This forest, which covers the slopes and bottom of this wide canyon, particularly upstream of the proposed DB 2 site, is dominated by two alien tree species: Christmas berry and strawberry guava (*Psidium cattleianum*). The forest here is low and produces a dense shade on the forest floor, which supports a light to moderate cover of herbaceous species, particularly the native fern blechnum (*Blechnum occidentale*), and alien species oak fern (*Christella parasitica*) and basket grass (*Oplismenus hirtellus*). Only a few native species are found in this type of forest.

A sixth subtype of forest differs from the others in that it is entirely dominated by species that have been planted. These plantation forests are found near Kīpapa Gulch, the S-shaped canyon within the Koa Ridge Interchange site, and on the flat area on the south side of the large canyon south of Mililani Mauka. These are often in monoculture, i.e., comprise a single species, but sometimes several species are planted together. The most common trees used for this purpose at the sites are swamp mahogany (*Eucalyptus robusta*), lemon-leafed gum (*Eucalyptus citriodora*), and ironwood (*Casuarina equisetifolia*).

One hundred seventy-four vascular plant species were recorded at the off-site drainage improvement areas, Koa Ridge Interchange area, and sewer line alignment. Thirteen of the 174 are native; two of them endemic and eleven indigenous. The two endemic species found during the survey are koa (*Acacia koa*) and ʻohiʻa lehua (*Metrosideros polymorpha*), both of which are common in Hawaiʻi. The indigenous species included blechnum (*Blechnum occidentale*),

kauna‘oa pehu (*Cassytha filiformis*), uluhe (*Dicranopteris linearis*), ‘a‘ali‘i (*Dodonaea viscose*), beach hibiscus (*Hibiscus tiliaceus*), koali-‘awa (*Ipomoea indica*), pakahakaha (*Pleopeltis thunbergiana*), moa (*Psilotum nudum*), black nightshade, popolo (*Solanum americanum*), pala‘a (*Sphenomeris chinensis*), and ‘uhaloa (*Waltheria indica*).

Within the area planned for improvements to the Waipi‘o Interchange, the botanical survey recorded 102 vascular plant species. Only four of these are native, all of them indigenous and common to Hawai‘i. No federally listed threatened or endangered species were recorded.

3.7.1.2 Probable Impacts

The proposed action will not adversely affect threatened or endangered plant species. The entire area proposed for development is on disturbed land. No wetlands or native forests are found in the areas proposed for development or off-site infrastructure. No federally listed threatened or endangered species have been reported in the area, and none were found in any of the surveys. Because two of the Isle Botanica surveys were conducted during the dry part of the year, it is likely a few additional species, mostly herbaceous alien weeds, would have been recorded if the surveys were performed during the rainy season or in a wetter year. However it is very unlikely that more than a few, if any, additional native species would be found in such a survey, and even less likely any threatened or endangered species would be found, since none have previously been reported from the area.

3.7.2 Fauna

3.7.2.1 Affected Environment

A survey of faunal resources in the Koa Ridge Makai and Waiawa Petition Areas was conducted by Botanical Consultants in January 1996. The areas were resurveyed in November 1999, verified in 2002 and most recently surveyed for avian and mammalian species by Rana Productions, Ltd. in September 2007 (Waiawa) and August 2008 (Koa Ridge Makai). The off-site infrastructure areas were surveyed by Rana Productions, Ltd. in March 2008 (Waipi‘o Interchange improvement area), and August 2008 (off-site drainage improvements, sewer line, and Koa Ridge Interchange areas) (see Appendix D for 2007 and 2008 reports). The mammalian surveys were conducted during times of the year when all of the mammalian species resident on the Island of O‘ahu can be expected to be detected if present within the areas surveyed. All the project surveys were conducted during times of the year when all resident birds are present in the lowlands of the Island of O‘ahu, as well as the migratory shorebirds that are present within the State (i.e., between late July and the end of April each year).

Mammalian Resources. Four species of mammals were detected in the Koa Ridge Makai Petition Area and the off-site drainage improvement areas: domestic dogs, (*Canis f. familiaris*), Indian mongooses (*Herpestes a. auropunctatus*), cats (*Felis catus*), and pigs (*Sus s. scrofa*). Domestic cattle (*Bos taurus*) and a horse (*Equus c. caballus*) were seen at the Koa Ridge Interchange site. Additionally, tracks, scat, and sign of dogs, mongooses, and cats were observed in all of the sites surveyed. No mammalian species were detected during the survey of the Waipi‘o Interchange improvement area.

Eight mammalian species were detected within the Castle & Cooke Waiawa Petition Area, all of them considered to be alien to the Hawaiian Islands, including European house mice (*Mus musculus domesticus*), domestic dogs (*Canis f. familiaris*), Indian mongooses (*Herpestes a. auropunctatus*), a cat (*Felis catus*), pig (*Sus scrofa*), domestic cattle (*Bos taurus*), and an unidentified species of rat (*Rattus sp*.). The endangered Hawaiian hoary bat was not recorded during the course of the surveys at any of the development or off-site infrastructure areas. This finding is not surprising given that this species has rarely been documented on the Island of O'ahu.

Avian Resources. A total of 2,151 individual birds, of 27 different avian species, representing 19 separate families were recorded during the avian surveys at Koa Ridge Makai and the off-site drainage improvement, Koa Ridge Interchange, and sewer line areas. A total of 399 individual birds of 19 different avian species, representing 13 separate families, were recorded during station counts at the Castle & Cooke Waiawa Petition Area. A total of 170 individual birds, of 16 different species, representing 13 separate families were recorded during the survey of the Waipi'o Interchange improvement area. During each of the surveys, only one of the species recorded, Pacific Golden-Plover (*Pluvialis fulva*), is an indigenous migratory shorebird species. Pacific Golden-Plover breed in the high Arctic, and spend their winters in Hawai'i and the tropical Pacific, where they are readily seen throughout the Hawaiian Islands between late July and the end of April. The remaining avian species detected at all the sites are considered to be alien to the Hawaiian Islands.

Although not detected during the survey, it is likely that the Hawaiian endemic sub-species of the Short-eared Owl *(Asio flammeus sandwichensis*), or *pueo* use resources within the general Koa Ridge Makai project area occasionally. Although the O'ahu population of the short-eared Owl is listed as an endangered species under the State of Hawai'i's endangered species program, it is not protected under the federal endangered species statutes (Department of Land and Natural Resources [DLNR] 1998 in David 2008b).

The survey of the Waipi'o Interchange area turned up no mammalian species. The avian survey results in this area detected only established alien species, except for the Pacific Golden-Plover.

Invertebrate Resources. A field survey of invertebrate resources (animals without backbones, i.e. insects, spiders, snails, shrimp, etc.) within the Waiawa development area was conducted by Steven Lee Montgomery, Ph.D. in March 2008. The survey yielded predominantly adventive insect species, and a few native arthropods (see Appendix D). No invertebrate listed under either federal or state endangered species statutes was located within the survey area.

Sensitive and Protected Species. No evidence of any bird, mammal, or invertebrate species classified as an endangered or threatened species by the U.S. Fish and Wildlife Service nor any species proposed as a candidate for listing as an endangered or threatened species were detected within the development or off-site improvement areas during the surveys. There is no federally designated Critical Habitat for any avian or mammalian species on, or adjacent to any of the parcels of land associated with this proposed development.

3.7.2.2 Probable Impacts

The proposed action will not adversely affect threatened or endangered animal species, as none are known to exist on the surveyed areas. The proposed action will not result in modification of any federally designated Critical Habitat as there is none present on the Petition Areas or off-site infrastructure areas.

The removal of existing trees on the project site will initially impact introduced alien bird populations and habitat in the area. This habitat loss will be offset by the reintroduction of trees to streets, parks, residences, and open space throughout the project.

4.0 | Human Environment: Environmental Setting, Probable Impacts and Mitigation Measures

Chapter 4: HUMAN ENVIRONMENT: ENVIRONMENTAL SETTING, PROBABLE IMPACTS AND MITIGATION MEASURES

4.1 ARCHAEOLOGICAL AND HISTORIC RESOURCES

4.1.1 Affected Environment

An archaeological inventory survey of the Koa Ridge Makai and Castle & Cooke Waiawa Petition Area was conducted by Cultural Surveys Hawai‘i in 1996 (Cultural Surveys Hawai‘i June 1996) and confirmed in 1999. Cultural Surveys Hawai‘i conducted additional archaeological research and inventory survey of the areas identified for off-site infrastructure improvements in 2008, including:

- archaeological field inspection and literature review of the proposed Waipi‘o Interchange improvements (March 2008)
- archaeological inventory survey for the proposed sewer line alignment (October 2008), and
- archaeological inventory survey for proposed drainage system improvements and proposed Koa Ridge Interchange (November 2008).

The findings of the studies are summarized in this section. The full reports, along with correspondence from the SHPD, are included as Appendix E.

Most of the project area lies within the Waipi‘o Ahupua‘a, with the exception of a small section of the Castle & Cooke Waiawa Petition Area that extends into the Waiawa Ahupua‘a and the makai portion of the sewer line alignment that extends into the Waikele Ahupua‘a. Historical research, including settlement patterns of pre-contact Native Hawaiians and the locations of Land Commission Awards within Waipi‘o, Waikele and Waiawa Ahupua‘a, indicate that traditional Hawaiian settlement would have been concentrated along the coast. The coastal areas of Waipi‘o Peninsula and the surrounding waters of Pearl Harbor contained abundant marine resources and arable land which would have been extremely favorable for the development of large scale taro cultivation and fish ponds in support of human settlement. Limited inland settlement in Waipi‘o Ahupua‘a was supported by the broad and flat-bottomed Kīpapa Gulch, with agricultural terraces extending over two miles upstream of Kīpapa and Waikele Streams. The settlements along Kīpapa Gulch would have accessed the uppermost reaches of Kīpapa Gulch for traditional gathering of forest resources, including medicinal plants and koa trees for canoes, although no permanent settlements would have been located in the upper gulch areas.

The traditional settlement pattern, combined with land modifications associated with long-term commercial pineapple and sugar cultivation and modern urban development, accounts for the lack of pre-contact traditional Hawaiian sites identified within the boundaries of the project area. The section of the sewer line alignment makai of the H-1 Freeway between Koaki Street and the Waipahu WWPS is the only portion of the project area where subsurface historic properties associated with both pre- and post-contact land use may be present, based on background

research that indicates intensive use of this area by pre-contact Hawaiians for agriculture, aquaculture and habitation.

Fourteen historic properties associated with post-contact plantation agriculture or military-related uses were documented within or in the immediate vicinity of the project area. Figure 4-1 shows the general location of the sites. Eleven of the historic properties are located in the off-site areas proposed for the detention basin improvements, two are in the proposed Koa Ridge Interchange project area, and one is located within the proposed sewer line alignment.

SIHP No. 50-80-09-6959: This site consists of a plantation-era irrigation ditch and water control box related to pineapple or sugar cultivation. It is located within the alignment of the proposed sewer line, approximately 20 feet southwest of Kamehameha Highway along the upslope edge of a road cut.

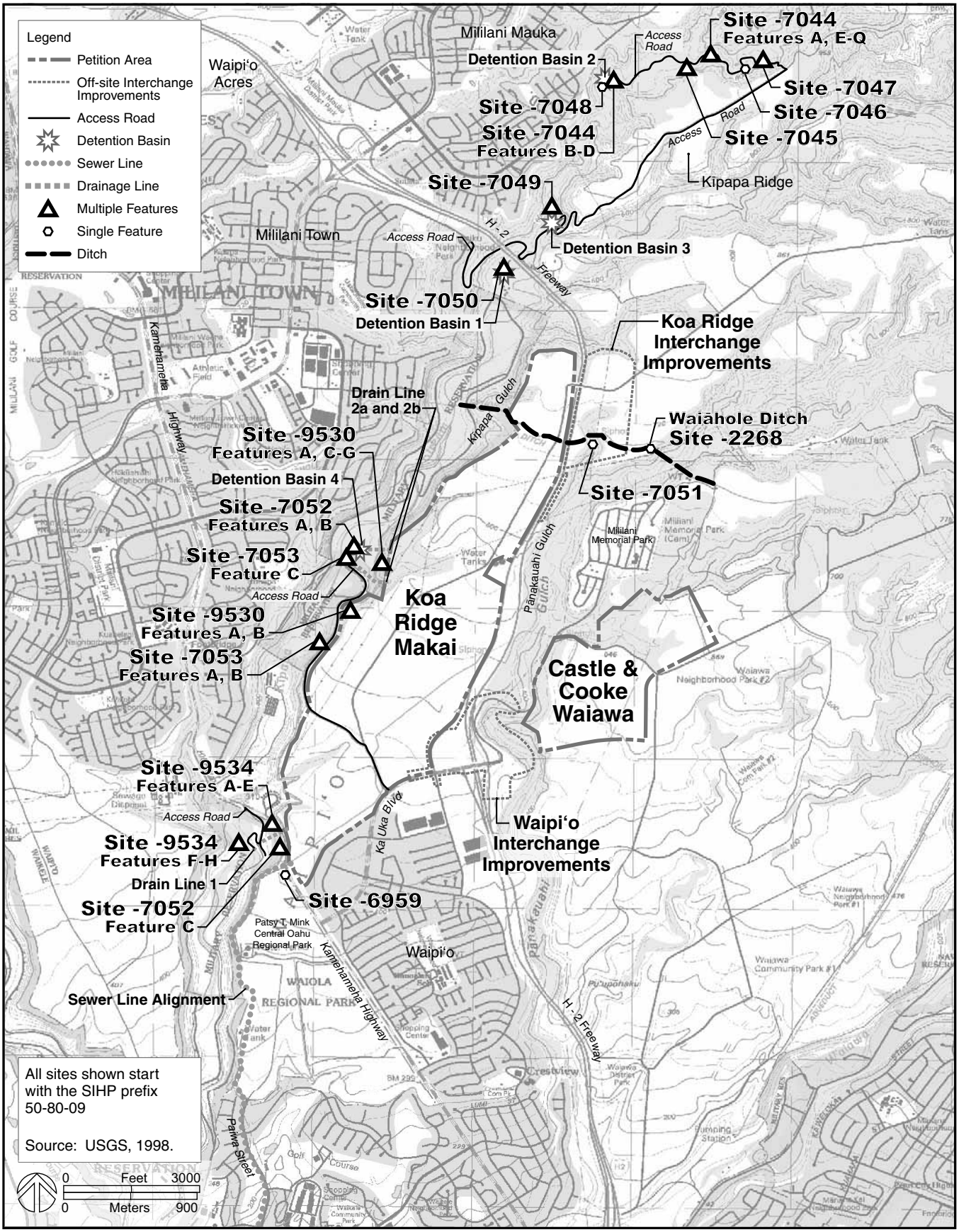
Waiāhole Ditch (SIHP No. 50-80-09-2268): The Waiāhole Ditch System is an extensive plantation irrigation system that extends approximately 22 miles, transporting water from the windward Koʻolau range to leeward Oʻahu. Constructed between 1913 and 1916, the ditch remains actively maintained and continues to be used for irrigation of agricultural fields in Central Oʻahu. The ditch is an open concrete-lined channel, except for two areas where six-foot wide metal siphons are used to carry the water across steep gullies. This site crosses the central portion of the proposed Koa Ridge Interchange and runs along the upslope northern portion of Koa Ridge Makai.

SIHP No. 50-80-09-7044: This site consists of a historic road and 16 individual features along the stream channel corridor associated with historic plantation agricultural cultivation in Kīpapa Gulch and its tributaries. The road generally parallels the stream channel and runs along the base of the tributary gulch, although it is difficult to discern due to the effects of erosion, sedimentation and heavy vegetation growth. Stream channel improvements include stone mounds, alignments and walls situated along the banks of or immediately upslope of the stream channel. This site is located within the DB 2 and DB 2 access road project areas.

SIHP No. 50-80-09-7045: This site consists of two retaining walls constructed of stacked basalt boulders and cobbles located near the central portion of the DB 2 access road. The site is interpreted to be associated with historic agricultural endeavors, likely functioning as water diversion and erosion control features.

SIHP No. 50-80-09-7046: This is a triangular-shaped platform constructed of stacked basalt boulders and cobbles. Situated near the eastern portion of the DB 2 access road, the platform sits at the base of the gulch slope in the central portion of a drainage swale. It most likely functioned as both an agricultural clearing feature, with the stones used in the construction generated by clearing of adjacent planting areas, and as a water diversion feature.

SIHP No. 50-80-09-7047: This site is an agricultural terrace complex consisting of six terraces and one excavated pit situated along the base of a relatively narrow tributary gulch near the eastern portion of the DB 2 access road. It is interpreted to be associated with historic agricultural endeavors, functioning as an agricultural planting area and charcoal kiln.



Historic Sites

Figure 4-1

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

SIHP No. 50-80-09-7048: This is an excavated stone-lined pit located within the southern portion of the DB 2 project area. It is interpreted to be a charcoal kiln associated with the area's plantation agricultural use.

SIHP No. 50-80-09-7049: This site is a complex of nine historic agricultural features consisting of large mounds and terraces constructed at the base of the gulch and along the gulch slopes. Located within the DB 3 portion of the project area, most of the features are situated along the sloping western face of a tributary of Kīpapa Gulch, except for one feature along the eastern gulch slope. The mounds and terraces are interpreted to be the result of agricultural clearing, with the terraces likely also functioning as erosion control features. Improvements to the stream channel were also made to control erosion of the stream bank and preserve adjacent terraces for agricultural cultivation.

SIHP No. 50-80-09-7050: This site consists of a retaining wall and C-shaped structure (semi-circular wall) located in the DB 1 project area. It is interpreted to be associated with historic agricultural endeavors, likely functioning as erosion control and planting area boundary features.

SIHP No. 50-80-09-7051: This is a retaining wall located in the central portion of the Koa Ridge Interchange project area. The site is situated along the western edge of the tablelands bordering the tributary of Pānakauahi Gulch, immediately downslope of the Waiāhole Ditch (SIHP No. 50-80-09-2268). This site is interpreted to be associated with historic agriculture, likely functioning to prevent erosion of the tablelands upslope.

SIHP No. 50-80-09-7052: This site consists of three features, including a storage tunnel and asphalt pad located in the DB 4 project area, and a large concrete slab located in the southern portion of the of the Drain Line 1 project area. The storage tunnel and asphalt pad in the DB 4 project area are components of the U.S. Army Upper Kīpapa Ammunition Storage Site, which consists of a series of 52 storage tunnels and associated infrastructure constructed following World War II. The large concrete slab in the Drain Line 1 project area is interpreted to be a historic building foundation associated with the Lower Kīpapa Ammunition Storage Site.

SIHP No. 50-80-09-7053: This site is the original alignment of Kamehameha Highway (known as the "Old Kamehameha Highway") that was in service until 1934 when the current alignment was adopted. The site includes three features within the DB 4 access road. The historic roadbed and stone wall running alongside the roadbed (Features A and B) are located along the gulch slope. The Kīpapa Stream Bridge (Feature C), a concrete bridge constructed in 1923, is located at the base of Kīpapa Gulch.

SIHP No. 50-80-09-9530: This site is a complex of irrigation and transportation related structures attributable to the O'ahu Sugar Company located within the DB 4 project area. The site was initially identified during an inventory survey conducted by the Bishop Museum in 1977 (Rosendahl 1977), and redefined in 1988 to include features "related to activities of the O'ahu Sugar Company" (Hammatt and Borthwick 1988). In the current survey, Cultural Surveys Hawai'i identified seven distinct features, including five plantation irrigation-related structures (i.e., irrigation and drainage ditches used to transport water from Kīpapa Stream) and two plantation transportation-related structures providing access through Kīpapa Gulch (i.e., a

segment of a railroad berm and two parallel bridge foundations located at the base of Kīpapa Gulch).

SIHP No. 50-80-09-9534: This site is a complex of eight agriculture and transportation related structures identified within the Drain Line 1 project area. One feature – an irregular-shaped rock platform – is related to agricultural clearing, three features consist of irrigation ditches, another is an L-shaped stone alignment possibly functioning as a field boundary, and three features are remnants of a railroad bridge crossing Kīpapa Stream.

4.1.2 Probable Impacts

Due to the historic long-term commercial agricultural use of the Petition Area, the Petition Area is relatively clear of significant historic sites. With the exception of Waiāhole Ditch which crosses the Petition Area, all of the significant historic sites identified during the archaeological inventory surveys are located within the off-site infrastructure improvements areas.

The archaeological inventory survey conducted for the previously proposed Koa Ridge and Castle & Cooke Waiawa development (which includes the Petition Area) was reviewed by the SHPD in 2002. As documented by a letter dated November 22, 2002, the SHPD determined that the survey was performed acceptably, and that development of these lands would have "no effect" on significant historic sites due to the past intensive cultivation that has altered the project area (see Appendix E).

The archaeological work conducted for the off-site infrastructure improvements, which includes the proposed Waipi'o and Koa Ridge H-2 Freeway interchange improvements, proposed sewer line alignment and drainage system improvements, was submitted to SHPD in November 2008. SHPD reviewed and accepted, by letter dated December 2, 2008, the archaeological field inspection and literature review report for the Waipi'o interchange improvements and determined that no historic properties would be affected by the proposed improvements because urbanization has altered the land (see Appendix E for SHPD letter). SHPD review and determination is currently pending for the project's two archaeological inventory survey reports completed in 2008.

The Proposed Action may potentially affect significant historic sites identified within the project area boundaries. Land-disturbing activities such as grubbing, grading, and excavation associated with the construction of the proposed improvements may potentially alter or remove the historic sites. Minor alterations to Waiāhole Ditch (SIHP No. 50-80-08-2268) and the O'ahu Sugar Company irrigation structures in Kīpapa Gulch (SIHP No. 50-80-09-9530) may be needed, depending on project engineering. Since the project would only utilize three of the four off-site drainage detention basins, either the DB 3 or DB 4 site would remain undeveloped. If DB 3 is developed, none of the historic sites in DB 4 would be impacted, with the exception of a plantation-era irrigation ditch (SIHP No. 50-80-09-9530 Feature A), which may be impacted by a storm drainage box culvert from Koa Ridge Makai (Drain Line 2a or 2b). In this scenario, Site No. 50-80-09-7049 in DB 3 may be disturbed. If DB 4 is determined to be needed, DB 3 would remain undeveloped while the sites in DB 4 would be affected.

Construction activities associated with the proposed sewer line has the potential to adversely affect subsurface historic resources, including human burials, which may be located within the sewer line alignment.

The archaeological work carried out for the adjacent Waiawa development area, which includes the proposed off-site water tank and access road to serve Castle & Cooke Waiawa, was successfully completed and acknowledged by letter from the SHPD, dated March 2, 1995 (see Appendix E).

4.1.3 Mitigation

Five historic sites identified for preservation (SIHP No. 50-80-09-2268, 50-80-09-7046, 50-80-09-7047 Features C-G, 50-80-09-7053, and 50-80-09-9530 Feature A) would be preserved in compliance with SHPD preservation requirements for those sites. Two of the sites, including the Old Kamehameha Highway alignment (SIHP No. 50-80-09-7053) and a plantation-era clearing platform (SIHP No. 50-80-09-7046) would be preserved in entirety. Preservation of three sites requiring minor modifications would be determined in consultation with SHPD:

- SIHP No. 50-80-09-7047, a plantation era-agriculture terrace complex, is recommended for partial preservation and/or data recovery. An archaeological data recovery plan would be prepared in accordance with HAR 13-278-3 in the event that SIHP No. 50-80-09-7047 Features C-G are affected by the proposed project.

- SIHP No. 50-80-09-9530 Feature A is a plantation-era irrigation ditch. Proposed drainage improvements in this area may require the installation of a 10-foot wide storm drain culvert through this feature. Site modification would be conducted with consultation and approval from the SHPD when details of the proposed project become available during the project design phase.

- Waiāhole Ditch (SIHP No. 50-80-09-2268) is recommended for general preservation. The need for modifications to Waiāhole Ditch through the Petition Area would be identified during project design, at which time the SHPD would be consulted to determine what, if any, mitigation may be appropriate.

A cultural resource preservation plan will be prepared to address buffer zones and identify protective measures for the historic sites recommended for preservation, including identification of any modifications proposed for the SHIP No. 50-80-09-9530 Feature A irrigation ditch. The SHPD would be consulted on any significant historic sites – such as the Waiāhole Ditch – requiring further archaeological work or documentation prior to future construction activities.

No further work is recommended for the remaining nine historic sites identified within the project area, as sufficient information regarding the location, function, age and construction methods of the sites has been generated to mitigate any adverse effect caused by the proposed development activities.

Construction of the proposed sewer line alignment makai of the H-1 Freeway between Koaki Street to the Waipahu WWPS would proceed under an archaeological monitoring program to be reviewed and approved the SHPD. Microtunneling technology is planned for construction of portions of the proposed sewer line, which would minimize the impact to subsurface historic resources.

In the event that any significant archaeological resources are encountered during future construction activities, all work in the immediate area would be halted and consultation with the SHPD would be sought in accordance with applicable regulations. The treatment of any remains or artifacts would be in accordance with procedures required by the O‘ahu Burial Council and the SHPD.

4.2 CULTURAL RESOURCES

4.2.1 Affected Environment

A cultural impact assessment to address the effects that the proposed project may have on native Hawaiian resources, practices, culture and traditions was prepared for the Koa Ridge Makai and Castle & Cooke Waiawa Petition Areas by Cultural Surveys Hawai‘i in 1996, with a supplement prepared in 2001. A cultural impact assessment for the proposed off-site infrastructure improvements (i.e., off-site drainage improvements, H-2 Freeway interchange improvements, and sewer line alignment from Koa Ridge Makai to the Waipahu WWPS) was prepared by Cultural Surveys Hawai‘i in 2008. The findings of the studies are summarized in this section. The full reports are included as Appendix F.

Background research of both traditional and historical records suggests that traditional Hawaiian settlement was concentrated along coastal areas, with some limited inland settlement located in a handful of valleys and gulches with favorable conditions. The sections of the project area located within the Waikele Ahupua‘a (i.e., the upper Waipi‘o Peninsula where the proposed sewer line alignment is located) and Kīpapa Gulch were permanently settled in pre-contact and early historic times. Waipi‘o Peninsula and Kīpapa Gulch were well-known places of native Hawaiian activity from pre-contact times, and were likely places of traditional Hawaiian habitation and agriculture as described in the Land Commission Award records. Although the settlements along Kīpapa Gulch would have accessed the upper reaches of the gulch for traditional gathering of forest resources, the northern reaches of the project area away from Kīpapa Gulch were unlikely to be used for either permanent native Hawaiian settlements or traditional cultivation practices.

A traditional trail which formerly connected ‘Ewa to the Waialua District crossed through the Central O‘ahu Plains in the immediate vicinity of the project area. While archaeological evidence of this pre-contact trail has not been found and is unlikely to be found due to the past history of sugar cane cultivation and urban development in this area, the trail alignment is thought to have been situated near the present-day Kamehameha Highway.

Petition Area

There is no evidence that the Petition Area is used for traditional practices such as gathering or any other cultural or religious purposes. The tributary gulches adjacent to these areas, however, have been used traditionally for gathering plants for medicinal purposes. No burials are believed to exist within the Petition Area, so customs and practices concerning burials are not applicable. There are no commoner land claims within the Petition Area. Although some Hawaiian activity may have taken place in the Petition Area, the patterns of land use are relatively clear, as the native Hawaiians did not utilize this land nearly as intensively as the coastal areas, well-watered areas, and forest zones.

Off-Site Infrastructure Improvement Areas

Community consultations conducted for the cultural impact assessment concluded that portions of Kīpapa Gulch were historically used for traditional practices such as gathering plants for *hula* and medicinal purposes, and that religious and cultural sites and burials may be present. Plants traditionally gathered from the Kīpapa area included *kūkaenēnē (Coprosma* sp.), *maike (Alyxia oliviformis), ʻieʻie (Freycinetia arborea)* and purple *lilikoi (Passiflora edulis).* Caves in Kīpapa Gulch may contain *iwi* (ancestral remains) or other burial *moepu* (funerary objects), and community consultants have expressed concerns about the caves being disturbed during construction of the sewer line. One historic site located near the eastern portion of the DB 2 access road – SIHP No. 50-80-09-7047, identified in the archaeological inventory survey as a plantation-era clearing platform and water diversion feature – is believed by the community consultants to have historical and cultural significance as a burial marker. There are no traditional Hawaiian visual landmarks located in areas potentially impacted by the project.

4.2.2 Probable Impacts

The cultural impact assessment for the Koa Ridge Makai and Castle & Cooke Waiawa Petition Areas concluded that the impact of the proposed development on Hawaiian culture would be minimal due to its geographical location away from the coast and the absence of surface water, unique topographic features, burial sites, and commoner land claims within these areas. If Hawaiian activity took place on these lands, it would not be nearly as intensively utilized as coastal areas, well-watered areas, and forest zones.

The cultural impact assessment for the off-site infrastructure improvements concluded that the proposed improvements would have minimal impact on Hawaiian culture, its practices and traditions. Preservation of the historic site that cultural practitioners believe to be burial marker (SIHP No. 50-80-09-7047) is recommended. Caves in Kīpapa Gulch are located outside the project area, and are not expected to be affected by construction activities. The plants historically gathered from Kīpapa Gulch for *hula* and medicinal purposes were not identified by the botanical survey, and are not believed to exist within the off-site infrastructure improvement areas. Furthermore, no ongoing practices related to traditional gathering were documented in the cultural impact assessment. Because the area potentially impacted by the project does not contain traditional Hawaiian visual landmarks, no impacts on these resources are expected.

4.2.3 Mitigation

The project would preserve and protect one culturally significant historic site (SIHP No. 50-80-09-7047). As a precautionary measure, personnel involved in construction activities would be informed of the potential for inadvertent cultural finds or burials. In the event that any significant historic or cultural resources are discovered during construction, work would be halted and the proper authorities would be consulted.

To address community concerns that resources used for traditional gathering practices are protected, cultural practitioners would be consulted to discuss the presence of species of ethnobotanical significance within the project area as the project proceeds.

4.3 SOCIO-ECONOMIC CHARACTERISTICS

4.3.1 Population

4.3.1.1 Affected Environment

A market assessment for the Proposed Action's residential, commercial, and light industrial uses was conducted by Mikiko Corporation in 2008, and included population and demographic data and projections for the CO SCP area and the State of Hawai'i. This section presents the assessment's population and demographic findings. The full report is included in Appendix G.

The project site is situated within the CO SCP area which extends inland from the center of Pearl Harbor, in a large swath bordered by the Ko'olau Mountains to the east and the Wai'anae Range to the west. The CO SCP includes the communities of Waipahu, Village Park, Waipi'o, Wheeler Air Force Base, Schofield Barracks, Wahiawā, Kunia, Mililani Town, Mililani Mauka, Waikele, Waipi'o Acres and the planned Waiawa Ridge development.

Central O'ahu abuts the 'Ewa Development Plan Area along Fort Weaver Road on its western edge, and the Primary Urban Center DPA ("PUC") along its southern and eastern sides. Special attention is also given herein to the 'Ewa DPA because it represents a supplementary market for the proposed non-residential uses at Koa Ridge Makai and Waiawa, such as in their retail and office market.

In March 2008, the U.S. Census estimated O'ahu's 2007 resident population at 905,601, representing a 0.5% annual rate of growth since the Census' 2000 estimate. The Census' 2007 estimate represented a slight decline from its 2006 estimate. Claritas (a leading provider of geodemographic market research information to government and industry throughout the U.S.) provided a 2008 population estimate of 918,194 and a 5-year projection to 943,773 by 2013. The State of Hawai'i, Department of Business, Economic Development and Tourism's (DBEDT) January 2008 long-term projection shows 919,953 residents on O'ahu in 2008 and anticipates 1,080,700 by 2030, at an annual growth rate of 0.7%. Finally, SMS, Inc. recently prepared a model that, by employing a 0.7% rate of population growth, projects 920,638 O'ahu residents in 2008 and 1,073,340 by 2030. This model assumed a continuation of the trend towards smaller

households on O‘ahu (from 2.99 persons/household in 2008 to 2.95 persons/household in 2030) (Mikiko August 2008).

DPP uses the State’s projections to forecast population within its Development Plan Areas (DPA). Its most recent such forecast was prepared in 2006 and was based on DBEDT’s prior projections, prepared in August 2004. However, these allocations of island population to DPAs are valuable in that they consider resident distribution in the context of the City’s development policies and plans.

In Central O‘ahu, DPP foresees below-average rates of growth over the next 10 years, and above-average rates thereafter. Overall, this would result in an average 0.8% per annum growth from 2008 to 2030, at a slightly faster rate than for the island as a whole. Central O‘ahu would continue to house approximately 18% of the island’s population. This would lead to 195,620 persons living in the CO SCP in 2030, or 31,040 more than estimated in 2008.

In ‘Ewa, DPP anticipates relatively high rates of growth over the projection period, in concert with its vision for the area as a “Second City.” ‘Ewa is eventually seen to house 16% of the island’s population, more than doubling from some 93,630 persons in 2008 to 177,030 by 2030. The ‘Ewa DPA is projected to approach Central O‘ahu in population by the end of the period.

Central O‘ahu’s population is relatively young, at an estimated 2008 median age of 32.8, compared to the islandwide median of 37.3. ‘Ewa is also a relatively young community, with an estimated median age of 31.8 in 2008. This is attributed to the more numerous entry-level housing options in both Central O‘ahu and ‘Ewa.

In 2008, Claritas estimated O‘ahu had about 304,600 households. Within this total, some 16% or 48,900 lived in Central O‘ahu, while 8% or 25,000 lived in ‘‘Ewa. As average household sizes decline, households are expected to increase more rapidly than population. In Central O‘ahu, households are projected to increase 1.4% per annum, to about 52,300 by 2013. This would mean Central O‘ahu’s share of O‘ahu households would increase slightly, to about 17%.

Household heads are older than the population as a whole. The largest number of households islandwide and in Central O‘ahu are headed by persons aged 25-44. This group includes many first-time homebuyers. In Central O‘ahu, the numbers of households headed by those aged 45-59 (considered a prime move-up housing market) and 60-74 are increasing most rapidly. The combination of population growth, aging and a trend towards smaller households could lead to 1,600 more households headed by persons aged 60-74, and 1,500 more by those aged 45-59 by 2013. In contrast, the number of households headed by those aged 25-44 is expected to be static.

4.3.1.2 Probable Impacts

The Proposed Action is expected to have a negligible, indirect effect on the population of the State or County, as most residents are assumed to relocate from elsewhere on O‘ahu. The Proposed Action is forecast to result in an average daily resident population of 15,590 persons at full build-out in 2025 (see Exhibit 2-2 in the project’s Economic and Fiscal Impact Assessment in Appendix G for calculations). This forecasted population represents about 50.2% of the

projected regional growth of 31,040 in Central O‘ahu by 2030. Based on CCHH buyer origin patterns at representative other developments in Central O‘ahu after 2005, 97% of the market units are expected to be purchased by existing O‘ahu residents. The remaining three percent are expected to be purchased by new residents from off-island or out of state. Therefore, the project will represent more of a population shift within the County rather than an influx of new residents to the State.

It can be assumed that the jobs supported by Koa Ridge Makai and Waiawa, particularly the professional, technical and managerial career opportunities, will create incentives for some neighbor islanders or former Hawai‘i residents to move to O‘ahu. Koa Ridge Makai and Waiawa’s housing opportunities themselves could be expected to attract some households that previously lived off-island. These could include retirees as well as younger households. These and other indirect factors can be expected to result in perhaps 430 persons living on O‘ahu who might not otherwise have lived on the island (in-migration to the County) by the time of project completion in 2025. Within this total, some 280 might be persons who had previously lived out-of-State.

Within the context of population changes in Central O‘ahu, the Proposed Action is likely to have both adverse and beneficial social impacts. The attitudes and opinions of Central O‘ahu residents towards the Koa Ridge Makai and Castle & Cooke Waiawa project include both positive anticipation of new housing and employment opportunities in Central O‘ahu to concerns over additional traffic congestion, the adequacy of infrastructure and public services, and potential impacts of the off-site drainage improvements on cultural resources. These mixed attitudes have been reflected in area Neighborhood Board meetings as well as the ongoing Community Visioning meetings that have been held for the project since 2003. Impacts of the Proposed Action on the specific areas of concern (e.g., transportation facilities, infrastructure, public services, and cultural resources) are addressed elsewhere in this EIS. Balancing these potentially adverse social effects are direct and indirect beneficial effects in Central O‘ahu:

- substantial job creation (discussed in Section 4.3.2)
- additional health care services (discussed in Sections 2.3.2 and 4.10.5)
- increased housing opportunities for the area’s aging population and the next generation of Central O‘ahu families

4.3.1.3 Mitigation

No mitigation is warranted for the Proposed Action’s negligible impacts on population. The Applicant will provide its fair share contribution to providing necessary infrastructure and public facility (e.g., elementary school sites) improvements to mitigate project impacts. Impacts to cultural resources will be minimized in the design of the off-site drainage improvements. Specific mitigation measures are discussed in the relevant resource area topic.

4.3.2 Economy and Employment

An economic and fiscal impact assessment for the Koa Ridge Makai and Waiawa project was conducted by Mikiko Corporation in 2008 and is appended as part of Appendix G. The findings

of the assessment are summarized in this section. All monetary amounts are in 2008 dollars unless otherwise stated.

4.3.2.1 Affected Environment

The current land use and operations on the Petition Area provides a total of 35 agriculture/ranch jobs. There is no other employment generated by the property. City and County of Honolulu property taxes levied on the site were $7,408 for fiscal year 2008 (Exhibit 5-1 in Mikiko November 2008).

4.3.2.2 Probable Impacts

The Proposed Action would generate significant, on-going economic and fiscal benefits for residents of the islands, as well as for the County and State governments. Development of facilities would generate employment and consequent income and taxes. In addition, by attracting new residents to O‘ahu and generating additional real estate sales activity, the Proposed Action is expected to support long-term impacts, including additional consumer expenditures, employment opportunities, personal income and government revenue enhancement.

Employment and Earnings. The Proposed Action involves development-related jobs and jobs associated with continuing operations. In the short term, the Proposed Action will bring about positive benefits to the local economy, including increased expenditure for construction, off-site infrastructure improvements, and construction-related jobs and tax revenue.

During its early years of infrastructure development, Koa Ridge Makai and Waiawa could generate employment for some 1,990 full-time equivalent (FTE) persons per year, through its direct, indirect and induced impacts. During the subsequent years of the project’s build out, it could support some 1,730 FTE development-related jobs per year, also considering direct, indirect and induced impacts. These jobs are expected to be associated with annual personal earnings of some $119 million (2009 to 2015) and $100 million (2016 to 2025) per year, at about $58,000 to $60,000 per FTE job.

By the time of its expected completion in 2025, the Proposed Action could be expected to generate some 2,460 direct FTE jobs on-site at its retail, office, industrial, hotel, medical and school facilities.

Considering the direct, indirect and induced impacts statewide, Koa Ridge Makai and Waiawa could alternatively be seen to have generated 1,490 permanent, on-going FTE jobs that would not have existed had the project not been developed. These “net new” jobs could include professional, technical, managerial and other staff positions at the planned Koa Ridge Medical Center, hotel and office and retail areas; and sales and marketing positions supported by the on-going resales and releasing of property; and myriad other positions generated throughout the economy. The net new job estimate is lower than the on-site job estimate because some of the jobs shown at the project’s facilities could be expected to be created elsewhere in the state even if the Proposed Action were not developed.

Altogether, these net new operations-related positions could be expected to generate personal earnings for Hawai‘i residents of about $90 million per year by 2025, or an average of about $61,000 per FTE job.

Fiscal Impacts. The Proposed Action's fiscal impacts were estimated by comparing its anticipated impacts on government revenues to the government service costs associated with the additional population the Proposed Action could attract to the County and State.

The Proposed Action could be expected to contribute some $11 million per year in new County revenues at its completion. The major contributor to these fiscal benefits would be the Proposed Action's new real property taxes, which were calculated based on the County's Fiscal Year 2008 rates for land and buildings in relevant land use classes.

For the State, net additional operating revenues generated by the Proposed Action are estimated at about $13.7 million per year by 2025, derived principally from General Excise Taxes, Transient Accommodations Tax (on room revenues from the proposed extended stay hotel), individual income taxes, and miscellaneous licenses, fees, and other payments.

Both the State and City governments will incur additional operating expenses to support the in-migrants that are attracted by the Proposed Action. For the County, new expenditures are estimated at $0.8 million per year at project buildout in 2025. The State could require up to $1.5 million more per year to support the net additional residents attracted by the Proposed Action.

Net fiscal benefits of the project for the City and State, therefore, are estimated at $10.1 million and $12.3 million, respectively, at project buildout in 2025. Put another way, new County government revenues derived from the project are estimated to be about 13 times the new operating expenditures incurred by the City government that can be associated with the Proposed Action. For the State, the revenue/expenditure ratio is estimated at 9.4 in 2025. At the State level, these benefits would be expected to drop after 2025 due to the cessation of the initial development activity. Review of the analyses during the operational period suggests net additional revenue of $4 million annually after 2025, and a 4.0 revenue/expenditure ratio for the State. Although County net revenues associated with the Proposed Action would also decline slightly after 2025, since the majority of the Proposed Action's County tax revenues come from real property taxes, the revenue/expense ratio is not anticipated to change significantly.

These public sector contributions do not consider the value of the school sites, public parks or various off-site infrastructure improvements to be developed by CCHH, and the various impacts and permit fees expected to be paid to the County and State governments during the development of the project. These additional contributions could increase the net public benefits of Koa Ridge Makai and Waiawa.

4.3.3 Market Assessment

A market assessment for the Koa Ridge Makai and Waiawa project was conducted by Mikiko Corporation in 2008. The objective in this study was to describe the market support for

development of the residential, commercial (retail and office) and light industrial uses proposed at Koa Ridge Makai and Waiawa. The findings of the assessment are summarized in this section, and the conclusions presented herein are in addition to any that may be associated with the proposed health facilities or extended stay hotel. The full report is attached as Appendix G.

4.3.3.1 Affected Environment

Residential. Section 4.3.1 Population summarizes population and demographic trends for the Island of O'ahu and the vicinity of the Petition Area. In short, O'ahu's resident population is expected to grow to over 1,070,000 residents by 2030 (per SMS/DBEDT in Mikiko August 2008), with the CO SCP area (in which the project is located) having below average growth rates in the next ten years and above average rates thereafter. Central O'ahu will continue to house approximately 18% of O'ahu's population. O'ahu household size is expected to continue to decrease in the future, leading to a greater number of households needing housing.

O'ahu has an acute shortage of housing suitable for primary residents, with an estimated pent-up demand for some 21,000 units as of mid-2008. Furthermore, based on growth projections prepared for or by the State and county agencies, O'ahu will need to house some 57,000 additional households by 2030. About 51,000 potential future housing units are currently entitled at the State LUC level. Even assuming substantially accelerated housing development in the short-term, without further urbanization of lands for residential use, O'ahu's housing shortfall could gradually be pared down to some 17,000 units by about 2020, but it could then spiral to about 29,000 units by 2030. This conclusion is summarized in Table 4-1:

Table 4-1
Supply and Demand for New Resident Housing Units on O'ahu: 2008 to 2030

		Units
Future Demand	Pent-up demand, 2008	21,000
	Future need, 2008-2030	57,000
	Total need	78,000
Future Supply	Planned and entitled (51,000 less 5% vacancy)	49,000
Shortage	As of 2030	29,000

Source: Mikiko Corporation, August 2008. Future supply estimate assumes full buildout of all lands currently designated Urban by the LUC, and proposed for residential development and those considered deliverable by 2030. See Appendix G for further information.

Commercial and Light Industrial Market. The commercial market assessment encompasses both retail- and office-based uses, in recognition of the typical crossover of office spaces within shopping centers and retail uses in office complexes. Thus, although the market support data for retail and office-based uses were developed separately, the assessment does not distinguish between the two. Specific types of retail, service or office uses will likely be determined as each area is developed.

Considering the analysis of retail- and office-based markets presented in detail in Appendix G, the CO SCP area is expected to support 1.74 million square feet of commercial space in addition

to that already in place and entitled and planned for development. By 2030, Central O‘ahu could be expected to support a cumulative 2.22 million additional square feet of commercial space.

If added to the existing and proposed/entitled commercial areas identified, the net additional markets represent a potential total CO SCP area commercial marketplace of up to 5.7 million square feet by 2020, or 6.5 million square feet by 2030. This could include neighborhood, community and regional shopping centers, office buildings, and retail spaces mixed into residential and/or office structures.

The strong commercial outlook for Central O‘ahu is based on an assumption that economic, workforce, and spending pattern changes take place within the SCP area and its neighboring districts prior to or during the Proposed Action’s development phase. Of great significance to commercial markets, these changes are expected to be accompanied by a decrease in out-commuting from the entire region, including Central O‘ahu, ‘Ewa and Wai‘anae.

Altogether, Central O‘ahu’s developed industrial areas (dispersed among Waipahu, Wahiawā, Waipi‘o, and Mililani) include about 220 net acres. There are also about 1,200 net acres of developed industrial land in the ‘Ewa DPA. Considering several planned developments, plus areas already in use, Central O‘ahu and ‘Ewa could have some 2,200 net acres of private business or industrial park lands available by 2030, if all projects are developed as currently planned and on the timetables projected. Central O‘ahu could account for 390 or about 18% of these net acres, while the regional market center would remain in the ‘Ewa DPA.

Demand for future business park/industrial lands in Central O‘ahu can be expected to come from two sources: 1) Employment-driven demand, which is estimated based on projections of civilian employment and is driven by the future needs of businesses island-wide; and 2) Transition-driven demand, which is the relocation of some existing industrial tenants and landowners. In total, supportable new industrial/business park land in the Central O‘ahu SCP area, beyond that already entitled and planned, could amount to some 80 acres by 2020, and 160 acres by 2030.

4.3.3.2 Probable Impacts

Residential. Koa Ridge Makai and Waiawa would have a beneficial impact on O‘ahu’s housing supply by addressing the critical need for new housing on O‘ahu, and directing growth to an area identified by the City for future development. The Proposed Action would provide 5,000 new housing units in Central O‘ahu by 2025 towards the projected 2030 shortfall of 29,000 units island-wide. This represents over 17% of the shortfall. At least 30% of the project units will be developed as affordable in accordance with the City’s affordable housing policies. Among the market for-sale units, the majority is expected to be purchased for use by owner-occupants. Some may be purchased as investments and rented out, again resulting in units for primary resident use.

The CO SCP notes that residential growth in Central O‘ahu is targeted to occur primarily in master planned communities of Mililani Mauka, Royal Kunia, Koa Ridge, Waiawa and Waikele. The Koa Ridge Makai and Waiawa’s housing units are an important component of the CO SCP

and could be a solution for up to 17% (5,000/29,000) of the island's currently unentitled housing demand through 2030.

The project will offer a diverse product mix, including some 74% as multi-family units (includes for-sale and rentals), and a range of densities from about 10 to 45 units per gross acre. This mix reflects broad-based U.S. and Hawai'i planning interest in sustainable, "smart" communities with higher densities. It also reflects the anticipated trend toward smaller household sizes, and Castle & Cooke's goal to maintain relatively affordable price points. The Proposed Action would include single-family for-sale units, at densities of six to nine units per acre. The variety of proposed products responds to the demographic changes discussed in Section 4.3.1 Population and in more detail in the Market Assessment in Appendix G. Anticipated buyer markets include entry-level, downsizers, retirement/seniors, and move-up markets.

The project would follow the highly successful communities of Mililani and Mililani Mauka, building on CCHH's established reputation in the region. It would serve multiple generations of households, many of whom already make Central O'ahu home. Since 1970, CCHH's new home sales closings on O'ahu have averaged 500 units per year. Based on this long-term, solid benchmark, it is estimated that the project could realize sales ranging from 360 to 450 units per year, meaning that it could be expected to sell out in 10 to 14 years, or between 2022 and 2025 (assuming all are built as for-sale units). In the early years of marketing, closings would all be at Koa Ridge Makai, but after 2015, they would represent sales at both Koa Ridge Makai and Waiawa.

Commercial and Light Industrial Market. Based on the analysis for these markets, the Proposed Action would have a beneficial impact by addressing supportable but un-met future demands for these uses. The Proposed Action proposes up to a total of 410,000 square feet of commercial uses, including retail and office uses (not including space included in the proposed hotel or health facility). The primary retail trade area for the Proposed Action is considered to encompass the CO SCP. Office facilities at the Proposed Action could draw from a larger community, including businesses that attract employees from throughout O'ahu. However, to be more conservative, the office market was evaluated in terms of demand generated only within Central O'ahu and 'Ewa. Commercial spaces at the Proposed Action are projected to be fully absorbed about the time of complete residential absorption, which is assumed to be by 2025.

If developed to the full proposed capacity, the Proposed Action's commercial spaces could represent some 6% of the CO SCP area's total future inventory in 2020 and in 2030. These developments could also represent venues for about 18 to 19% of the currently unplanned but future supportable commercial space in Central O'ahu.

These market shares are considered achievable in light of the medical, hotel and other economic initiatives represented within Koa Ridge Makai, as well as the expected developments in the broader Waiawa community (including the Waiawa Ridge development). Given that potential commercial developments on other entitled lands throughout Central O'ahu have already been accounted for, Koa Ridge Makai and Castle & Cooke Waiawa appear to be some of the few significant areas within the SCP area on which such development could occur.

Koa Ridge Makai and Waiawa's commercial properties are expected to be supportable by 2025, in concert with the anticipated build-out of its residential units by that date. If the first completions are in 2012, this would mean an approximately 14-year absorption period, averaging some 30,000 net new square feet leased per year.

The proposed 5-acre site at Koa Ridge Makai for business park or light industrial development represents a solution for only about 6% of the net unprovided-for demand in the region, or about one percent of the future DPA marketplace, as of 2020. Due to the strong long-term market conditions and Koa Ridge Makai's central location, the site is likely to be fully absorbed by 2020.

4.4 AGRICULTURAL IMPACTS

Decision Analysts Hawaii, Inc. prepared an agriculture impact study for the Castle & Cooke Waiawa Petition Area in October 2007, followed by an agriculture impact study for the Koa Ridge Makai Petition Area in April 2008. The findings of the studies are summarized in this section. The full reports are included in Appendix H.

4.4.1 Affected Environment

4.4.1.1 Historic and Current Agricultural Uses of the Land

For the greater part of a century, Dole Food Company Hawai'i (Dole) used the Petition Area to grow pineapple. This was a feasible crop for the area because pineapple requires little water compared to most other crops. However, by 2002, Dole ceased growing pineapple on this land and shifted its remaining Central O'ahu pineapple operations to the North Shore in order to consolidate operations near its packing plant, base yard, and offices. The North Shore land became available due to the closure of Waialua Sugar Company, Inc. in 1996.

Since 2000, 186 acres of the 191-acre Castle & Cooke Waiawa Petition Area has been leased to the Flying R Livestock Company for cattle grazing. Their operation at Waiawa encompasses a total of 404 acres, including 186 acres within the Petition Area and an additional 218 acres of adjoining gulch land. About 40 cow-and-calf units and three bulls graze on the 404 acres, involving the part-time effort of a single rancher with no employees. The Flying R Livestock Company leases a total of about 5,130 acres for cattle grazing, including the 404 acres of Castle & Cooke land at Waiawa, plus an additional 4,725 acres split between the planned WRD LLD development (about 800 acres), lands north and east of the H-2 Freeway (about 625 acres), and the North Shore (about 3,300 acres).

Since 2002, 446 acres of the 575-acre Koa Ridge Makai Petition Area has been leased to Aloun Farms. Of the 446 acres, about 430 acres are arable and about 325 acres are farmed. Aloun Farms uses the land to grow leafy vegetables for the Honolulu market and seed corn for export. The company, which is the second largest diversified crop farm in Hawai'i, farms a total of about 2,440 acres on leased land on O'ahu, including the Koa Ridge Makai Petition Area and an additional 2,100 acres in 'Ewa and Kunia. Aloun Farms' operations on the Koa Ridge Makai

lands provides an estimated 34 jobs (field, packing and other), or about 24% of the total jobs at Aloun Farms.

4.4.1.2 Agricultural Conditions

Agricultural lands within both the Koa Ridge Makai and Waiawa Petition Areas are suitable for growing low-elevation crops based on the favorable soil conditions and soil ratings over much of the site, the gently sloping terrain, the mild sunny climate, and good access (includes about 135 acres of land within the Waiawa Petition Area and about 430 acres of land within the Koa Ridge Makai Petition Area). Based on these agronomic conditions, the lands within the Petition Area are suitable for growing, but not limited to, the following commercial crops: asparagus, beans (green, bush, and snap), bell peppers, bittermelon, cantaloupe, Chinese peas, cucumbers, daikon, dry onions, eggplant, flowers/nursery products, ginger root, green onions, green peppers, head and semi-head lettuces, herbs, honeydew melons, limes, lotus root, lychee, Mānoa lettuce, mango, mustard cabbage, Oriental squash, parsley, pumpkins, seed crops, sweet corn, sweet potatoes, tangerines, and watermelons. The relative cool temperatures and low rainfall also makes the Koa Ridge Makai Petition Area well-suited for growing leafy vegetables and summer seed corn.

The approximately 430 acres of agricultural land in the Koa Ridge Makai Petition Area has crop production potential of about 6.5 million pounds per year (based on the mix of vegetable crops grown on the land, intensity of farming and yield per acre per year). The 135 acres of agricultural land at the Castle & Cooke Waiawa Petition Area has crop production potential of 2 million pounds per year (see Appendix H for assumptions).

Although conditions for agriculture are favorable within both the Koa Ridge Makai and Waiawa Petition Areas, the water allocation of 1.1 million gallons per day (MGD) from Waiāhole Ditch is only sufficient to irrigate about 314 acres of land in diversified crops, or about 41% of the total 766 acres of agricultural land owned by CCHH at Waiawa and Koa Ridge.

4.4.1.3 Locational Advantages and Disadvantages for Crop Farming

Due to the short trucking distance to Honolulu, the Honolulu International Airport, and Honolulu Harbor, the Petition Area is well-suited for serving the local consumer market and export markets. In the U.S. mainland market, farmers in Hawai‘i must compete against farmers on the mainland, as well as in Mexico, Central and South America, the Caribbean, Australia, New Zealand, and Southeast Asia, among others. Most of these competing farm areas incur lower production and delivery costs than Hawai‘i does. Competing against Mexico is particularly difficult given the North American Free Trade Agreement and Mexico’s proximity to major U.S. markets.

4.4.1.4 Land Available for Diversified Crops

Statewide, a vast amount of land has been released from plantation agriculture: about 256,200 acres between 1968 and 2007. During this period, the demand for land to cultivate diversified crops increased by about 26,300 acres, which is about 10% of the land released from plantation agriculture. With the acreage released from plantation agriculture outpacing the

demand for land for diversified crops, the net decrease of land in crop is estimated to be about 229,900 acres. While some of the released land has been converted or is scheduled to be converted to urban uses and tree plantations, an estimated 160,000+ acres remain available for diversified crops.

On O‘ahu, a similar release of plantation land occurred over this same period: about 51,900 acres released between 1968 and 2007 due to the contraction of five plantations and the closure of all but one of them. About 32,700 acres, or more than sixty percent of the 51,900 acres, were released after 1990, much of which is located outside the City and County of Honolulu’s Urban Community Boundary as shown on the CO SCP. In total, about 10,900 acres of former plantation land on O‘ahu remain available for other crops, including about 3,150 acres of former pineapple land in Kunia and about 7,750 acres of former sugarcane and pineapple land on the North Shore.

4.4.2 Probable Impacts

The Proposed Action is not expected to have a significant adverse impact on agricultural production in the State. In total, the Proposed Action would commit 565 acres of agricultural land to a non-agricultural use. In view of the available supply of farm land (160,000+ acres statewide and about 10,900 acres on O‘ahu), the development of this agricultural land – combined with the other planned developments in Hawai‘i – involves the loss of too little agricultural land to significantly affect either: 1) the growth of diversified crop farming (averaging about 160 acres per year in new acreage); or, 2) the relocation of farms that are being displaced or could be displaced from Central O‘ahu, ‘Ewa, and lower Kunia (about 3,600 acres).

The Proposed Action would eliminate existing cattle grazing and agricultural operations within the Petition Area, resulting in the loss of about 135 acres of good agricultural land in the Waiawa Petition Area that currently supports a fraction of one ranch job, and about 430 acres of arable land at the Koa Ridge Makai Petition Area that currently supports 34 agricultural jobs. No significant impacts to existing cattle and agricultural operations or employment are expected. There would be little or no loss of existing or potential agricultural activity since other lands are available for farming, and suitable replacement lands have been secured.

4.4.3 Mitigation

The herd currently using the Castle & Cooke Waiawa Petition Area and surrounding lands are planned to be relocated onto the rancher’s other leased lands. Furthermore, the supply of grazing land in Hawai‘i is very large – over 50,000 acres on O‘ahu alone – and has increased statewide due to the contraction of plantation agriculture. The decrease in grazing land on O‘ahu will amount to a loss of about 0.37% of the total available supply.

The farming operation currently using the Koa Ridge Makai Petition Area will relocate onto 335 acres of former pineapple lands north of the Dole Plantation by early 2010. The replacement land would allow for the same crops to be grown, while also maintaining the same production, revenues, operating and delivery costs, employment level, and payroll costs, although some adjustments in varieties and cultivation practices may be needed to accommodate the slightly

different agronomic conditions. The transition to the new fields may also require some additional expenditures associated with soils preparation and irrigation system installation.

The relocation of existing cattle and agricultural operations to other available agricultural lands would mitigate the impact to existing operations that currently use the Petition Area lands. In view of the negligible impact that the Proposed Action would have on the growth of Hawai‘i’s diversified agriculture industry and the availability of productive agricultural land on O‘ahu and within the State, no other mitigation measures are proposed.

4.5 ROADWAYS AND TRAFFIC

A Traffic Impact Assessment Report (TIAR) was prepared by Wilson Okamoto Corporation (Appendix I) to analyze the potential traffic-related effects of the Proposed Action. Traffic conditions were evaluated for the following conditions: Existing, Year 2016 Without Project, Year 2016 With Project and Year 2025 With Project (date of expected project buildout). The TIAR also responded to a November 2007 Resolution by the Mililani/Waipi‘o/Melemanu Neighborhood Board No. 25 requesting consideration of contextual information including commuter travel time analyses, rapid transit system impacts, 2030 Oahu Regional Transportation Plan project impacts, and the potential indirect and cumulative impacts of development.

A study evaluating alternative transportation components was also conducted for this EIS to identify possible transportation projects and programs designed to reduce impacts that might otherwise be caused by additional vehicle trips associated with the project (Weslin Consulting Services, Inc. (Appendix I)). Relevant parts of both these studies are summarized in the following section.

4.5.1 Affected Environment

4.5.1.1 Area Roadway System

The Petition Area is well serviced by regional transportation facilities that include the interstate freeway systems, Kamehameha Highway, and other major collector roadways. Traffic volumes along the freeway, Kamehameha Highway, and Ka Uka Boulevard in the project vicinity have been increasing slightly over the years due to on-going development within Central O‘ahu.

The proposed Koa Ridge Makai development will be located west of the Waipi‘o Interchange between the Interstate H-2 Freeway and Kamehameha Highway, immediately north of Ka Uka Boulevard. The Waipi‘o Interchange serves as a junction between the Interstate H-2 Freeway and Ka Uka Boulevard and is configured as a traditional “diamond interchange”. Primary access to Koa Ridge Makai will be via Ka Uka Boulevard between Moaniani Street and Ukee Street (east). Other access points include a second access to Ka Uka Boulevard, roadway connections at Kamehameha Highway and future connections at a new Interstate H-2 Freeway interchange on the northern portion of the site near the existing Pineapple Road overpass.

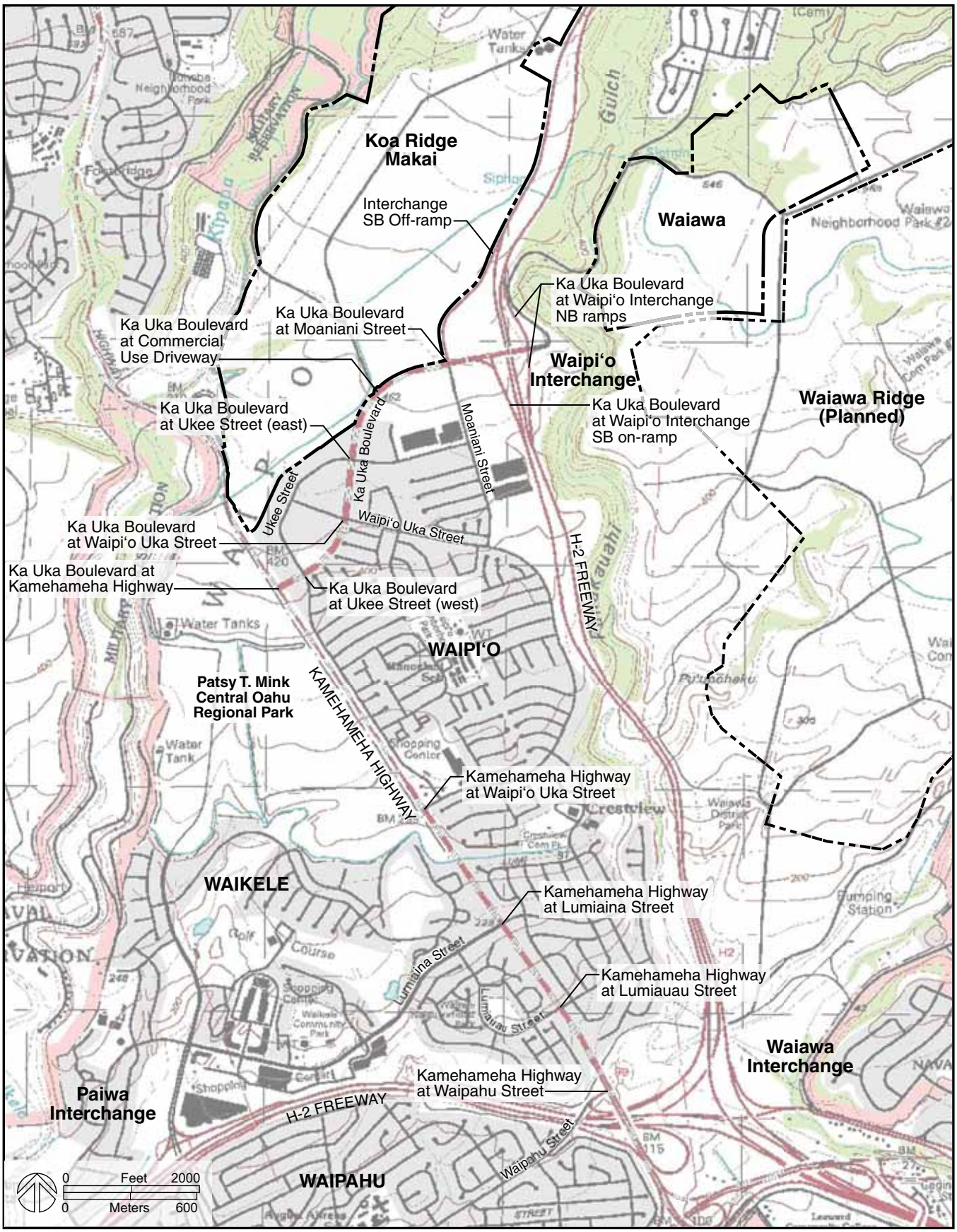
The proposed Waiawa development will be located east of the Waipi‘o Interchange near the northbound on- and off-ramps to the Interstate H-2 Freeway with access provided via an

eastward extension of Ka Uka Boulevard. There are two existing uses in the Waiawa area that will be affected by planned roadway construction. The State of Hawai‘i has a roadway access easement through the Castle & Cooke Waiawa Petition Area to its nearby Waiawa Correctional Facility. The roadway access easement will remain in place during construction of the project until primary access to the facility site is established from the extension of Ka Uka Boulevard. Access to the correctional facility will be maintained at all times during the construction period. The roadway access easement will be eliminated when the project's road network is completed and roadways are dedicated as public streets. Permanent access will be made available by the Waiawa Ridge development as development progresses into its mauka lands. The existing Mililani Memorial Park Access Road may need to be relocated as part of the Ka Uka Boulevard extension and proposed improvements to the Waipi‘o Interchange being undertaken by the Waiawa Ridge development. Should relocation be necessary, CCHH will assist the Waiawa Ridge development in its efforts to relocate the road.

To ensure adequate sampling of traffic data reflecting current traffic conditions, traffic count surveys were conducted during several periods spanning from 2007 to 2008. The most current traffic data available were collected in September 2008 that consisted of manual turning movement count surveys and traffic flow assessments in the vicinity of the project. In consultation with the State Department of Transportation, the manual turning movement counts were conducted between the morning peak hours of 6:00 AM and 9:00 AM, and between the afternoon peak hours of 3:00 PM and 6:00 PM at 12 locations along Ka Uka Boulevard and Kamehameha Highway (see Figure 4-2).

The morning peak hour of traffic generally occurs between 7:00 AM and 8:00 AM in the project vicinity. The afternoon peak hour of traffic generally occurs between the hours of 4:00 PM and 5:00 PM.

The highway capacity analysis performed in the TIAR is based upon procedures presented in the "Highway Capacity Manual" (Transportation Research Board 2000), and the "Highway Capacity Software" developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS). LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F". LOS "A" represents ideal or free-flow traffic operating conditions and LOS "F" represents unacceptable or potentially congested traffic operating conditions. LOS "D", a concept that typically describes conditions where traffic flow is stable with delays at intersections and congestion along roadway segments, is generally considered acceptable in urban areas. The LOS definitions are included in Appendix C of the TIAR (Appendix I).



Evaluated Intersections and Ramps **Figure 4-2**

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

4.5.1.2 Existing Conditions

Levels of service for the study locations are summarized in Table 4-2. As can be seen, most of the intersections and movements are functioning at acceptable levels of service for urban areas (LOS D or better). Problem intersections include Kamehameha Highway and Lumiaina Street (particularly left turn movements), and Kamehameha Highway and Waipahu Street (all eastbound movements). Level of service for commuters using the freeway system is computed in terms of travel time because of the existing level of congestion. Travel time provides an estimate of the amount of time it takes a commuter to travel between the Mililani Interchange with H-2 and the Ka‘ahumanu Street Overpass of H-1, a distance of about 7.5 miles. This segment spans the H-1 and H-2 merge at the Waiawa Interchange, considered to be one of the most congested segments of the freeway system. The study indicates that it currently takes between 8-16 minutes in the morning peak period heading southbound (8 minutes or less before 5 AM and after 8 AM, with the longest time (16 minutes) occurring about 6:30 AM). Afternoon peak period heading northbound experiences less delay with travel time more consistently in the range of 8-9 minutes. Traffic conditions during these periods include vehicles southbound queuing on H-2 about 4,000 feet up the H-2 from the Waiawa Interchange and eastbound vehicles queuing along H-1 back to the Paiwa Interchange.

Table 4-2: Existing and Projected (Year 2016 Without Project) Levels of Service

Intersection	Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Project	Exist	Year 2016 w/out Project
Ka Uka Blvd/ Waipi‘o IC NB Ramps*	EB	LT	B	-	D	-
		TH	A	A	B	C
	WB	TH-RT	A	B	B	D
	NB	LT-TH	B	C	D	D
		RT		-		-
	SB	LT-RT	-	D	-	D
Ka Uka Blvd/ Waipi‘o IC SB On-Ramp*	WB	LT	A	-	A	-
Ka Uka Blvd/ Moaniani St/ Waipi‘o IC SB Off-Ramp*	EB	TH-RT	D	C	E	E
	WB	LT	E	D	E	F
		TH	B	A	C	C
	NB	LT	D	D	D	F
		RT	D	A	E	A

Intersection	Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Project	Exist	Year 2016 w/out Project
	SB	LT-TH	D	D	E	D
		RT		C		D
Ka Uka Blvd/ Driveway	WB	LT	A	B	A	B
	NB	RT	B	B	B	B
Ka Uka Blvd/ Ukee St (East)**	EB	LT	A	A	B	A
		TH-RT	-	A	-	A
	WB	LT	B	A	A	A
		TH-RT	-	A	-	A
	NB	LT-TH-RT	C	B	D	B
	SB	LT-TH-RT	C	B	D	B
Ka Uka Blvd/ Waipi‘o Uka St	EB	LT	A	A	A	A
		TH-RT	A	A	A	A
	WB	LT	A	A	A	A
		TH-RT	A	A	A	A
	NB	LT-TH-RT	B	B	B	B
	SB	LT-TH-RT	B	B	B	B
Ka Uka Blvd/ Ukee St (West)	EB	LT	D	D	D	D
		TH-RT	C	B	C	C
	WB	LT	C	C	C	C
		TH-RT	B	B	B	B
	NB	LT-TH-RT	C	C	C	C
	SB	LT-TH-RT	B	B	B	B
Ka Uka Blvd/ Kamehameha Hwy***	EB	LT	D	D	D	D
		TH	C	D	D	D
		RT		A		A
	WB	LT	D	C	D	D
		TH	C		C	
		RT	A	B	A	B
	NB	LT	D	D	D	D
		TH	C	C	C	C
		RT	B	C	C	C
	SB	LT	C	C	D	D
		TH	A	B	B	B
		RT	A	A	B	B
Kamehameha Hwy/ Waipi‘o Uka St	EB	LT	D	D	D	D
		TH	D	D	D	D
		RT	A	A	A	A
	WB	LT	C	C	C	C

Intersection	Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Project	Exist	Year 2016 w/out Project
		TH-RT	B	B	C	C
	NB	LT	D	D	D	D
		TH	B	B	C	C
		RT	B	B	C	C
	SB	LT	D	D	D	D
		TH	B	B	C	C
		RT	B	B	B	B
Kamehameha Hwy/ Lumiaina St*	EB	LT-TH	E	D	E	D
		RT	A	A	A	A
	WB	LT	B	D	B	D
		TH-RT	B	D	B	D
	NB	LT	E	D	E	D
		TH	C	B	D	C
		RT	C	B	C	B
	SB	LT	E	D	E	D
		TH	D	C	D	C
		RT	A	A	A	A
Kamehameha Hwy/ Lumiauau St	EB	LT-TH	C	C	C	C
		RT	A	C	A	C
	WB	LT	C	C	C	D
		TH-RT	B	C	C	D
	NB	LT	D	D	C	C
		TH	B	B	A	A
		RT	A	A	A	A
	SB	LT	D	D	D	D
		TH	B	B	B	B
		RT	A	A	A	A
Kamehameha Hwy/ Waipahu St*	EB	LT	F	C	F	D
		RT		D		C
	NB	LT	F	D	F	D
		TH	B	A	D	B
	SB	TH	F	C	D	C
		RT	C	B	C	B

Source: Wilson Okamoto Corporation November 2008
*Intersection modifications implemented.
**Traffic signal system installed. ***Intersection modifications implemented.

Public Transportation. Central O‘ahu residents have a variety of alternatives to using private automobiles including TheBus, TheHandiVan and vanpools. Current TheBus service to the

project vicinity consists of Routes 52, 62 and 433. Route 52 is a suburban trunk route providing service between Turtle Bay and Ala Moana Center, passing Koa Ridge Makai on the H-2 Freeway. Route 62 is another suburban trunk route providing service between Wahiawā and Ala Moana Center via the H-2. Route 433 is a community circulator that connects Waipi‘o with the Waipahu area.

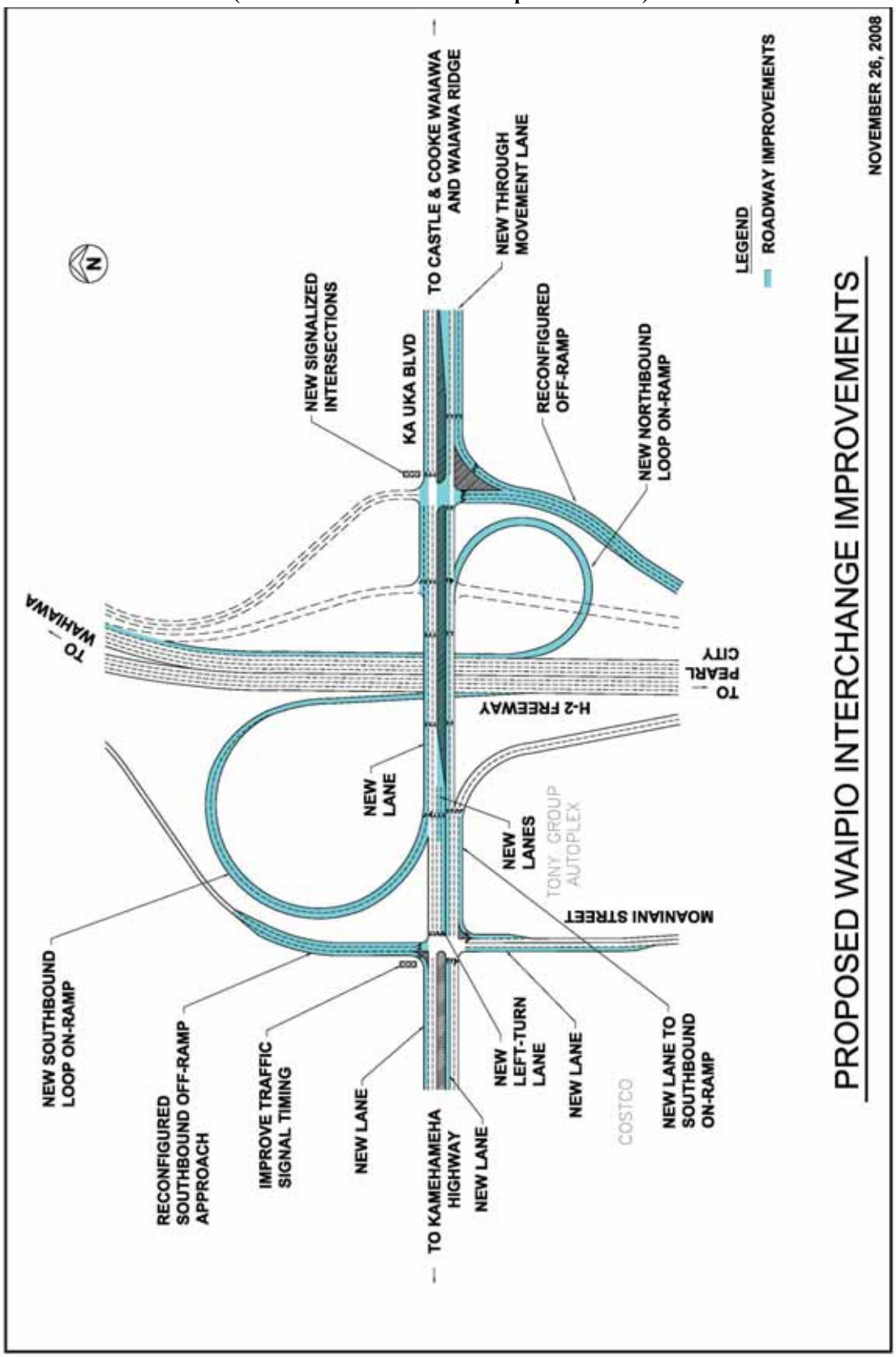
4.5.1.3 Projected Traffic Conditions without Project (No Action Alternative)

Regional Growth Rates. The TIAR's travel forecast is based upon the average annual traffic growth rate as described in the O‘ahu Regional Transportation Plan (ORTP). The ORTP, prepared for the O‘ahu Metropolitan Planning Organization (OMPO), serves as a guide for the development of the major surface transportation facilities and programs to be implemented on O‘ahu. Using 2008 as the Base Year, growth factors of 1.04 and 1.09 were subsequently applied to the existing through traffic demands along the Interstate H-2 Freeway, Ka Uka Boulevard, and Kamehameha Highway to achieve the projected Year 2016 and Year 2025 traffic demands, respectively.

Waiawa Ridge Development assumptions. Based on Institute for Transportation Engineers (ITE) trip generation rates and procedures, the Waiawa Ridge Development is anticipated to generate an external total of approximately 3,489 trips and 5,661 trips during the AM and PM peak hours of traffic, respectively. Accommodations were made for internal capture of site-generated trips during the PM peak period in accordance with ITE guidelines. These resulting external trips were assigned to the street network in the project vicinity to account for trips generated by the proposed Waiawa Ridge development.

2016 Roadway Improvements Without Project. The Without Project scenario analysis incorporates the development of other projects based on assumed development schedules and ambient growth to the Year 2016, as well as the implementation of improvements at the study intersections identified as needed by the Waiawa Ridge Development traffic studies. In addition, to accommodate increased traffic demands associated with development areas east of the Interstate H-2 Freeway, a freeway northbound loop on-ramp is incorporated in the analysis to eliminate conflicts resulting from those same trips utilizing the existing freeway northbound on-ramp. Figure 4-3 presents a conceptual layout of the proposed northbound on-ramp loop. Other minimum intersection and roadway improvements to accommodate Year 2016 Without Project conditions include the following projects:

Figure 4-3: Conceptual Layout of the Waipi‘o Interchange Improvements
(Source: Wilson Okamoto Corporation 2008)



Ka Uka Boulevard/Interstate H-2 Northbound On- and Off-Ramps (Figure 4-3)

- Two exclusive right-turn lanes on the Interstate H-2 northbound off-ramp approach.
- Four eastbound lanes located east of the Waipi‘o Interchange northbound on- and off-ramps to accept two free-flow right-turn lanes from the off-ramp and two eastbound through lanes on Ka Uka Boulevard.
- Two through movement lanes and an exclusive right-turn lane on the westbound approach of Ka Uka Boulevard.
- Two through lanes on the eastbound approach of Ka Uka Boulevard.
- Widen the Interstate H-2 northbound off-ramp to two ramp diverge lanes to accommodate two northbound left-turn lanes and two exclusive right-turn lanes at the ramp junction of Ka Uka Boulevard.

Ka Uka Boulevard/Interstate H-2 Southbound On-Ramp

- Southbound loop on-ramp to the Interstate H-2 freeway in the northwest quadrant of the Waipi‘o Interchange.
- One through lane, a shared through and right-turn lane, and an exclusive right-turn lane on the eastbound approach of Ka Uka Boulevard.
- One through lane and a shared through and right-turn lane on the westbound approach of Ka Uka Boulevard.

Ka Uka Boulevard/Interstate H-2 Southbound Off-Ramp/Moaniani Street

- Two exclusive left-turn lanes and two through lanes on the westbound approach of Ka Uka Boulevard.
- Two southbound departure lanes along Moaniani Street to accept the double left-turn lanes from westbound Ka Uka Boulevard.
- Three lanes on the Interstate H-2 southbound off-ramp approach to accommodate an exclusive left-turn lane, a shared left-turn/through lane, and an exclusive right-turn lane.
- Widen Ka Uka Boulevard between Moaniani Street and the Interstate H-2 southbound on-ramp (from west) to accommodate an additional eastbound lane providing free-flow movement from northbound right-turn Moaniani Street.

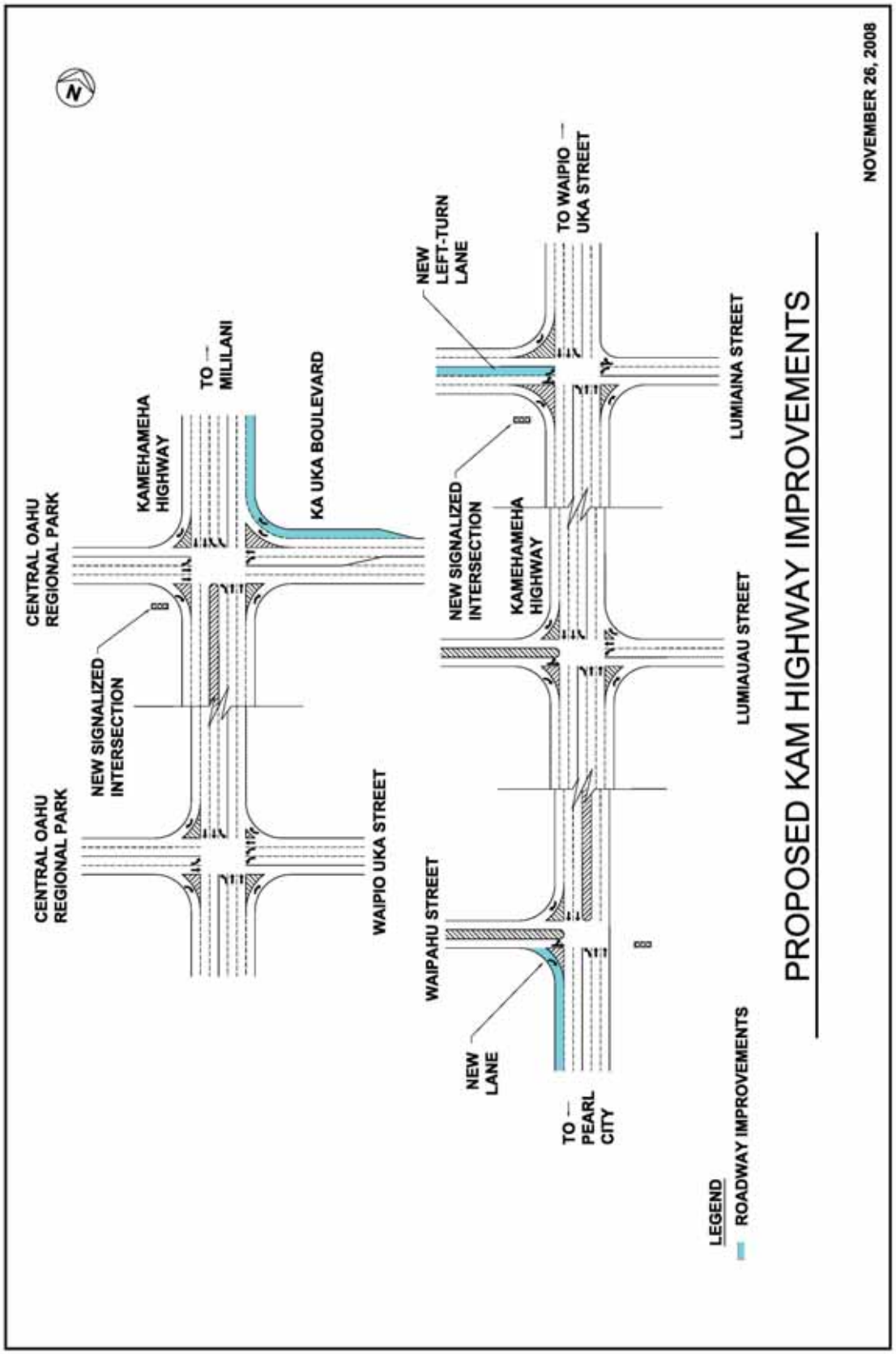
Ka Uka Boulevard/Kamehameha Highway (Figure 4-4)

- Modify the traffic signal phasing at the intersection to allow for simultaneous left-turn movements on the eastbound and westbound approaches.
- Provide an exclusive left-turn lane, a through lane, and two exclusive right-turn lanes on the westbound approach of Ka Uka Boulevard. Intersection geometry may need to be adjusted to accommodate the necessary approach laneage.

Kamehameha Highway/Lumiaina Street

- Provide an additional eastbound left-turn lane that results in an exclusive left-turn lane, a shared left-turn/through lane, and an exclusive right-turn lane on Lumiaina Street.
- Modify traffic signal system to permit split phases for the eastbound and westbound approaches of Lumiaina Street.

Figure 4-4: Proposed Kamehameha Highway Improvements
(Source: Wilson Okamoto Corporation 2008)



Kamehameha Highway/Waipahu Street

- Provide an additional lane on the eastbound approach of Waipahu Street that results in separate left-turn and right-turn lanes with a southbound intersection departure lane on Kamehameha Highway to accommodate the new eastbound right-turn lane.
- Modify traffic signal system to permit overlap phasing for eastbound right-turn movements.

Projected Year 2016 Traffic Volumes Without Koa Ridge Makai and Waiawa Developments. The Year 2016 AM and PM peak hour traffic volumes and operating conditions at the study intersections without the proposed Koa Ridge Makai and Waiawa developments are shown in Table 4-2. As previously discussed, at the time the TIAR was prepared, signal hardware and appurtenances have already been installed at the intersection of Ka Uka Boulevard and Ukee Street (east). As such, this intersection is assumed to be signalized by the Year 2016 without the project.

Based on the implementation of the intersection and roadway improvements discussed above, LOS at the two problem intersections (Kamehameha Highway at Lumiaina Street and Kamehameha Highway at Waipahu Street) improve to LOS D or above, with all 12 analyzed routes and intersections operating at LOS D or better.

4.5.2 Probable Impacts and Mitigation (Projected Year 2016 and 2025 Traffic Volumes With Koa Ridge Makai and Waiawa Developments)

This section evaluates traffic conditions for the 2016 and 2025 horizon periods with the Proposed Action.

Generation/distribution assumptions. The trip generation methodology utilized by the TIAR is based upon generally accepted techniques developed by ITE and published in "Trip Generation, 7th Edition," 2003. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per dwelling unit or 1,000 square feet of development.

In consideration of the Koa Ridge project's plans which advocate mixed use, compact development, and a pedestrian/transit emphasis, a separate assessment was undertaken to evaluate potential reductions in vehicle trip generation (*Castle & Cooke Koa Ridge Makai and Waiawa Project, Alternative Transportation Components,* prepared by Weslin Consulting Services, Inc., November 2008) (Appendix I). The study notes that the ITE trip generation rates, based on vehicle-oriented, single land use projects, can be reduced for multi-land use projects and those projects with good pedestrian-bicycle facilities and access to public transportation. Accordingly, based on the project's more progressive land use plan and characteristics, adjustments were made to the ITE rates based on ITE guidelines and published studies conducted elsewhere in the country. Internal capture refers to trips that have both their origin and destination within the project. The Weslin study notes that the Koa Ridge Makai and Waiawa projects have a very balanced mix of land uses, resulting in a estimated 24% to 28% reduction during peak periods from internal capture. Pass-by trips, those trips that are assumed to pass-by or be diverted into and out of a commercial use such as a restaurant or retail store (i.e., already

on the road) account for a 1% to 4% adjustment during the peak hours. Bus transit trip reductions are estimated at 8%. Pedestrian and bicycle trip reductions were calculated at 3%. Transportation Demand Management (TDM) techniques which include subsidized transit passes, flexible work schedules, car sharing and carpooling programs are estimated to yield a 16% reduction in trips. In total, the Weslin Study estimated a total potential trip reduction of 56% during peak periods.

Although the Weslin study provides a good rationale for the reductions, some of the specific components, such as bus transit routes and TDM strategies, have yet to be specifically determined for the project. For the purpose of TIAR, therefore, a more conservative assumption of 30% total reduction of site-generated trips was assumed for the traffic analysis.

Roadway improvement assumptions. The cumulative volumes consist of project-generated traffic superimposed over Year 2016 projected traffic demands. The implementation of intersection and roadway improvements identified above for the *Year 2016 Without Castle & Cooke Project* analysis scenario is also assumed. Additional intersection and roadway improvements assumed for the cumulative analysis include the following (Figures 4-5 and 4-6):

Ka Uka Boulevard/Interstate H-2 Northbound Off-Ramp

- Provide an additional northbound left-turn lane resulting in two exclusive left-turn lanes and a shared left-turn/through lane.

Ka Uka Boulevard/Interstate H-2 Southbound Off-Ramp/Moaniani Street

- Modify the southbound approach to include an exclusive left-turn lane, a through lane, and an exclusive right-turn lane.
- Modify the traffic signal phasing at the intersection to allow for simultaneous left-turn movements on the northbound and southbound approaches. Intersection geometry may need to be adjusted to provide adequate vehicle spacing to accommodate turning maneuvers.

Ka Uka Boulevard/Commercial Use Driveway/New Spine Road (Figure 4-5)

- Three lanes on the southbound approach of the Spine Road (Koa Ridge Makai Access) to accommodate two exclusive left-turn lanes and a shared through and right-turn lane.
- Provide an exclusive right-turn lane on the westbound approach of Ka Uka Boulevard between the H-2 southbound off-ramp and Spine Road.
- Install a traffic signal system with protected left-turn movements along Ka Uka Boulevard.

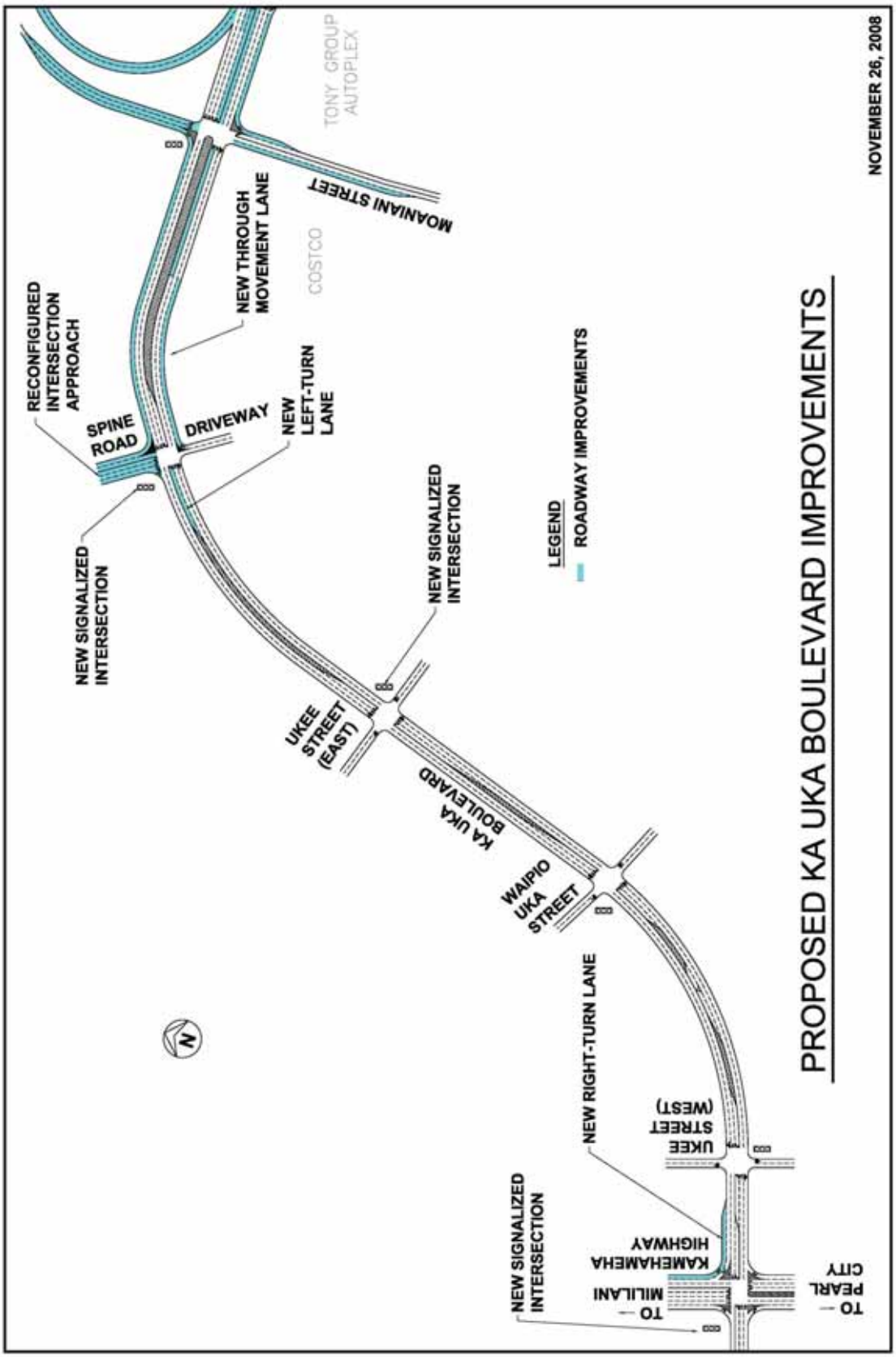
Kamehameha Highway/New Project Access Road (Figure 4-5)

- Provide project access connection to Kamehameha Highway north of Ka Uka Boulevard as a full-service signalized intersection.
- Coordinate the traffic signal system with other traffic signal systems in the vicinity.

Miscellaneous Improvements

- Coordinate the traffic signal systems along the entire length of Ka Uka Boulevard to improve traffic flow progression along the roadway.

Figure 4-5: Proposed Ka Uka Boulevard Improvements
(Source: Wilson Okamoto Corporation 2008)



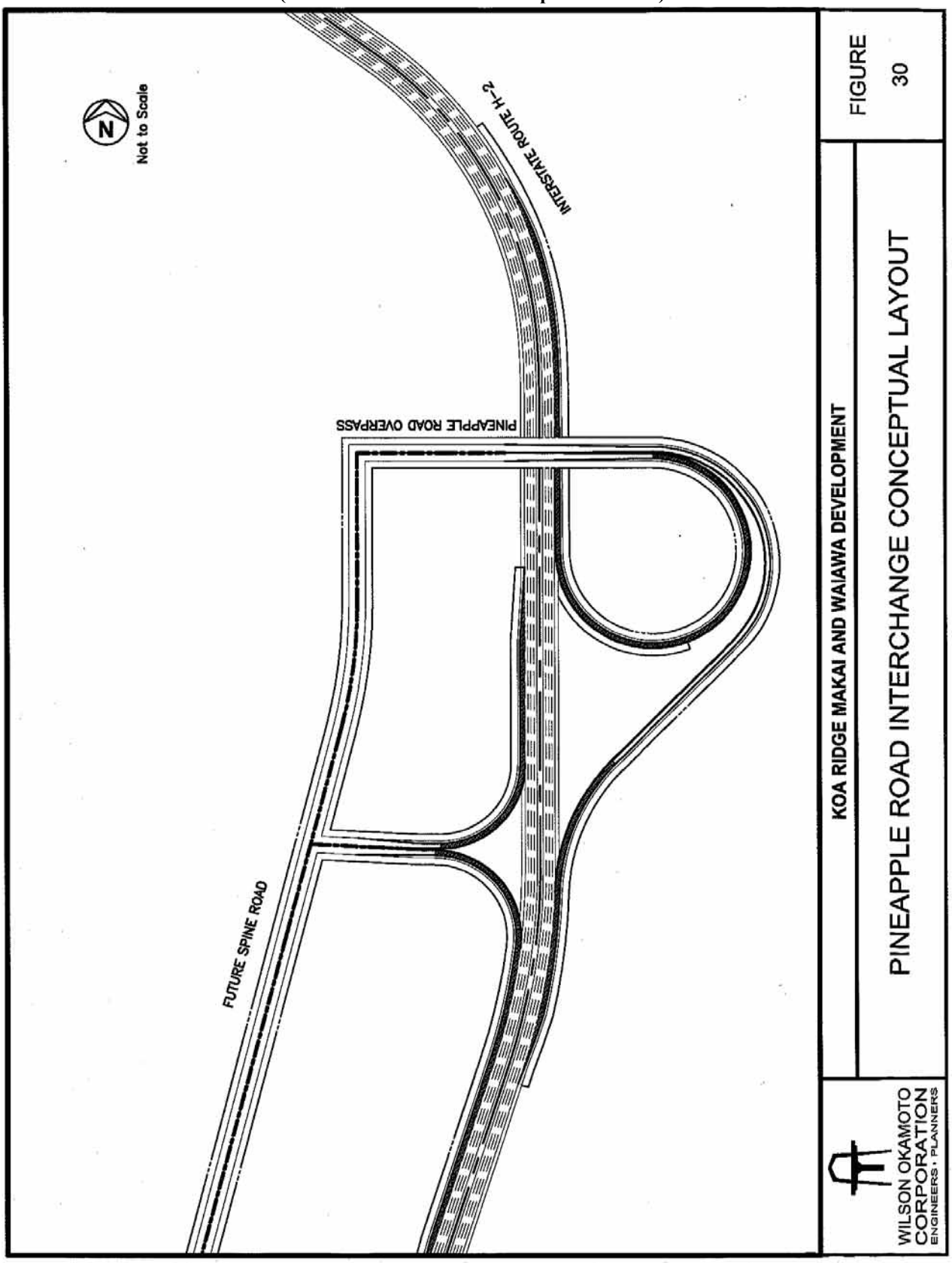
Public transportation assumptions. The Weslin report (Appendix I) developed a number of alternative bus service options to serve Koa Ridge Makai and Waiawa to evaluate potential reductions in the amount of external privately owned vehicles exiting the project areas. The options ranged from maintaining the existing service to creating a Central O'ahu Regional Bus Transit Station in the H-2 center median north of the Waiawa Interchange, accessible to both the Koa Ridge Makai and Waiawa projects via a new bicycle and pedestrian bridge across H-2. Option 4 (construction of the Pineapple Road Interchange and realignment of TheBus routes 50 and 52 through Koa Ridge) was recommended because it represents the most predicable transit outcome in the year 2025, given current circumstances on O'ahu. Route 50 is a planned new suburban trunk service connecting the Mililani and Waipahu Transit stations with the planned Koa Ridge Makai station.[1]

Projected Impacts for Year 2016. As shown in Table 4-3, all 12 intersection and routes operate at acceptable conditions (LOS D or better). From the perspective of a commuter using the H-2/H-1 Freeway, commute time are projected to increase, however. Morning peak period commute times between Mililani Interchange with H-2 and the Ka'ahumanu Street Overpass of H-1 would increase from 8-16 minutes in the morning peak period (existing condition) to between 10-21 minutes (6:30 AM continues to represent the slowest time period). Traffic conditions during these periods include vehicles southbound queuing on H-2 about 8,000 feet up from the H-2/H-1 merge. The simulation reflects existing roadway configurations (e.g., no improvements to the roadway infrastructure or consideration of the City's rail transit project). It is expected that travel time would reduce when incorporating these factors.

Projected Impacts for Year 2025. By 2025, a new interchange for the Interstate H-2 Freeway is proposed to be constructed at the existing Pineapple Road overpass (Figure 4-6). The operational and design analyses of the interchange will be included in an Interstate Access Modifications report for consideration by the Federal Highway Administration. Although this connection will provide the development of a third access point, it is primarily expected to serve those portions of the project constructed during the second phase of development due to the proximity of the other access points to the areas developed during the first phase. As such, all site-generated vehicles associated with the Year 2025 or second phase of the project are assumed to utilize the new interchange to access the Interstate H-2 Freeway with the exception of internal trips within Waipi'o. Similar to those generated by the first phase of development, these vehicles are assumed to utilize the Spine Road and Ka Uka Boulevard to access Moaniani Street, Ukee Street (East), Waipi'o Uka Street, or Ukee Street (West). The distribution of traffic between these local roadways was based upon the relative distribution of turning traffic at each of these roadways.

[1] According to the Weslin study, Option 4 is assumed to generate an 8% reduction in external trips. The Central O'ahu Regional Bus Transit Station options (5 & 6) are believed to be able to produce up to a 20% reduction, especially in the peak hour.

Figure 4-6: Pineapple Road Interchange Conceptual Layout
(Source: Wilson Okamoto Corporation 2008)



The cumulative Year 2025 AM and PM peak hour traffic conditions resulting from the projected external traffic, ambient growth, other developments in the region, and the proposed Koa Ridge Makai and Waiawa developments are summarized in Table 4-3. Projected Year 2016 operating conditions with the proposed developments are provided for comparison purposes.

As shown in Table 4-3, all 12 intersection and routes continue to operate at acceptable conditions (LOS D or better). From the perspective of a commuter using the H-2/H-1 Freeway, commute time will increase slightly over 2016 conditions with the project. Morning peak period commute times between Mililani Interchange with H-2 and the Ka‘ahumanu Street Overpass of H-1 would increase from 10-21 minutes in the morning peak period (2016 condition) to between 11-23 minutes (6:30 AM continues to represent the slowest time period). Traffic conditions during these periods include vehicles southbound queuing about 10,000 feet up H-2 from the H-2/H-1 merge.

During the afternoon peak periods, the predominant traffic volumes would continue to occur in the westbound direction as a result of significant future developments expected on the west side of the island. Along the westbound Interstate H-1 Freeway, traffic queues would continue to extend upstream through the Waiau Interchange and beyond the Hālawa Interchange. Just east of the Waiawa Interchange, the westbound lanes of the Interstate H-1 Freeway segment would operate at LOS “F” during the projected afternoon peak periods of traffic for both Year 2016 and Year 2025.

Table 4-3: Projected With Project (Year 2016 and Year 2025) Levels of Service

Intersection	**Traffic Movement**		**AM**		**PM**	
			Year 2016 w/Proj	Year 2025 w/Proj	Year 2016 w/Proj	Year 2025 w/Proj
Ka Uka Blvd/ Waipi‘o IC NB Ramps/ Cemetery Road	Eastbound	TH	B	A	C	C
	Westbound	TH-RT	B	B	C	D
	Northbound	LT-TH	C	D	C	D
	Southbound	LT-RT	D	D	D	D
Ka Uka Blvd/ Moaniani St/ Waipi‘o IC SB Off-Ramp	Eastbound	TH-RT	C	C	D	D
	Westbound	LT	D	D	D	D
		TH	A	A	B	B
	Northbound	LT	D	D	D	D
		RT	A	A	A	A
	Southbound	LT	C	C	D	D
		TH	D	D	D	D
		RT	A	A	A	A
Ka Uka Blvd/ Driveway*	Eastbound	LT	D	D	D	D
		TH-RT	B	B	B	B
	Westbound	LT	C	C	C	D
		TH	A	A	B	A
		RT	A	A	A	A

Intersection	Traffic Movement		AM		PM	
			Year 2016 w/Proj	Year 2025 w/Proj	Year 2016 w/Proj	Year 2025 w/Proj
	Northbound	RT	A	A	A	A
	Southbound	LT	C	C	C	C
		TH-RT	C	C	B	C
Ka Uka Blvd/ Ukee St (East)	Eastbound	LT	A	A	A	A
		TH-RT	A	A	A	A
	Westbound	LT	A	A	A	A
		TH-RT	A	A	A	A
	Northbound	LT-TH-RT	B	B	B	B
	Southbound	LT-TH-RT	B	B	B	B
Ka Uka Blvd/ Waipi‘o Uka St	Eastbound	LT	A	A	A	A
		TH-RT	A	A	A	A
	Westbound	LT	A	A	A	A
		TH-RT	A	A	A	A
	Northbound	LT-TH-RT	B	B	B	B
	Southbound	LT-TH-RT	B	B	B	B
Ka Uka Blvd/ Ukee St (West)	Eastbound	LT	D	D	D	D
		TH-RT	B	B	C	C
	Westbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Northbound	LT-TH-RT	C	C	C	C
	Southbound	LT-TH-RT	B	B	B	C
Ka Uka Blvd/ Kamehameha Hwy	Eastbound	LT	D	D	D	D
		TH	D	D	D	D
		RT	A	A	A	A
	Westbound	LT-TH	C	D	D	D
		RT	B	B	C	C
	Northbound	LT	D	D	D	D
		TH	C	C	C	C
		RT	C	C	C	C
	Southbound	LT	C	C	D	D
		TH	B	B	B	B
		RT	A	A	B	B
Kamehameha Hwy/ Waipi‘o Uka St	Eastbound	LT	D	D	D	D
		TH	D	D	D	D
		RT	A	A	A	A
	Westbound	LT	C	C	D	D
		TH-RT	C	C	C	C
	Northbound	LT	D	D	D	D
		TH	B	B	C	C
		RT	B	B	C	B

Intersection	Traffic Movement		AM		PM	
			Year 2016 w/Proj	Year 2025 w/Proj	Year 2016 w/Proj	Year 2025 w/Proj
	Southbound	LT	D	D	D	D
		TH	B	B	C	C
		RT	B	B	B	B
Kamehameha Hwy/ Lumiaina St	Eastbound	LT-TH	D	D	D	D
		RT	A	A	A	A
	Westbound	LT	D	D	D	D
		TH-RT	D	D	D	D
	Northbound	LT	D	D	D	D
		TH	B	B	C	C
		RT	B	B	B	B
	Southbound	LT	D	D	D	D
		TH	C	C	C	C
		RT	A	A	A	A
Kamehameha Hwy/ Lumiauau St	Eastbound	LT-TH	C	C	D	D
		RT	C	C	D	D
	Westbound	LT	C	C	D	D
		TH-RT	C	C	D	D
	Northbound	LT	D	D	C	C
		TH	B	A	A	A
		RT	A	A	A	A
	Southbound	LT	D	D	D	D
		TH	B	B	B	B
		RT	A	A	A	A
Kamehameha Hwy/ Waipahu St*	Eastbound	LT	D	D	D	D
		RT	D	D	C	C
	Northbound	LT	D	D	D	D
		TH	A	A	B	B
	Southbound	TH	C	D	C	C
		RT	B	B	B	B

4.5.3 Other Considerations

4.5.3.1 TDM strategies

Further strategies to reduce traffic demands in the region and improve traffic operations are being considered. These TDM strategies are related to land use planning concepts and operations of the individual land uses. The following are TDM strategies for considerations that may be applied to commercial, office, or similar applicable land uses to further mitigate traffic impacts to the surrounding roadways in the vicinity:

- Implement flexible or staggered work shift times for employees when possible to minimize trips during peak periods of traffic.
- Establish a bus pass program for employees to encourage the use of public transit. This initiative may be in the form of a subsidized program as an incentive to attract employees to use public transit as a mode of travel.
- Provide adequate and secure bicycle parking areas to encourage the use of alternate modes of travel.
- Encourage ride-sharing and establish a program to identify employees of same work shifts and similar travel routes that potentially may carpool together. The program should be initiated by surveying the work force and coordinating the matching of employees desiring to participate in the ride-sharing program. The program may also consider the assignment of convenient parking stalls for carpooling vehicles, as well as, discounted parking rates as incentives.
- Restrict deliveries to off-peak hours when possible to minimize trips during peak periods of traffic.

In addition, for the residential uses within the development, some or all of the following land use planning strategies and concepts could be considered:

- Design mixed-use components within the project to reduce the use of regional transportation facilities.
- Provide multiple or alternate routes within the project that promote connectivity concepts to lessen the reliance on specific travel routes.
- Provide a system of safe and usable pedestrian routes.
- Provide safe and secure bike facilities.
- Consider park-and-ride lots on or in the vicinity of the project coinciding with supporting transit service.

Detailed discussions of these and other strategies are included in *Castle & Cooke Koa Ridge Makai and Waiawa Project, Alternative Transportation Components,* prepared by Weslin Consulting Services, Inc. (Appendix I).

4.5.3.2 City Rail System Benefits

The proposed Honolulu High-Capacity Transit Corridor Project is intended to increase east-west mobility on O‘ahu’s most heavily congested corridor. As described in the November 2008 Draft EIS, the transit project is intended to:

- provide faster, more reliable public transportation service than can be achieved with buses operating in congested mixed-flow traffic
- provide reliable mobility in areas of the corridor with people of limited income, an aging population and rapidly developing areas
- provide additional transit capacity and an alternative to the automobile, and
- moderate anticipated traffic congestion in conjunction with other improvements included in the ORTP

The rapid transit system alignment does not extend to Central O'ahu, however, Central O'ahu commuters would benefit to the extent that the Interstate H-1 freeway corridor from Kapolei to the Waiawa Interchange experiences capacity relief and there is a reduction in traffic congestion on the H-1 Freeway to and from the west. The transit project's Draft EIS reports that total congestion would be reduced by 23% with the transit improvements.

Although not directly served by the rail system, Central O'ahu commuters can make use of a complementary system to realize the benefits of travel mode choices afforded to those along the proposed route. This would be in the form of transit system feeder buses or shuttles traveling between established and planned park-and-ride facilities and the rail transit stations. The current community service and long haul bus routes would need to be modified to provide connections between users and these stations. Existing park-and-ride lots in Central O'ahu and existing and proposed bus transit stations could be integrated with the high-capacity transit system with modified shuttle services supporting the high-capacity transit system.

A major transit station and supporting park-and-ride facility are planned in the vicinity of the Pearl Highlands Shopping Center (Kamehameha Highway at Kuala Street). The Pearl Highlands Station will have a parking structure with 1,600 parking stalls for Park-and-Ride commuters. Central O'ahu commuters will benefit from the construction of a new direct access ramp from the H-2 Freeway. The ramp connection will allow both bus transit vehicles and park-and-ride automobiles direct access with the proposed Pearl Highlands Transit Station park-and-ride lot. Of all the stations along the rail route, the Pearl Highlands Station is expected to have the highest number of boardings in the morning two-hour peak period. The Park-and-Ride Lot at Pearl Highlands is the largest of four proposed park-and-ride lots, and is the only one with structure parking. Discussion of proposed modified bus service routes and system is included in *Castle & Cooke Koa Ridge Makai and Waiawa Project, Alternative Transportation Components,* prepared by Weslin Consulting Services, Inc. (Appendix I) and summarized in a following subsection.

The transit project's construction phasing has the East Kapolei to Pearl Highlands segment as the first of four phases of development. Central O'ahu commuters thus would be one of the early beneficiaries of the rail transit project. Upon build-out in 2018, Central O'ahu commuters can be expected to benefit from the following transit project effects:

- improved transit service mobility, reliability, equity, and access,
- decline in vehicle miles traveled, vehicle hours traveled, and vehicle hours of delay, and
- improved transit travel times between major employment centers in Downtown and West O'ahu.

4.5.3.3 Regional Transportation Improvements and Issues

A number of regional transportation projects are planned in the vicinity that are in various stages of planning and implementation. These projects are identified in the ORTP, that serve as a planning document to address mobility issues and transportation needs for the island of O'ahu. The plan is intended to integrate growth patterns of the island's communities recognizing available financial resources over the next 25 years. The plan identifies transportation projects and outlines an implementation program based on available transportation funds to incorporate

mid- and long-range projects for the island. The following transportation projects in the region identified in the ORTP are listed here and assessed more fully in the TIAR (construction cost estimates are reported in 2005 dollars).

H-1 Widening of Westbound lanes between Waiau Interchange and Waiawa Interchange
The project would provide an additional travel lane in the westbound direction for a total of six westbound travel lanes between the Waiau and Waiawa Interchanges. Cost: $137,500,000 Timeframe: 2006 to 2015.

H-1 Widening of Westbound lanes between Waiawa Interchange and Paiwa Interchange
The proposed H-1 Freeway widening project would provide an additional westbound lane between the Waiawa and Paiwa Interchanges to provide additional freeway capacity and improve westbound traffic flow. Cost: $6,900,000 Timeframe: 2006 to 2015.

H-1 PM Zipper Lane from Keʻehi Interchange to Kunia Interchange
The PM westbound zipper lane from the Keʻehi to Kunia Interchanges would create additional freeway capacity by deploying movable concrete barriers similar to those in use during the morning peak periods. Cost: $19,900,000 Timeframe: 2006 to 2015.

H-1 Waipahu Westbound off-ramp Widening
Construction of an additional off-ramp lane to facilitate traffic movement exiting the freeway at the Waipahu Street westbound off-ramp. Cost: $11,700,000 Timeframe: 2006 to 2015.

H-2 Waipiʻo Interchange on- and off-ramps and Ka Uka Overpass Widening
Similar to mitigation measures identified in the traffic study, the proposed project includes the widening of the on- and off-ramps at the Waipiʻo (Ka Uka) Interchange, widening of the Ka Uka Boulevard Overpass, including separate turning lanes and intersection modifications that will provide additional storage capacity and improved traffic flow at the ramp junctions of the interchange. In addition, this project includes the widening of the Ka Uka Overpass to include a total of seven lanes including turn lanes. Cost: $20,700,000 Timeframe: 2006 to 2015.

H-1/H-2 Merge Eastbound Transition Lane to Halawa Interchange
The project is to improve the merging characteristics of the bottleneck condition at the H-2 and H-2 merge. The removal of the bottleneck condition is expected to improve southbound and eastbound traffic flows on the freeways particularly during the morning peak periods. Cost: $45,500,000 Timeframe: 2006 and 2015.

H-1 Widening of Eastbound lanes from Waiawa Interchange
The proposed H-1 widening project would provide an additional travel lane eastbound between the Waiawa and Halawa Interchanges, including freeway shoulder improvements. The new lane would be available throughout the day and would improve traffic flow and increase safety for eastbound motorists. Cost: $251,300,000 Timeframe: 2016 and 2030.

Pineapple Road Interchange and Overpass Widening
Similar to the mitigation measures proposed in the traffic study, this project entails the development of a full-service freeway interchange to accommodate future developments in

Central O‘ahu and surrounding regions. The project also includes the widening of the Pineapple Road Overpass from two lanes to four lanes to accommodate anticipated traffic demands at the interchange. Cost: $50,000,000 Timeframe: 2016 to 2030.

Elevated Reversible 2-Lane Highway from Waiawa Interchange to Ke‘ehi Interchange
A permanent elevated reversible 2-lane highway along the Interstate H-1 freeway between the Waiawa and Ke‘ehi Interchanges would provide double the operating capacity of a single zipper lane configuration. A reversible roadway is intended to service imbalanced traffic flows associated with daily commuter traffic periods without impacting opposing traffic flow, as would a zipper lane deployment. Cost: very high at $2,500,000,000 Timeframe: considered a potential or “Illustrative” project not part of the official ORTP so no timeframe set.

Central Mauka Road
The Central Mauka Road project is intended to provide a second or alternate route along the east side of the Interstate H-2 corridor between Waiawa and Mililani Mauka, connecting Kamehameha Highway in Pearl City and Meheula Parkway in Mililani Mauka with connections at available interchanges along the route. The major challenges facing the project are its high cost of construction and ineligibility for federal highways funding because it is not part of the State Highway System. Cost: $160,000,000 Timeframe: 2016 to 2030.

Kamehameha Highway Paiwa Road Connection
Northward extension of the roadway in Waipahu at Lumiauau Street in Waikele to the Kamehameha Highway intersection with Ka Uka Boulevard to provide an alternate route, improve circulation and connectivity. However, the majority of the surrounding neighborhood residents do not support the project. Cost: $15,000,000 Timeframe: considered an “Illustrative” project so no timeframe set.

Kamehameha Highway Widening
Widening of Kamehameha Highway from a three-lane undivided roadway to a four lane divided roadway between Lanikuhana Avenue in Mililani and Ka Uka Boulevard in Waipi‘o. Project currently being pursued by DOT. Cost: $78,900,000 Timeframe: 2006 to 2015.

H-2 Park-and-Ride Facility
A park-and-ride facility has been considered within the median of the Interstate H-2 Freeway, just north of the Waipi‘o Interchange. In the City’s Draft EIS for the rail transit project, this H-2 median park-and-ride facility was not considered, presumably since the Pearl Highlands Station incorporates a large 1,600-stall park-and-ride structure with a direct access ramp from the H-2 freeway. The Alternative Transportation Components report (Weslin 2008, Appendix I) considered the center median island as an option for an H-2 Freeway Flyer Transit Station. A regional bus station could be created in this median island as done in Seattle and Los Angeles using direct access ramps from the HOV lanes. Access to the Station would be by a pedestrian and bicycle only bridge over H-2 with direct, curb-separated, safely designed pathway connections integrated with the Koa Ridge Makai site. Cost and Timeframe: undetermined. This project is not a part of the ORTP.

These regional highway improvements could not be reasonably included in the traffic analysis because: 1) implementation of the improvements is programmed based on available transportation funds and priorities which are difficult to establish; and 2) determining which of the many identified improvements would be completed by a certain timeframe is difficult to estimate. Nevertheless, the traffic analysis represents a more conservative assessment for determining impacts and necessary mitigation improvements. Having any of the regional improvements implemented within the study period would result in improved conditions over that indicated. Thus, the traffic analysis conducted already incorporates methods to assess the cumulative impacts associated with the proposed project.

4.6 NOISE

4.6.1 Affected Environment

An environmental noise assessment report was conducted by D.L. Adams Associates in November 2008 to characterize the ambient noise environment and to provide baseline traffic noise measurements for the purposes of validating a traffic noise prediction model. The findings of the assessment are summarized below and the full report is attached as Appendix J.

The noise assessment included continuous long-term (24-hour) ambient noise level measurement at four locations within the Petition Area, and short-term noise measurements and corresponding traffic counts in four locations along Kamehameha Highway, Ka Uka Boulevard, and in the Petition Area.

Vehicular traffic noise from the nearby H-2 Freeway dominates the ambient noise environment near the eastern boundary of the Koa Ridge Makai Petition Area and the western boundary of the Castle & Cooke Waiawa Petition Area. Noise levels close to the freeway generally range from 53 A-weighted decibels[2] (dBA) during the low traffic times to approximately 69 dBA during peak hour traffic times. At the northeastern boundary of the Castle & Cooke Waiawa Petition Area, noise levels are much quieter and generally range from 30 dBA at night to 57 dBA during the day. The average day-night level, Ldn, varied from 57 dBA and 65 dBA depending on the proximity to the H-2 Freeway. The dominant noise sources include traffic, wind, birds, and farming equipment.

Short-term traffic noise measurements and corresponding traffic counts were taken at Ka Uka Boulevard near its intersection with Moaniani Street; at Kamehameha Highway at points south and north of its intersection with Ka Uka Boulevard; and adjacent to the H-2 Freeway near the Pineapple Road Overpass.

4.6.2 Probable Impacts and Mitigation

[2] Studies have shown conclusively that at equal sound pressure levels, people are generally more sensitive to certain higher frequency sounds (such as made by speech, horns, and whistles) than most lower frequency sounds (such as made by motors and engines) at the same level. The A-weighted scale was developed to address people's differing sensitivities to higher or lower frequency sounds by adjusting the sound level in each frequency band in much the same manner that the human auditory system does. Thus the A-weighted sound level (read as "dBA") becomes a single number that defines the level of a sound and has some correlation with the sensitivity of the human ear to that sound. Different sounds with the same A-weighted sound level are perceived as being equally loud.

4.6.2.1 Construction Period

Development of the project site will involve excavation, grading, and other typical construction activities that will temporarily generate significant amounts of noise. This construction noise may impact existing adjacent properties such as the Mililani Memorial Park, the commercial areas along Ka Uka Boulevard, as well as planned and proposed adjacent developments such as the developments at Waiawa to the south. Similarly, residences from the initial phases of the development may be impacted by subsequent phases of construction due to their proximity. Pile-driving and earth-moving equipment will likely be the loudest equipment used during construction.

During construction, DOH's noise regulations and conditions for construction activities will be followed, and a permit will be obtained from the DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the maximum permissible levels. Construction equipment and on-site vehicles or devices requiring an exhaust of gas or air will be equipped with mufflers. Construction-related blasting, if required, will utilize appropriate blast design techniques to minimize noise impacts on nearby noise sensitive areas. Additional noise mitigation such as temporary noise barriers, or time of day usage limits for certain types of activities will be employed as required by DOH. Construction activities that emit noise in excess of the maximum permissible sound levels established by the DOH would be scheduled appropriately.

4.6.2.2 Operational Period

All project activities shall comply with the Administrative Rules of the State DOH, Chapter 11-46, on "Community Noise Control." Noise from stationary mechanical equipment such as air handling equipment and condensing units would be required to meet the State DOH noise rules, which stipulate maximum permissible noise limits of 55 dBA during the daytime hours and 45 dBA during nighttime hours for single-family residential areas. Typical noise mitigation for stationary equipment includes mufflers, silencers, acoustical enclosures, and noise barrier walls. Design strategies that locate noise generating equipment away from neighbors and residential units would be incorporated where practical to control the noise emanating from stationary mechanical equipment.

Traffic Noise. The noise assessment estimated increases in peak hour traffic noise as a result of the project by measuring existing traffic noise levels along key roadways adjacent to and in the vicinity of the project. The predicted maximum traffic noise level increase on the surrounding community due to the project is less than 2 decibel (dB) along Ka Uka Boulevard and Kamehameha Highway. The minimal change in noise levels perceptible to the average listener is generally taken to be 3 dB; therefore, the increase in traffic noise due to the project will not be significant.

Noise from the H-2 Freeway, Kamehameha Highway, and Ka Uka Boulevard may significantly impact the residences of the proposed development. Appropriate setback distances will need to be taken into consideration to ensure that the U.S. Federal Highway Administration (FHWA) maximum noise limit of 67 dBA is satisfied at new residences. Any homes built more than 100

feet from the edge of the pavement of Kamehameha Highway are expected to experience noise levels below the FHWA limits; homes built within 150 feet from the edge of pavement of the H-2 Freeway will experience noise levels that exceed the FHWA levels.

The project will include implementation of sound attenuation measures to reduce noise impacts to residential areas projected to be affected by the H-2 Freeway. Effective noise mitigation measures may include:

- constructing barrier walls and/or earthen berms along roadways;
- air-conditioning buildings instead of relying on natural ventilation;
- acoustically softening interior spaces by the addition of thick carpeting with a padding underlayment, an acoustical tile ceiling, louvered closet doors;
- using exterior wall constructions that exhibit high noise reductions; or
- reducing the elevation of the roadways relative to adjacent lands.

Typical exterior-to-interior noise reductions for naturally ventilated homes (i.e. with open windows) are approximately 9 dB. Adding absorption to interior spaces, (acoustically softening) can further reduce the noise levels by 1 to 5 dB, depending on the absorption initially present, and the amount of absorption added to the space. Air-conditioned or mechanically ventilated homes will also show higher exterior-to-interior noise reductions achieved by several types of building constructions. Factors such as distances to roadways and setbacks, intervening ground conditions, barrier construction, barrier height, roadway elevations, etc. will determine the noise reduction afforded by a traffic noise barrier.

Schools. State Board of Education (BOE) Policy 6700 requires that air conditioning be installed for schools exposed to an exterior noise level of L_{10} 65 dBA (Note: L_{10} indicates that the sound level would exceed 65 dBA 10% of the time). There are expected to be no impacts to the learning environment from noise because the schools will be located appropriately and constructed to meet BOE policies on external noise exposure. However, if they do experience noise levels greater than L_{10} 65 dBA, air conditioning will be installed in the school facilities or other mitigation measures will be employed in order to meet State of Hawai‘i BOE policies on exposure of school facilities to exterior noise levels. Additionally, temporary noise mitigation measures will be required if construction activities occur in the vicinity of the elementary schools.

Health Center and Commercial Activities. The proposed medical park and commercial areas may generate noise that could significantly impact existing residential homes. Mechanical equipment noise from commercial and industrial areas must meet State DOH maximum permissible noise limits at the property line. For areas zoned industrial, the property line noise limit is 70 dBA during the day and night. For commercial areas, State DOH maximum permissible noise limits at the property line are 60 dBA during the day and 50 dBA during the night.

In order for the commercial areas to be compatible with the adjacent residential areas, noise mitigation measures will be implemented. Typical noise mitigation for stationary equipment such as air-conditioning and ventilation equipment, refrigerators, compressors, etc., includes

mufflers, silencers, acoustical enclosures, noise barrier walls, etc. Non-stationary noise sources may include trucks loading and unloading supplies. Additional noise sources may include ambulance sirens and backup alarms on trucks and forklifts, which are exempt from State DOH noise regulations. Noisier activities, such as traffic access and loading areas, will be located away from nearby residential areas. There are no guidelines or noise criteria for ambulance noise; however, ambulances and other emergency vehicles typically disengage their sirens when entering residential communities to minimize their noise impacts.

4.7 AIR QUALITY

An air quality study was undertaken in 2007 for the Castle & Cooke Waiawa development by B.D. Neal & Associates. The study included the implementation of the Koa Ridge Makai and Waiawa Ridge developments in its assumptions. Key intersections of the Ka Uka Boulevard and Waipi‘o (Ka Uka) Interchange were monitored and modeled for potential air quality impacts, including the Koa Ridge Makai spine road at Ka Uka Boulevard and the intersection of Moaniani Street and Ka Uka Boulevard. The following summarizes the study, which is included as Appendix K.

4.7.1 Affected Environment

The climate and air quality of the Waiawa area is very much affected by its situation between the Ko‘olau and Wai‘anae Mountain Ranges. Winds are predominantly trade winds from the east-northeast although probably deviated somewhat by the terrain. Occasional periods of kona storms may generate strong winds from the south. When the trade winds are weak, landbreeze-seabreeze circulations may develop. Wind speeds typically vary between about 5 and 15 miles per hour providing relatively good ventilation much of the time. Temperatures in the Central O‘ahu area are generally very moderate with average daily temperatures ranging from about 65°F to 84°F. Rainfall in the Central O‘ahu area is moderate with an average of about 40 to 50 inches per year.

Both the State and Federal government have established standards to maintain ambient air quality. At the present time, seven air quality parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawai‘i air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide which are more stringent than the national standards.

The State DOH operates an air quality monitoring station in Pearl City, approximately 2.5 miles to the south-southeast of the Castle & Cooke Waiawa project site. This station monitors for coarse (PM_{10}) and fine ($PM_{2.5}$) particulate matter. PM_{10} consists of particulate matter that is 10 microns or less in size and generally originates from sources such as road and windblown dust, and from crushing and grinding operations. $PM_{2.5}$ is particulate matter that is 2.5 microns or less and is generally the result of fuel combustion. Year 2006 data from this station recorded only one exceedance of $PM_{2.5}$, and this was an anomaly due to fireworks. Otherwise, the data indicated no exceedances of either State or Federal maximum or annual mean particulate matter standards at this urban location.

Other air quality monitoring stations operated by the State DOH elsewhere around O‘ahu indicate that all national air quality standards are being met, although occasional exceedances of the more stringent State standards for carbon monoxide may occur near congested roadway intersections. For the most part, the air quality at the project site is relatively good and it has probably improved in recent years with the discontinuation of sugar cane cultivation in the ‘Ewa Plain area. Overall, air quality in the State of Hawai‘i continues to be one of the best in the nation, and criteria pollutant levels remain well below State and Federal ambient air quality standards.

4.7.2 Probable Impacts and Mitigation

4.7.2.1 Construction Period

Some short- and/or long-term impacts on air quality will occur either directly or indirectly as a consequence of project construction and use. Potential air quality impacts during construction of the project will be mitigated by compliance with the State DOH Administrative Rules, Title 11, Chapter 60, Air Pollution. The construction contractor(s) will be responsible for complying with the State DOH regulations that prohibit visible dust emissions at property boundaries. Hence, an effective dust control plan will be implemented to ensure compliance with State regulations. Fugitive dust emissions will be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Monitoring dust at the project boundary during the period of construction will be considered conducted as a means to evaluate the effectiveness of the project dust control program. Exhaust emissions may be mitigated by moving construction equipment and workers to and from the project site during off-peak traffic hours.

4.7.2.2 Operational Period

After construction, motor vehicles coming to and from the proposed development could potentially result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without the proposed project (see Appendix K). During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are within both the State and the national ambient air quality standards. In the year 2021 without the project, carbon monoxide concentrations were predicted to increase along Ka Uka Boulevard at the intersection of the H-2 northbound ramps and at the proposed main spine road access intersection for Koa Ridge Makai but remain largely unchanged at other locations in the project area. With the project in the year 2021, and assuming that the roadway improvements recommended in the project traffic study are implemented, carbon monoxide concentrations were estimated to either decrease or remain nearly unchanged compared to the without-project condition except at the intersection of Ukee Street (east) and Ka Uka Boulevard where a small increase was predicted. With or without the project, worst-case concentrations

should remain within both national and State standards through the year 2021. Implementing mitigation measures for traffic-related air quality impacts is probably unnecessary and unwarranted.

Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with the project's electrical power and solid waste disposal requirements. Quantitative estimates of these potential impacts were not made, but based on the estimated demand levels and emission rates involved, any impacts will likely be negligible. Nevertheless, incorporating energy conservation design features and promoting conservation and recycling programs within the proposed project could serve to further reduce any associated impacts.

4.8 SCENIC AND VISUAL RESOURCES

4.8.1 Affected Environment

Existing views of the Petition Area from public vantage points include westerly views of the Koa Ridge Makai area and easterly views of Waiawa from the H-2 Freeway, northerly views of the Koa Ridge Makai area from Ka Uka Boulevard, and northeasterly views of the Koa Ridge Makai area from Kamehameha Highway. Views of the Petition Area from these public vantage points include predominantly cultivated and undeveloped land vegetated with a mixture of weedy species and grasses, open mixed scrub, and trees.

Although the project area flanks the H-2 Freeway on both sides, views of the upland areas from the freeway are limited by local topography and vegetation to the southern end near the Waiawa Interchange and the section of the freeway crossing Kīpapa Gulch. Koa Ridge Makai stretches along about 1.8 miles of the H-2 Freeway, which runs in a cut configuration along the northern half of this frontage (i.e., ground elevation of Koa Ridge Makai is higher than the travel lanes). In the south, the freeway grade is slightly higher than the Koa Ridge Makai grades. Thus, views of the Koa Ridge Makai Petition Area and vistas beyond from the H-2 Freeway vary from being obscured by the vertical road cut near the Pineapple Road bridge to views of the Wai‘anae Range in the lower sections.

Currently, there are two major 138 kV power line corridors traversing the Koa Ridge Makai Petition Area. One segment, which consists of power lines on parallel pairs of single steel poles, traverses the northern portion of the site from the H-2 Freeway west to the edge of Kīpapa Gulch. This segment is visible from where it crosses the H-2 Freeway to the Kīpapa Gulch. The other segment, which consists of power lines on multiple wooden pole structures in parallel easements, extends from the edge of Kīpapa Gulch and traverses makai to the southern end of the Koa Ridge Makai Petition Area where it eventually crosses Kamehameha Highway. This segment is distant from public vantage points.

The CO SCP identifies several significant views and vistas in the vicinity of the project area. These are:

- Distant vistas of the shoreline and Pearl Harbor from the H-2 Freeway above the ‘Ewa Plain
- Views of the Wai‘anae and Ko‘olau Mountains from the H-2 Freeway

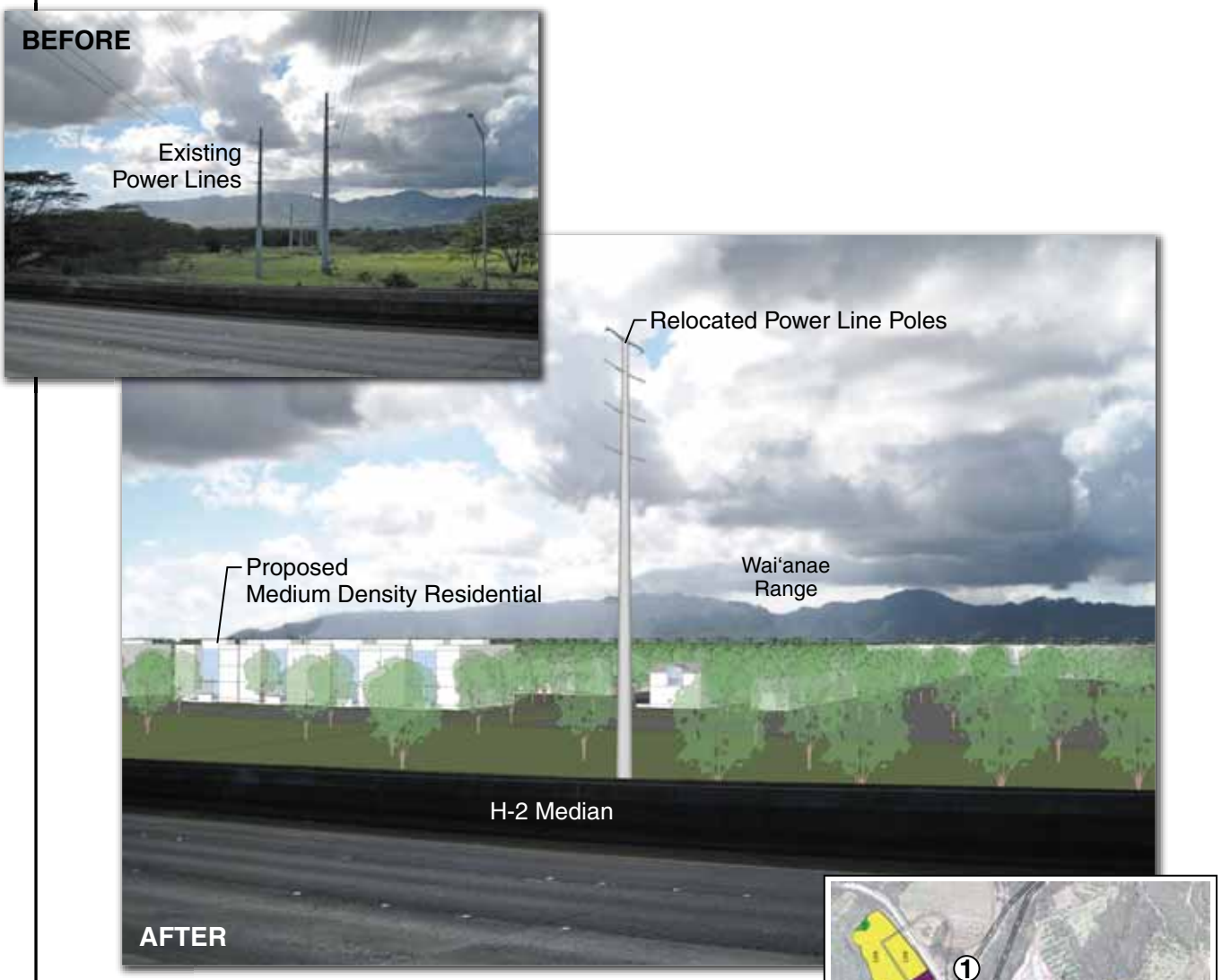
- The view of Diamond Head and Pearl Harbor from Mililani Recreation Center No. 2

4.8.2 Probable Impacts

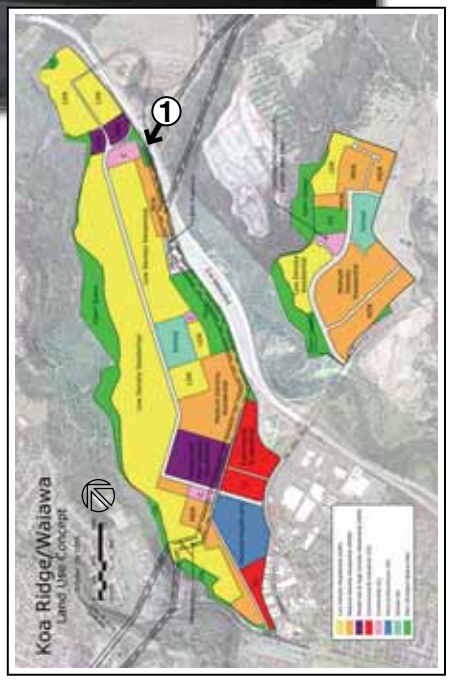
Development of the proposed project will alter the existing views from the H-2 Freeway from undeveloped or agricultural lands to urban forms. Most distant views of the Koʻolau and Waiʻanae Range ridgelines as well as views of Pearl Harbor from the H-2 Freeway will not be impeded.

The proposed project is not expected to have a significant adverse impact on the significant vistas identified in the City's CO SCP. The Proposed Action will not impede views of Pearl Harbor and the ʻEwa Plain from the H-2 Freeway, in the southbound direction. Views of the upland areas from the H-2 Freeway are limited by local topography and vegetation to the southern end near the Waiawa Interchange and the section of the H-2 Freeway crossing Kīpapa Gulch. Some views of the lower sections of the Waiʻanae and Koʻolau Mountains will be obscured by the proposed development from the H-2 Freeway, although views of the ridgeline will be retained (described below). The project is not expected to impede views of Diamond Head and Pearl Harbor from Mililani Recreation Center No. 2. Most buildings in the development will be no more than two to four stories in height, but the medical center complex will have the tallest buildings, with a possible height of up to 75 feet. Most of the land at Mililani Recreation Center No. 2 is located at an elevation greater than 570 feet above MSL (City and County of Honolulu 2008). The portion of the Petition Area (within Koa Ridge Makai) that lies within line-of-sight of Diamond Head and Pearl Harbor from the Recreation Center is at an elevation between 450 and 485 feet. The addition of a 75-foot tall building to this area is not likely to impede this view.

Local views of motorists traveling along the H-2 Freeway will be affected. A segment of the power lines through Koa Ridge Makai, paralleling Kīpapa Gulch, is planned to be relocated on-site, aligned on a roadway that passes adjacent to the Village Center and medium density residential areas. The relocated power lines would continue northward along the eastern boundary of the Koa Ridge Makai Petition Area and cross the H-2 Freeway at their current crossing locations. Figures 4-7 and 4-8 illustrate potential "before" and "after" views at points on the H-2 Freeway, including how the approximately 100-foot tall 138 kV poles may appear when relocated along the east side of the Koa Ridge Makai Petition Area.. View 1 is looking toward the southwest from a point on the southbound H-2 Freeway lanes near the proposed Koa Ridge Interchange. Instead of bisecting the site from the east to the west as in the "before" view, the relocated 138 kV power lines would be located along 0.8 miles of the west side of the H-2 Freeway. View 1 (Figure 4-7) also depicts the potential massing of the proposed medium density residential uses on the eastern boundary of the Koa Ridge Makai Petition Area. In this location, the proposed development obscures views of the lower sections of the Waiʻanae mountains, though the top of the range is still clearly visible. View 2 (Figure 4-8) is looking toward the south from the southbound H-2 Freeway lanes in the vicinity of the proposed Community Park in Koa Ridge Makai. In this area, the open space character is retained along the park frontage. View 3 (Figure 4-8) is looking north from the northbound H-2 Freeway lanes. In this area, much of the foreground view to the east will continue to be dominated by the freeway median with project construction.

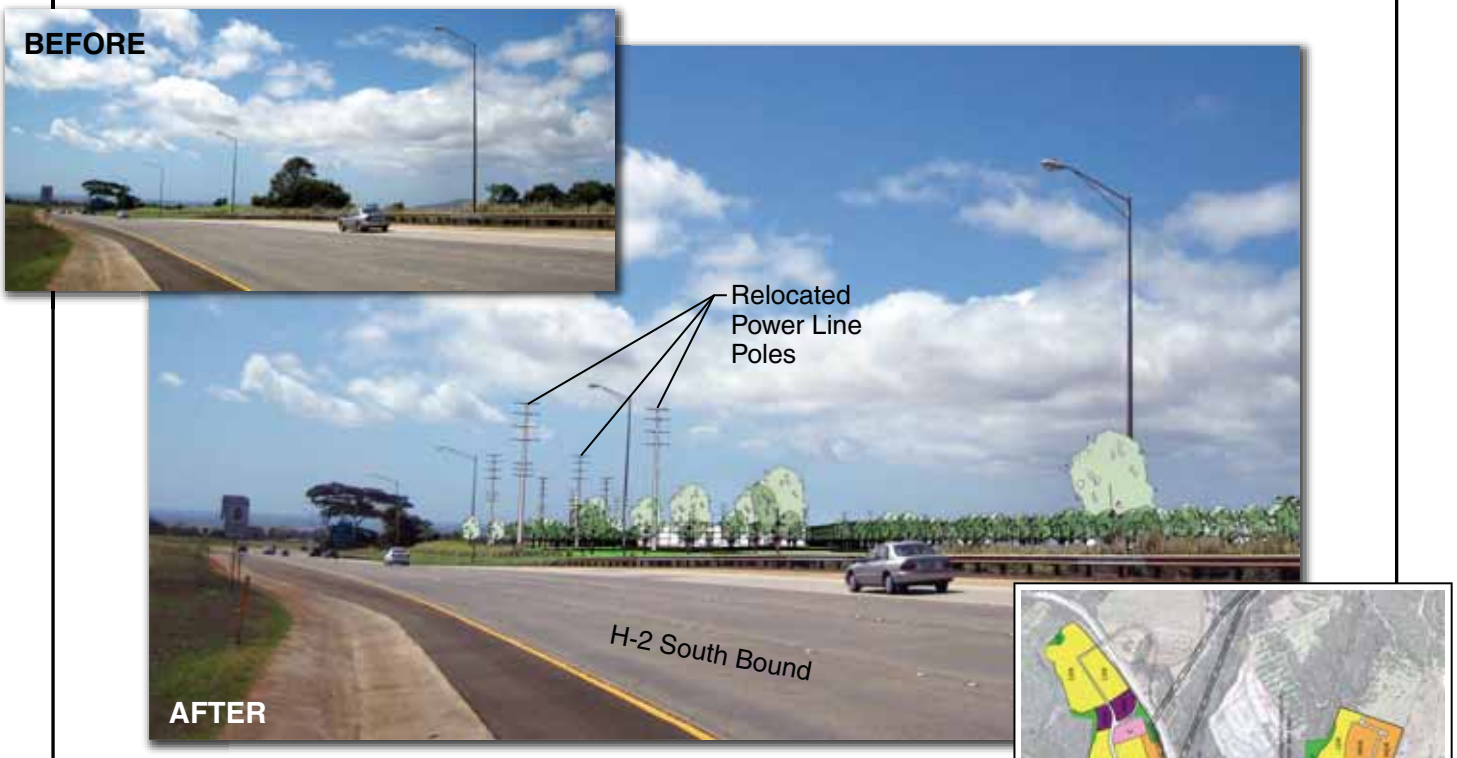


① View to southwest from H-2 near proposed Koa Ridge Interchange.



Source: Van Meter Williams Pollack, LLP
October 2008

Visual Analysis **Figure 4-7**



② View to south from H-2 southbound.

③ View to north from H-2 northbound.

Source: Van Meter Williams Pollack, LLP
October 2008

Visual Analysis

Figure 4-8

4.8.3 Mitigation

Visual impacts along the H-2 Freeway frontage will be mitigated through appropriate landscaping and setbacks from the travel lanes. A 19-acre community park is planned to be located along the H-2 frontage (approximately 0.35 miles long), which will preserve some open space views toward the west from the H-2 Freeway.

4.9 INFRASTRUCTURE AND UTILITIES

Infrastructure reports were prepared for the Koa Ridge Makai and Castle & Cooke Waiawa developments by Park Engineering. They are found in Appendix B.

4.9.1 Drinking Water System

4.9.1.1 Affected Environment

The proposed project overlies the Waipahu-Waiawa Aquifer System, largest of the three aquifers that comprise the Pearl Harbor sector. The sustainable yield for the Waipahu-Waiawa Aquifer System is presently 104 MGD as established by the CWRM. As previously discussed in Section 3.5.2, Groundwater Resources, based on the current unallocated supply of about 19 MGD, the availability of drinking water for the project appears adequate. Water use, well construction, and pump installation permits will be obtained from the State CWRM prior to development of the resource.

There is no drinking water infrastructure currently available to service the Koa Ridge Makai project site. However, the BWS operates a well and reservoir facility within the Koa Ridge Makai project area. The BWS Waipi‘o Heights III wells and 595 reservoirs are located in TMK: 9-4-006:014 & 015 along Interstate Route H-2 within the Koa Ridge Makai plateau. The facility houses two deep well pumps, two 1.5 million gallon (MG) reservoirs, control building, instrument house, and a granular activated carbon treatment system. As part of the BWS 595 water system, the wells and reservoirs are designated to provide drinking water to the area south of Ka Uka Boulevard.

Currently, no drinking water facilities exist within either the Castle & Cooke Waiawa project site or the planned Waiawa Ridge development located adjacent to the south, except for four non-developed wells on the lands owned by WRD LLC. The closest municipal drinking water system is located to the west and serves the communities of Crest View and Waipi‘o Gentry.

4.9.1.2 Probable Impacts

Koa Ridge Makai. The Koa Ridge Makai development would generate an average daily water demand of 2.006 MGD (see Appendix B for calculations). Two water service zones are proposed to serve the development: a 595-ft system and an 820-ft system. The Koa Ridge 595 system would serve the development areas north of Ka Uka Boulevard to an elevation of 495 feet above MSL. The Koa Ridge 820 system would serve the development areas from elevation 495 to 720 feet above MSL. The proposed Koa Ridge 595 system would ultimately be connected to the BWS Waipi‘o Heights 595 system. The proposed Koa Ridge 595 well and reservoir complex

will be located on lands immediately north of the existing BWS Waipi‘o Heights III well site. The new site will function as an expansion of the existing facility, capable of servicing both the existing Waipi‘o Heights 595 service zone (south of Ka Uka Boulevard) and the Koa Ridge Makai 595 service zone. The new site will encompass approximately 1.7 acres. The proposed drinking water system infrastructure improvements will include construction of two additional wells, each with pumps rated at 1,200 gallons per minute (GPM), and a new 1.5 MG reservoir.

The proposed Koa Ridge 820 well site will be located to the northeast of the Koa Ridge Makai project site, mauka of Interstate Route H-2. The proposed well site will require approximately 1.7 acres. This site will include three wells, each rated at 1,200 GPM, and a 1.5 MG reservoir.

Although a standby well is available at the Waipi‘o Heights III facility, the two water service zones would be hydraulically interconnected so that the upper (820) service zone is capable of providing standby capacity for the lower (595) service zone, when needed.

The drinking water transmission mains will be designed in accordance with BWS standards. The transmission mains will be sited within the proposed roadways of the Koa Ridge Makai development, or within easements with an all-weather road provided.

Castle & Cooke Waiawa. The projected average daily water demand for the Castle & Cooke Waiawa development is estimated at 0.704 MGD (see Appendix B for calculations). The proposed Castle & Cooke Waiawa area would be served by wells developed at the 785-foot elevation. Because both Castle & Cooke Waiawa and the adjacent (planned and entitled) Waiawa Ridge development have a need for drinking water system improvements at the 785-foot water service zone, improvements will be jointly coordinated. The storage facility requirement for the Waiawa development project is 2.0 MG. The proposed project water demand will require 1.0 MG of storage. Depending on scheduling, either a single 3.0 MG storage tank will be constructed to serve both projects, or two smaller storage tanks will be constructed to serve each project independently.

The Castle & Cooke Waiawa development will require one 1,250 GPM pumping (well) unit to be developed. Water will be conveyed to the project site via 24-inch and 20-inch transmission mains, which will also serve the Waiawa Ridge development to the south. On-site distribution mains will be installed in the roadways of the project to distribute water to the various parcels.

All proposed wells and reservoirs will be designed in accordance with the BWS standards.

4.9.1.3 Mitigation

As is the case with all CCHH projects, water conservation measures will be implemented throughout the development by the careful design of irrigation methods and the thoughtful selection of planting materials. Irrigation of large landscaped areas using non-potable sources has been explored by CCHH and continues to be an option if cost-effective sources become available. However, at the present time no such sources exist, and because the project does not call for any large landscaped areas, non-potable irrigation is not practical at the present time. The project will include a dual water system (i.e., both potable and non-potable water) if a suitable non-potable water source is available prior to commencement of site infrastructure.

4.9.2 Wastewater System

4.9.2.1 Affected Environment

Currently, there are no sewer system improvements within the Koa Ridge Makai and Castle & Cooke Waiawa development areas. There are existing 8-inch, 10-inch and 12-inch sewer lines within the adjacent developments of Waipiʻo Gentry and Waipiʻo Industrial Subdivision. The nearest sewer line to Koa Ridge Makai is an 8-inch vitrified clay pipe within Ka Uka Boulevard at the entry to the project site. These small diameter sewer lines are intended for localized sewer collection and do not have sufficient capacity to service the projected wastewater flows from the proposed project.

Wastewater generated elsewhere in this section of Central Oʻahu flows to the Waipahu Wastewater Pump Station WWPS. Wastewater pumped from the Waipahu WWPS is discharged into the trunk sewer on Geiger Road and continues on for treatment at the Honouliuli Wastewater Treatment Plant (WWTP). Capacity at Waipahu WWPS was recently upgraded to 38 MGD at peak flow. The Honouliuli WWTP currently processes an average flow of 27 to 29 MGD at the primary treatment level, which is being expanded to 38 MGD. Secondary treatment capacity at the plant is 13 MGD. Treated effluent is either disposed of through the deep ocean outfall or is further treated at the Honouliuli Reclamation Facility for industrial or irrigation reuse. The tertiary treatment for reuse water is capable of producing 12 MGD. Honouliuli WWTP is a regional facility that treats wastewater from the communities of Aiea, Pearl City, Waipiʻo, Waipahu, Mililani, Ewa, Kapolei and Makakilo. Developments within the basin area all compete for sewer capacity within the existing collection system and treatment facility infrastructure. Approval of sewer connection applications are based on available capacity and are awarded on a first come, first served basis.

4.9.2.2 Probable Impacts

Wastewater Generation. It is estimated that the Koa Ridge Makai and Castle & Cooke Waiawa developments will generate peak wastewater flows of 5.14 MGD and 1.6 MGD, respectively, or a total of 6.74 MGD (see Appendix B for table of calculations). Flow computations are based on the "Design Standards of the Department of Wastewater Management", Volume 1, City and County of Honolulu, State of Hawaiʻi, dated July 1993 with an average daily per capita flow of 80 gallons per day. Average daily wastewater generation is based on the City standard population densities associated with the various land uses. The forecasted peak sewer flows of 1.65 MGD from Castle & Cooke Waiawa are accounted for in the Waiawa by Gentry Revised Wastewater Master Plan, dated September 2006.

New sewer infrastructure will be required to serve the proposed project, as described below. The sewer systems serving the project will be designed in accordance with the "Design Standards of the Department of Wastewater Management," Volume 1, City and County of Honolulu, State of Hawaiʻi, dated July 1993. It will be designed to carry the peak flows of this development. The City's policy is that peak flows for new pipelines not exceed 85% of full pipe capacity. This allows the City to have a reserve capacity in new pipelines of up to 15%.

The Applicant will secure sewer connection approvals commensurately with its lot subdivision approvals.

Koa Ridge Makai Improvements. The onsite wastewater collection system will essentially follow the proposed public roadway system and will be conveyed by gravity to the proposed 36-inch off-site sewer system (See Figure 1-5 for alignment). The point of connection to the off-site sewer line is in the vicinity of the proposed access road connection to Kamehameha Highway. The off-site sewer line will connect to the onsite sewer system for Koa Ridge Makai and cross under Kamehameha Highway and into the Patsy T. Mink Central O'ahu Regional Park (CORP). The line will run south through CORP along the Kīpapa Gulch perimeter to Paiwa Street in Waikele. The line continues south along Paiwa Street, under the H-1 Freeway and onto CCHH-owned land adjacent to Paiwa Street on the west. The line will continue south through Waipahu on Koaki Street, Kopake Street, and Mokuola Street to Moloalo Street, where it will turn to the west. At the end of Moloalo Street, it will extend under Farrington Highway and continue west to Waipahu Depot Road, where it will turn south and terminate at the Waipahu WWPS. In general, the line will run within an approximately 10-foot wide easement.

A majority of the offsite sewer line will be installed using conventional open trench methods. This method is best suited for portions of the alignment that are shallower and have minimal obstructions to laying out the pipe segments. However, at locations where conventional methods are impractical or will result in significant impacts, microtunneling will be utilized for installation of the pipe line. Although microtunneling minimizes surface disruptions, large jacking and receiving pits will need to be excavated at intervals to provide access for the tunneling head and pipe segments. In areas with poor soil conditions, such as the section along Farrington Highway to Waipahu WWPS, a method called jet grouting will stabilize the soil supporting the sewer pipe. Jet grout columns spaced at intervals providing end support to pipe segments are drilled to depths sufficient to bear into firm soil. In this way, the jet grout columns perform in a manner similar to pile foundations.

Castle & Cooke Waiawa Improvements. The proposed sewer improvements to serve this area will essentially follow the proposed public roadway system and be conveyed by gravity to a proposed 12-inch sewer stub in the southeast corner of the Castle & Cooke Waiawa Petition Area. This stub will connect with the offsite sewer improvements planned for the Waiawa Ridge project. Wastewater will flow to the Pearl City WWPS via a 36-inch pipe and then to the Honouliuli WWTP. A limited portion of the southwest corner of the site is lower than the sewer stub connection point and will need to be pumped to a discharge manhole prior to flowing by gravity. This pump station will likely be a packaged sewer pump station which will be privately owned and operated.

4.9.3 Drainage System

4.9.3.1 Affected Environment

Koa Ridge Makai. The project site is comprised of ten existing drainage areas. All areas either sheet flow towards Kīpapa Gulch or collect in localized gullies that drain into Kīpapa Stream.

Under existing conditions, the 100-year peak discharge for Kīpapa Stream at a point downstream of the project site is 19,576 cubic feet per second (cfs). This flow corresponds to a drainage basin measuring 9,181 acres and extends to the top of the Koʻolau Mountain Range and includes the project site.

Castle & Cooke Waiawa. There are no existing and formal drainage facilities on the site. Grading of the former pineapple fields established the current on-site drainage patterns. The project site is comprised of two existing drainage areas, a southwestern portion and a northeastern portion (see Castle & Cooke Waiawa Infrastructure Report, Figure 5-1, Appendix B). The southwestern portion of the site drains directly towards Pānakauahi Gulch, while the northeastern portion of the site flows into a small tributary before its confluence with Pānakauahi Gulch. As described in Section 3.5, in the vicinity of Castle & Cooke Waiawa, the intermittent stream in Pānakauahi Gulch is tributary to Waiawa Stream, which eventually discharges into Pearl Harbor's Middle Loch.

Based on the FIRM prepared by FEMA, the project site is designated Zone "D," "Areas in which flood hazards are undetermined, but possible." Since the project site is located on plateaus bordered by large gulches, it is unlikely that on-site flooding would be a concern for the proposed development areas. However, the FIRM identifies areas downstream of the project site in Waipahu and Pearl City which are subject to flooding during peak storm events.

4.9.3.2 Probable Impacts

The Proposed Action will result in increased impervious surfaces at Koa Ridge Makai and Castle & Cooke Waiawa, which would increase the stormwater runoff coefficient (i.e., the percentage of precipitation that appears as runoff) at Petition Area from pre-development conditions. The Proposed Action includes both on- and off-site drainage improvements, described below. Drainage improvements for the project will be designed in accordance with the City and County of Honolulu's Rules Relating to Storm Drainage Standards. The proposed on- and off-site detention basins and water quality treatment facilities will be privately-owned and maintained by the project's community association(s). It is anticipated that the project's on-site streets and drainage infrastructure will be dedicated to the City for maintenance purposes. The City's Department of Facility Maintenance will require additional resources to maintain this infrastructure to a recognized standard. Any additional infrastructure to be provided by the project, if dedicated to the City, will require additional maintenance resources by the City.

4.9.3.3 Mitigation

Koa Ridge Makai Improvements. Development of the project site will result in reallocation of drainage areas from pre-development conditions. It is anticipated that the site will be developed into two major drainage areas. Stormwater runoff from developed areas will be collected by onsite drainage systems located within the internal roadways. The general drainage patterns for the site will still flow from north to south, following the underlying terrain of the site (see Appendix B Infrastructure Report). Runoff from both drainage areas will be conveyed to Kīpapa Stream through culverts and outlet structures located on U.S. Army property.

It is anticipated that each drainage area will have its own outlet. Runoff from the southern drainage area will be conveyed through drainage piping to the southwest corner of Koa Ridge Makai adjacent to Kamehameha Highway (see Drain Line 1 on Figure 1-5). A water quality treatment facility[3] will be sited in this vicinity to satisfy the water quality requirements of the Storm Drainage Standard prior to discharge into Kīpapa Stream.

Runoff from the northern drainage area will also be collected and conveyed via drainage piping to the vicinity of the natural gully located approximately at the midpoint of Koa Ridge Makai. Collected stormwater will be treated in a water quality treatment facility to satisfy the City's stormwater quality requirements. The treated runoff will then be discharged into Kīpapa Stream through a box culvert and outlet works located on Army property. Drain Lines 2a and 2b in Figure 1-5 indicate potential alternate alignments of the culvert.

The rate of stormwater discharge (100-year, 24-hour storm) into Kīpapa Stream downstream of the Koa Ridge Makai Petition Area would increase from 19,576 cfs to 20,490 cfs with the project. This increase in stormwater discharge into Kīpapa Stream from the project site would be mitigated by off-site detention basins proposed in the drainage basins upstream of the Koa Ridge site. These basins will be sited on lands between Mililani Mauka and the project site which are owned by CCHH or the U.S. Army. Detention basins function by using the storage volume to dampen the peak flow rates into the basin by controlling the rate of outflow leaving the basin. This is accomplished by appropriate sizing of the outlet works from the basin to restrict flow to a desired rate. These basins will reduce the peak discharge to Kīpapa Stream from a 100-year 24-hour storm event by 1,079 cfs to 19,411 cfs, which is lower than the calculated existing peak discharge rate of 19,576. The result of the proposed off-site detention basins will be to attenuate stormwater discharge rates from the 100-year 24-hour storm so the net impact of the Proposed Action and mitigation will be no increase or potentially a net decrease in Kīpapa Stream discharge at the point of contribution from the site. Upstream reductions in stream flow allow for the unattenuated flows from the developed project site to combine with Kīpapa Stream without increasing the risk of flooding downstream.

Offsite drainage improvements will consist of three detention basins located in the upper reaches of the Kīpapa Stream drainage basin, all of which are on lands owned by CCHH. DB 4, which is the only basin located on U.S. Army property, is included as an alternative location in the event the site for DB 3 is not suitable for development as a basin. These basins will detain flows generated from the fully developed subdivisions of Mililani Mauka and from the undeveloped tributary areas of Kīpapa Stream. (See Figure 1-5 for the locations of proposed off-site drainage basins and drain lines). Of the three off-site basins on CCHH property, only DB 1 is in an area that is actively being farmed. Construction of this basin may result in the relocation of a farm dwelling and removal of a limited area of cultivated land, which would be replaced elsewhere in Kīpapa Gulch.

[3] Water quality treatment facilities are either detention-based or flow-through based systems that remove sediments and pollutants from storm runoff. The water quality treatment facilities included in the Proposed Action will satisfy the water quality requirements of the City's Storm Drainage Standards prior to discharge into Kīpapa Stream or Pānakauahi Gulch. Detention-based systems employ basins to hold back storm runoff for several days to allow sediments to settle out. Flow-through based systems can be either grassed swales of appropriate length and geometry or proprietary, chambered systems that utilize baffling to hydraulically remove sediments from storm runoff.

The detention basins will have impounded volumes less than 50 acre-feet with maximum downstream berm heights of 25 feet. Berms will be constructed from compacted soil with typical fill slopes of 3:1 (horizontal:vertical). Each basin will require access during construction as well as permanent access for maintenance. Generally, access for the area is from the eastern edge of Mililani Town through an existing dirt road that provides access to Kīpapa Gulch farmers. Access road will be roughly 20 feet wide and will likely be of crushed rock construction. Table 4-4 summarizes the anticipated basin areas, and resulting volumes and peak discharge rates into Kīpapa Stream.

Table 4-4
Off-Site Detention Basin Size

Basin No.	Disturbed Area (acres)	Volume (acre-feet)
1	1.11	40
2	1.40	35
3	0.43	10
4*	2.16	35

*Alternate site on U.S. Army property in Kīpapa Gulch. Detention Basins 1 – 3 are on CCHH property. Only three of the four potential basins would be constructed.

Preliminary flood routing results demonstrate that for full development of Koa Ridge Makai, implementation of DBs 1, 2, and 3 will result in a 100-year peak discharge of 19,411 cfs at a point immediately downstream of the project site on Kīpapa Stream. This represents a flow reduction of 165 cfs compared to the existing conditions. If DB 4 is constructed in place of DB 3, the peak discharge is 19,315 cfs which corresponds to a 261 cfs reduction from existing peak discharge.

Impacts of the proposed off-site drainage improvements on surface water resources are addressed in Section 3.5.

Castle & Cooke Waiawa Improvements. Although development of this site will result in some reallocation of drainage areas from pre-development conditions, it will still have two drainage areas. The southwestern drainage area will be slightly enlarged to better direct flows over the proposed street network and toward the southwestern corner of the Castle & Cooke Waiawa site. A water quality treatment facility will be sited in this corner to remove silt prior to discharge into Pānakauahi Gulch.

The potential peak discharge rate in this area is estimated at 1,180 cfs with the Proposed Action, while the pre-development peak discharge rate is 871 cfs. Runoff from the northeastern portion of the site will be collected and conveyed to the vicinity of a natural depression that forms a tributary to Pānakauahi Gulch. A detention basin planned in this location will provide sufficient

hydraulic detention for the entire developed site and will limit peak discharge from the site to pre-developed conditions or lower. The planned detention basin will result in an overall peak stormwater discharge rate from this site of 850 cfs, a 21 cfs reduction from the pre-development estimate of 871 cfs. It is anticipated that the required storage volume for the basin will range between 30 to 50 acre-feet. The approximate size of the detention basin is 8.5 acres. Discharge from the detention basin will follow the natural drainage patterns, crossing through the existing box culverts under the access road easement granted to Mililani Memorial Park, before joining Pānakauahi Gulch. The road and box culverts are on lands owned by CCHH.

4.9.4 Electrical System

4.9.4.1 Affected Environment

Electric power is generated by Hawaiian Electric Company (HECO) and is transmitted across O‘ahu via overhead and underground lines that are energized at 138 kV, and distributed from 46-25 kV and 46-12kV substations via overhead and underground cables, presently energized at 25/12.47/4 kV, that are owned and maintained by HECO. As of 2006, HECO's current available generation capacity is approximately 1,669 megawatts (mW) and the present peak coincident demand for electricity on O‘ahu is approximately 1,327 mW.

HECO's existing “Waipi‘o” Substation, which is located in the Gentry Business Park and is situated adjacent to Ka Uka Boulevard, steps down the 46 kV sub-transmission voltage to 12.47 kV for distribution, and serves the Gentry Business Park and various existing facilities along Kamehameha Highway via an underground duct system that runs along the project frontage of Ka Uka Boulevard, between Moaniani Street and Ukee Street. (See Figure 7-1 in Appendix B).

HECO also completed construction of a tap to the existing 46 kV “Line B” circuit on the east side of the H-2 Freeway Waipi‘o Interchange, and has extended this feeder to its Waipi‘o Substation (situated on the west side of the interchange). The cables for this feeder are aerial across the interchange and then underground along Ka Uka Boulevard, from Moaniani Street to the substation.

A joint pole line consisting of HECO 46 kV (“Line A”) and 11.5 kV (the “Waipi‘o #1” circuit) overhead lines and Hawaiian Telcom (HTCO) cables follows Ka Uka Boulevard across the project frontage, from the vicinity of the Old Government Road to the H-2 Freeway Waipi‘o Interchange. The HTCO cables cross the H-2 Freeway underground, while the HECO lines span over the interchange. From the Old Government Road to Kamehameha Highway, HECO's 46 kV Line A and 11.5 kV Waipi‘o #1 circuits and Oceanic Time Warner Cable (OTWC) and HTCO cables cross the project overhead following the alignment of the old Mililani Memorial Park access road.

In addition, the project is traversed by three major pole lines, each carrying one HECO 138 kV transmission feeder (designated as the “Waiau-CEIP”, “Kahe-Halawa #1”, and “Kahe-Halawa #2” circuits, respectively), another transmission pole line carrying both HECO 138 kV “Kahe-Wahiawa” and 46 kV Line A circuits, a pole line for a parallel spur of HECO's 46 kV Line A and 11.5 kV Waipi‘o #1 circuits, and a second HECO 46 kV pole line (“Line B”). A joint pole line

supporting a HECO 11.5 kV circuit and HTCO cables spans across the H-2 Freeway from the east to provide service to the BWS Waipiʻo Heights III well.

HECO plans to relocate the two 46 kV pole lines that span the Waipiʻo Interchange onto a single pole line that will follow the Ka Uka Boulevard alignment until the Moaniani Street intersection. Beyond that intersection, one feeder will be spliced to the existing overhead line that continues along the mauka side of Ka Uka Boulevard to its Waipiʻo Substation, and the second feeder would be connected to the existing underground cables that go to that same substation. At that time, it may also be possible to relocate the segment of the pole line adjacent to the Moaniani intersection which presently clips the eastern tip of the Koa Ridge Makai site, to the Ka Uka Boulevard right-of-way. In the future, HECO anticipates extending a third 46 kV line from Wahiawā to its Waipiʻo Substation. The corridor for this line has not yet been determined.

A joint pole line consisting of an existing 11.5 kV) overhead line traverses the northern end of the Castle & Cooke Waiawa Petition Area. A private street lighting system owned by Mililani Memorial Park is located along the access road to the Memorial Park. Off-site facilities include 46 kV and 11.5 kV overhead lines and structures along Pānakauahi Gulch, adjacent to the H-2 Freeway and the forest reserve area.

4.9.4.2 Probable Impacts and Mitigation

The projected peak electrical demand for Koa Ridge Makai is forecasted at 42.1 mW, including the proposed medical complex. Peak electrical demand for Castle & Cooke Waiawa is estimated at 7.8 mW, or a total project peak demand of 49.9 mW. HECO anticipates that its generation system will be adequate to carry the project's electrical demand since the annual load growth for the project is anticipated to be gradual, therefore the project will not have an adverse impact on the future electrical generation or distribution system. Specific electrical system improvements are described below.

Koa Ridge Makai. Based on the forecasted loading, HECO plans to add transformers at its Waipiʻo Substation to serve the initial Koa Ridge Makai loads and will also require that a new substation be constructed to ultimately serve this area. The substation would require a site of about 22,500 square feet. In addition, the existing 46 kV lines crossing the development must be extended to the substation site. The Applicant will coordinate the necessary land acquisition and equipment procurement processing with HECO so a substation will be in place and ready to serve the project loads.

Onsite segments of the existing pole lines where the HECO 138 kV ("Waiau-CEIP", "Kahe-Halawa #1", and "Kahe-Halawa #2") circuits, 46 kV "Line A" and "Line B", and 11.5 kV "Waipiʻo #1" overhead lines takeoff to span the "H-2" freeway and Kīpapa Gulch, and the existing pole lines that are beyond the project site may remain. Sections of the HECO 46 kV Line A and Line B and 11.5 kV Waipiʻo #1 circuits that traverse the project will be relocated underground along the roadways within the development; the portions of the pole lines that are beyond the project will remain overhead. In addition, electric service to the BWS Waipiʻo Heights III well site will be reconnected from the overhead lines spanning the H-2 Freeway to new HECO cables routed in the duct system that will be provided with this project. The existing 138 kV pole lines will be relocated to accommodate the project, but will remain overhead.

Easements for the 138kV lines, typically about 75 feet wide, will be required along the entire route for each pole line, with supplemental easements necessary for anchor guying and at the transitions where the direction of the line must change to follow the alignment. The Applicant will work with HECO, who will design and construct the pole line, to secure the necessary Public Utilities Commission approvals as well as equipment procurement processing.

Castle & Cooke Waiawa. HECO will serve Castle & Cooke Waiawa from its proposed Waiawa Ridge Makai substation, which is scheduled to be constructed to coincide with the initial phase of the Waiawa Ridge development. This substation will step down the incoming 46 kV sub-transmission voltage to 12.47 kV, as required by HECO for distribution throughout the development. Existing off-site HECO 46 kV and 11.5 kV overhead lines along Pānakauahi Gulch and the forest reserve will remain in place. However, the segment of the existing HECO 11.5 kV overhead line that traverses the northern end of the project site will be relocated underground along roadways within the development. The portions of the pole line beyond the development will remain overhead.

Careful attention will be paid to improve energy efficiency throughout the development. Energy-efficient appliances and light fixtures will be offered in all homes. Efficient floor plans will ensure short runs of hot water piping between water heater and fixture, and all hot water piping will be insulated. Window selection, insulation, exterior surface colors, and planting and shading will be considered in order to reduce ambient heat around building envelopes. Air-conditioning, if installed, will have a 13 SEER (seasonal energy efficiency ratio) or greater energy efficiency rating and the installation will be designed and monitored to ensure efficiency. All ducting will be placed within insulated wall spaces or in attic crawl spaces beneath radiant barriers. Programmable thermostats will ensure efficient operation throughout the day. Solar water heater systems will be included with all new single-family homes constructed in the project, unless specific environmental conditions preclude their effectiveness, in compliance with Act 204 of the 2008 Hawai‘i Legislative Session. Homes will also be designed to accommodate the installation of solar photovoltaic panels, which, at a minimum, will be offered as an option to homebuyers.

Castle & Cooke Homes Hawai‘i will continue to seek out every feasible opportunity to incorporate renewable energy measures in its residential and commercial developments to reduce demands on the conventional electrical generation and distribution system.

4.9.5 Communications System

4.9.5.1 Affected Environment

Local area telephone service is provided by HTCO, and OTWC of Hawai‘i is the local cable television (CATV) provider. There are presently no OTWC facilities within the Petition Area.

Koa Ridge Makai. HTCO presently serves the vicinity of this area from its Waipi‘o Remote Office, which is located along Kamehameha Highway, at the northern end of the Waikele community. In addition, HTCO has installed switching equipment within an easement along Ka Uka Boulevard, adjacent to where it intersects the Old Government Road, that was also used to access the Mililani Memorial Park. HTCO has underground facilities along Ka Uka Boulevard

through which distribution cables are extended to serve the Gentry Business Park and portions of the Waipiʻo residential community.

Castle & Cooke Waiawa. A HTCO cable traverses the northern end of the Castle & Cooke Waiawa development area, and overhead telephone cables run along Pānakauahi Gulch adjacent to the H-2 Freeway and the forest reserve.

4.9.5.2 Probable Impacts and Mitigation

Additional telephone and CATV facilities and services will be required to serve the proposed development. Provision of these facilities and services is not expected to adversely affect existing customers or service. Cables and ducts will be suitable for underground applications and therefore will be tolerant of both wet and dry conditions. During the design development of the subdivision, plans will be submitted to HTCO and OTWC to verify compliance with their system requirements.

Koa Ridge Makai. The existing offsite HTCO overhead lines along Pānakauahi Gulch may remain in place. However, those segments of the existing HTCO lines that traverse the project will be relocated underground along the roadways within the development and the portions of the pole lines that are beyond the project will remain overhead. The overhead HTCO and OTWC lines along the old Mililani Memorial Park access road between Kamehameha Highway and Ka Uka Boulevard will be relocated underground. Hawaiian Telcom's direct buried Transpac cable, which crosses the site and continues on to Wahiawā, will be relocated as necessary to accommodate the development.

Telephone trunking facilities must be extended along Ka Uka Boulevard to a site within Koa Ridge Makai that HTCO requires to construct a remote office to serve this project.

OTWC facilities will need to be extended along Ka Uka Boulevard from OCTW trunking facilities located along Kamehameha Highway to a site within Koa Ridge Makai to a future hub facility to serve this project.

Castle & Cooke Waiawa. The existing off-site HTCO overhead lines along Pānakauahi Gulch will remain in place. However, the segment of overhead lines that traverses the northern end of the this site will be relocated underground across the development. HTCO facilities will be extended into the project from the proposed switching equipment provided in the Waiawa Ridge development project area. OTWC facilities will need to be extended from OTWC trunking facilities along Kamehameha Highway.

4.9.6 Solid Waste Disposal

4.9.6.1 Affected Environment

Curbside refuse collection service from the existing single-family residential areas in Central Oʻahu is generally provided by the City and County of Honolulu Department of Environmental Services' Refuse Division. Refuse collection for multi-family and non-residential uses are primarily provided by private refuse collection companies. Residential waste is transported to

the City and County of Honolulu's H-POWER (Honolulu Program of Waste Energy Recovery) waste-to-energy combustor located at the James Campbell Industrial Park in 'Ewa. Ash residue and non-processible waste are then disposed of at the Waimanalo Gulch Sanitary Landfill in West O'ahu. The Waimanalo Gulch Sanitary Landfill is nearing its design capacity. The LUC granted the City an 18-month extension to close the landfill beyond its former May 1, 2008 deadline. The extension allows the City to operate the landfill until November 1, 2009. The City and County of Honolulu Department of Environmental Services has plans to expand the landfill by another approximately 92.5 acres, which would provide additional capacity to accept waste for approximately 15 years. A permit modification was recently requested by the operator of the Waimanalo Gulch Sanitary Landfill to raise the height of the ash landfill portion of the landfill to provide needed additional capacity.

In October 2007, the City initiated a pilot curbside recycling program in the communities of Mililani and Hawai'i Kai, which was recently expanded to include Kuli'ou'ou to Mānoa; Kailua; Lanikai; and Mokulē'ia to Sunset Beach. Green waste and mixed recyclables (newspaper, corrugated cardboard, glass bottles and jars, aluminum cans, and plastic bottles and jugs) are each collected once every two weeks.

4.9.6.2 Probable Impacts

No adverse impacts to solid waste generation or disposal are expected during the construction period. CCHH's residential construction practices consist of steel framing and the use of prefabricated components, which greatly reduce and minimize construction waste generation. During construction, the proposed project will develop and implement a trash management and recycling program to minimize impacts to the local landfill.

The Proposed Action will not have a significant effect on municipal solid waste generation because almost all the residents are expected to originate from elsewhere on O'ahu (i.e., would have generated the same amount of solid waste at their previous residence). The project will generate approximately 26 tons of solid waste per day, based on a generation factor of 3.37 pounds/person/day used by the City Department of Environmental Services. The City will provide curbside refuse and recyclable material pickup service to single-family residences. Multi-family residences and non-residential properties will typically hire a private waste company to collect and dispose of refuse.

Disposal of all non-hazardous solid waste from residential and non-residential properties will primarily occur at the City's H-POWER facility in 'Ewa. With the Waimanalo Gulch Sanitary Landfill nearing its design capacity, the City is investigating various other methods of processing refuse to accommodate the future solid waste disposal needs of the Island.

4.9.6.3 Mitigation

To offset the potential increase in solid waste generation, storage facilities will be designed to accommodate the separation of waste materials to facilitate recycling, and reuse and recycling will be encouraged through community outreach and homeowner education. The City's comprehensive curbside recycling program is being expanded, and the new Koa Ridge and

Waiawa communities that have municipal trash collection will participate in the program, as required by the City Department of Environmental Services.

4.9.7 Hazardous and Regulated Materials

This section describes the Phase I Environmental Site Assessments (ESA) conducted for Petition Area by EnviroServices & Training Center, LLC in 2008. The purpose of the Phase I ESAs was to conduct an inquiry designed to identify recognized environmental conditions[4] (RECs) on the subject properties by performing visual observations for the use and/or storage of hazardous materials and waste on the Petition Area, review of user-provided information, conducting environmental database searches, and review of selected facility files from the State DOH. The Phase I ESA reports (with selected appendices) for Koa Ridge Makai and Castle & Cooke Waiawa are included as Appendix L. The findings of the investigation are described below.

4.9.7.1 Affected Environment

Koa Ridge Makai. The Phase I ESA revealed no evidence of recognized environmental conditions in connection with the Koa Ridge Makai Petition Area except for the following:

- Potential presence of residual contaminants associated with the historic usage of the Petition Area for commercial pineapple and possible sugar cultivation.
- Presence of solid waste observed at the Petition Area (e.g., construction and demolition debris, tires, batteries, abandoned car, car parts/portions, etc.) and the potential impact to the underlying soil from the solid waste.
- Potential presence of residual contamination associated with historic releases and operation of the U.S. Air Force's Hickam Air Force Base (AFB) petroleum, oils and lubricants (POL) pipeline on the Petition Area and surrounding areas (see description below).

These RECs may have had an impact on underlying soils from leaking materials or residual fluids.

The Hickam AFB POL system included a ten-inch steel dual pipeline was constructed in 1942 and operational until 1993, when the entire system was taken out of service. A portion of this fuel line is located within easements aligned through the Koa Ridge Makai Petition Area and was cleaned of residual fuel between 2006-2007. Although records do not show any pipeline leaks in the Koa Ridge Makai area, there is a potential for historical releases of fuel to the soil in the vicinity of the pipeline corridor, as noted in the Phase I ESA findings. The Hickam AFB Final Pipeline Cleaning Completion Report concluded that no additional cleaning activities are

[4] The term REC is defined as: "The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions." (EnviroServices & Training Center, LLC 2008)

required for the sections cleaned under the subject field effort, which included the portion of the pipeline in the Koa Ridge Makai Petition Area (Weston Solutions, Inc. 2007).

Castle & Cooke Waiawa. The Phase I ESA revealed no evidence of recognized environmental conditions in connection with the Castle & Cooke Waiawa Petition Area except for the following:

- Potential presence of residual contaminants associated with the historic usage of the property for commercial pineapple and possible sugar cultivation.
- Presence of solid waste observed at the Petition Area (e.g., construction and demolition debris, tires, batteries, abandoned car, car parts/portions, etc.) and the potential impact to the underlying soil from the solid waste.
- Presence of batteries, photo developing machine, paint cans, drums, leaking drums, etc. in poor condition.
- Presence of two apparent defunct transformers and lid-less drum of capacitors observed in poor condition.

These RECs may have had an impact on underlying soils from leaking materials or residual fluids.

4.9.7.2 Probable Impacts

Because any hazardous materials or wastes generated on-site will be appropriately stored, handled and disposed of, the Proposed Action will not result in adverse impacts from these materials. The Proposed Action will increase human activity on the Petition Area, which would deter illegal dumping that has previously taken place on the sites.

4.9.7.3 Mitigation

Land uses that may use, process or generate hazardous or regulated materials or waste on-site (e.g., petroleum products, medical or biohazard wastes, etc.) would comply with applicable Federal, State and City regulations for storage, use and disposal. Collection, transfer and disposal of infectious and hazardous wastes will be contracted to a private collection company. Medical hazardous wastes are usually treated by steam sterilization, shredding, and/or incineration prior to disposal. It is anticipated that health care facilities will employ similar methods to dispose of its medical waste. Collection, transfer and disposal of non-hazardous waste generated by the health care facilities will be collected by a private collection refuse company.

Castle & Cooke Homes Hawai‘i, Inc. is seeking to have the deactivated Hickam AFB fuel pipeline removed and the easement abandoned prior to construction in the affected area. While there are no known leaks associated with the fuel line in the project area, there is a potential that petroleum residue could be found in the soil if the line is removed.

4.10 PUBLIC FACILITIES AND SERVICES

4.10.1 Schools

4.10.1.1 Affected Environment

Since it is unimproved, there are currently no schools within the Petition Area. Central O'ahu is served by numerous schools within the residential communities of Mililani, Wahiawā, Waipi'o, Waipahu, and Waikele. In order to characterize the current school environment in the project vicinity, Table 4-5 lists the schools closest to the project site, their current student enrollment, and school capacity. The capacity calculation is produced each year for State DOE schools.

Table 4-5
Student Enrollment (2008-'09 School Year) and Capacity of Area Schools

	School	Current Enrollment	Capacity
Elementary	Mililani Uka Elementary	660	938
	Mililani Waena Elementary	567	844
	Mililani Mauka Elementary	845	931
	Mililani 'Ike Elementary	1,065	850
	Waikele Elementary	627	741
	Kīpapa Elementary	628	807
	Kanoelani Elementary	740	850
	Manana Elementary	371	415
	Pearl City Elementary	535	648
	Pearl City Highlands Elementary	370	432
Middle	Mililani Middle	1,730	1,896
	Highlands Intermediate	940	1,000
High	Mililani High	2,496	1,997
	Pearl City High	1,872	2,226

Source: State of Hawai'i DOE, Planning Section 2008

4.10.1.2 Probable Impacts

The DOE has determined that the Proposed Action will require two additional elementary schools to serve the new population—one at the Koa Ridge Makai Petition Area and one at the Castle & Cooke Waiawa Petition Area. The DOE assumes that middle school and high school students from the new communities will attend the middle school and high school that will be built in the adjacent Waiawa Ridge development.

4.10.1.3 Mitigation

To satisfy all DOE fair-share requirements for the project, CCHH will contribute to the provision of public school facilities, as agreed upon with the DOE through the Education Contribution Agreement of June 2008. Per the terms of the Agreement, CCHH will 1) provide a cash

contribution to DOE on an agreed upon schedule, based on residential units built and any in-lieu fees; and 2) dedicate land to the DOE for two 12- acre elementary school sites in mutually agreed upon locations, as well as provide all necessary off-site infrastructure.

A site for a 12-acre elementary school is proposed to be centrally located within Koa Ridge Makai. For the Castle & Cooke Waiawa development, a new elementary school is proposed to be located adjacent to a neighborhood park and community center to provide a focus for community life (see Figure 2-1 for locations).

4.10.2 PARKS AND RECREATIONAL FACILITIES

4.10.2.1 Affected Environment

There are currently no parks or recreational facilities within the project area. A number of existing district, community, and neighborhood parks located in the surrounding communities of Mililani, Mililani Mauka, Waipi‘o and Waipahu serve the residents of those communities.

Castle & Cooke Homes Hawai‘i previously transferred 269 acres to the City and County of Honolulu for the development of the existing Patsy T. Mink CORP, located on the ‘Ewa side of Kamehameha Highway near the Gentry Waipi‘o Business Park. This regional park serves all communities in Leeward and Central O‘ahu, including the Petition Area. Recreational facilities at the park include baseball fields, multi-purpose fields, a world-class tennis complex, a swimming pool complex, and an archery range. In close proximity, the 288-acre Waipi‘o Peninsula Soccer Complex, located in Waipahu to the south of the project site, includes 19 regulation soccer fields and a 5,000-seat stadium.

Golf courses in the region include the Mililani Golf Club, Waikele Golf Club, Hawaii Country Club, Royal Kunia Country Club, Leilehua Golf Course (military), and Ted Makalena Golf Course.

4.10.2.2 Probable Impacts

The Proposed Action will generate a demand for additional park facilities to serve the new population. An analysis was prepared to determine park dedication requirements, based on City and County Park Dedication Rules and Regulations (February 1996). Table 4-6 summarizes the park area requirements analysis.

Table 4-6
Park Dedication Requirements Analysis

	Koa Ridge Makai		Waiawa	
Land Use (Planning Factor)	No. Units	Park Area Required (acres)	No. Units	Park Area Required (acres)
Single-Family Residential (350 sf/dwelling)	1,054	8.5	182	1.5
Multi-family Residential (110 sf/dwelling)	2,446	6.2	1,318	3.3
Subtotals	**3,500**	**14.6**	**1,500**	**4.8**
Total Park Area Required (acres)	**19.4**			

As shown in the table,14.6 acres of park space is required for Koa Ridge Makai and 4.8 acres for Castle & Cooke Waiawa.

In addition to total park area, the City and County of Honolulu's Department of Parks and Recreation also has standards for service area populations and average sizes for different types of parks. Table 4-7 summarizes the standards for the size and type of parks that would be required for the projected population of 15,000 persons (pn) for the project (10,500 in Koa Ridge Makai and 4,500 in Castle & Cooke Waiawa).

Table 4-7
Park Type and Size Analysis

Koa Ridge Makai				
Land Use	**Planning Factor**	**Projected Population***	**Park Standard Requirement**	
			Sites	**Acres**
Neighborhood (5 acre)	1/5,000 pn	10,500 pn	2	10
Community (10 acre)	1/10,000 pn	10,500 pn	1	10
District (20 acre)	1/25,000 pn	10,500 pn	0	0
TOTALS			3	20
Waiawa				
Land Use	**Planning Factor**	**Projected Population***	**Park Standard Requirement**	
			Sites	**Acres**
Neighborhood (5 acre)	1/5,000 pn	4,500 pn	1	5
Community (10 acre)	1/10,000 pn	4,500 pn	0.5	5
District (20 acre)	1/25,000 pn	4,500 pn	0	0
TOTALS			1.5	10

* Based on average population factor of 3.0 pn/household multiplied by the estimated 3,500 dwelling units at Koa Ridge Makai and 1,500 units at Castle & Cooke Waiawa.

4.10.2.3 Mitigation

The Proposed Action includes a total of 36 acres of public and private park space, including a community park of approximately 19 acres proposed on the eastern edge of Koa Ridge Makai, which will include active ball fields, play courts, comfort station, and parking areas. The community park site will be dedicated to the City and County of Honolulu. The Castle & Cooke Waiawa development will include a variety of smaller parks of approximately 1/2 to 1-1/2 acres (totaling four acres) in addition to the public park area in a four-acre commercial/community center/park complex. These smaller, private neighborhood parks will offer opportunities for passive recreation and play areas for younger children located within easy walking distance of homes. The many parks will be linked with each other and the central community facilities by tree-lined sidewalks and bike paths. The planned park space of 36 acres for Koa Ridge Makai and Castle & Cooke Waiawa exceeds the City and County of Honolulu's park dedication requirement of 19.4 acres. An additional 40 acres of open space along Kīpapa Gulch will be preserved within Koa Ridge Makai, some of which will be accessible for recreation. At Castle & Cooke Waiawa, an additional 32 acres of open space also available within the development adjacent to the neighboring gulch. The combined 36 acres of park space along with the 72 acres of open space will provide more than adequate on-site park and recreational areas for the project's residents. The Applicant will submit a proposed master plan for park development to the City's Department of Parks and Recreation at a later stage in the development process when more detailed land use planning is completed.

4.10.3 POLICE PROTECTION AND PUBLIC SAFETY

4.10.3.1 Affected Environment

The project area is located within the jurisdiction of the City and County of Honolulu Police Department's District 2 (Wahiawā) and District 3 (Pearl City). The Pearl City Police Station is located to the southeast of the project site along Waimano Home Road near the intersection of Kamehameha Highway in Pearl City. The Wahiawā Police Station is located to the north of the project site along North Cane Street in Wahiawā.

4.10.3.2 Probable Impacts

The Proposed Action will increase housing inventory and resident population in Central O'ahu, thereby increasing the demand for existing City and County police services. The Proposed Action may require increases in police staffing and modification and possibly expansion of existing police station facilities that would presumably be funded out of property taxes generated by the project. In order to help minimize opportunities for crime, the Applicant will encourage and incorporate to the extent possible, crime prevention and deterrent measures through the design of the homes and neighborhood (e.g., home security feature options, appropriate lighting, landscaping and building layout to minimize visual obstacles and eliminate places of concealment).

The applicant will fund and construct adequate civil defense measures (sirens) to serve the Petition Area as required by the State of Hawai'i Department of Defense, Office of Civil Defense.

4.10.4 FIRE PROTECTION

4.10.4.1 Affected Environment

Fire protection services for the Petition Area are provided by the City and County of Honolulu Fire Department's Mililani Fire Station located to the north of the project site in Mililani; the Mililani Mauka Fire Station located to the north of the project site in Mililani; and the Waikele Fire Station located to the southwest of the project site at Waikele. The Castle & Cooke Waiawa Petition Area is adjacent to savannah grassland areas, which are susceptible to wildland fires, especially during the dry summer months.

4.10.4.2 Probable Impacts

The Honolulu Fire Department reviewed a description of the proposed development and responded that the proposed project will have an impact on fire services it provides.

The Proposed Action will provide a water system whereby all appurtenances, hydrant spacing, and fire flow requirements will meet the standards of the City and County of Honolulu BWS to ensure fire protection to all constructed facilities and buildings. Access roads within the proposed project capable of supporting the City Fire Department's fire apparatus will be designed and built in accordance with the requirements of the Fire Department and the 1997 Uniform Fire Code, Section 902.2.1. On-site fire hydrants and mains capable of supplying the required fire flow will be provided in accordance with the 1997 Uniform Fire Code, Section 902.2.1. All civil engineering drawings will be submitted to the Fire Department for review and approval.

Since the proposed developments will be adjacent to savannah grasslands which are susceptible to wildland fires, adequate buffers between structures and surrounding wildland fuels will be provided to limit the threat of damage or destruction to human life, homes and businesses. Other mitigation measures that will be considered in the project design process, particularly in areas adjacent to the savannah grasslands, include: use of ignition-resistant roofing and exterior siding, use of double or triple glazed energy efficient glass windows, boxed in eaves, and covered vent openings.

4.10.5 MEDICAL SERVICES AND FACILITIES

4.10.5.1 Affected Environment

The closest major medical facility to the project site is the 162-bed Wahiawa General Hospital located on Lehua Street in Wahiawā to the north. This acute care facility includes a 103-bed long-term care facility. Other major medical facilities in the region include the Hawaii Medical Center – West located on Fort Weaver Road in 'Ewa to the south, and Kapiolani Medical Center at Pali Momi in Aiea to the southeast. The Hawaii Medical Center facility features an acute-care

medical center with 134 beds, a medical office plaza, a 24-bed hospice, and a helipad to facilitate in the transport of patients. The Kapiolani Medical Center at Pali Momi features a 116-bed facility and adjoining medical office building. In the Gentry Business Park, Kaiser Permanente has a medical clinic.

Emergency medical service is provided by the City and County of Honolulu's Department of Emergency Medical Services. The new Central O'ahu ambulance unit operating out of Kaiser Permanente Hawaii's Waipi'o Clinic has recently expanded the emergency medical services available to the rapidly growing region.

4.10.5.2 Probable Impacts

The proposed project will increase the demand on the existing medical services in the Central O'ahu area.

A medical facilities planning forecast (Cattaneo & Stroud, Inc. 2008) was conducted to estimate the future need (2015-2025) for acute care hospital beds, ambulatory services, physician offices, and skilled nursing services. The forecast was based on industry-tested population-based planning principals that incorporated Hawaii-specific and national/industry trends and standards. Data points used in the forecast included: historical use rates for hospital services in Hawaii, market share and patient migration patterns, population growth and demographics within the assumed service area, current and future supply of physicians, and ratios of long-term care beds per resident. The forecast estimated a future need to serve the Central O'ahu-North Shore area for the following services:

- 100 bed acute care hospital, with site capacity to expand to 120+ beds to accommodate future growth through 2025
- Outpatient hospital and ambulatory care services to include:
    - Emergency services
    - Diagnostic imaging
    - Ambulatory surgery
    - Endoscopy and minor procedures
    - Other diagnostic and treatment services required for a full service hospital, including lab, rehabilitation, pulmonary function, cardiac testing, etc.
- Medical office building to house 40-60 physicians, with the site capacity to expand as demand grows
- Skilled nursing facility with 100 to 150 beds

4.10.5.3 Mitigation

The City and County of Honolulu's Emergency Services Department is working with the State to fund or construct additional emergency medical facilities in Central O'ahu. As discussed in further detail in Section 2.3.2, the proposed 28-acre Koa Ridge Medical Center Complex is intended to provide comprehensive primary and secondary care medical services to residents of Central O'ahu and North Shore. It could also incorporate and build upon the acute care services at Wahiawa General Hospital at a site that is more accessible to regional transportation corridors, population, and employment centers.

A comprehensive range of services could be supported by the proposed Koa Ridge Medical Center, including a 100-bed acute care hospital with full-service emergency department and inpatient and outpatient ambulatory care services; a medical office building for 40-60 physicians; and a 100- to 150-bed skilled nursing facility. With the planned addition of these new facilities, the supply of emergency medical services in the region should be adequate to serve the project.

5.0 | Conformity with Existing Plans, Policies and Controls

Chapter 5: CONFORMITY OF PROPOSED ACTION WITH EXISTING STATE AND COUNTY PLANS, POLICIES AND CONTROLS

5.1 STATE

5.1.1 Hawai'i State Plan

The Hawai'i State Plan, embodied in Chapter 226, HRS, serves as a guide for goals, objectives, policies, and priority guidelines for the State. The State Plan provides a basis for determining priorities, allocating limited resources, and improving coordination of State and County plans, policies, programs, projects, and regulatory activities.

The project conforms to most applicable goals, objectives, policies, and priority guidelines of the Hawai'i State Plan. The following section analyzes project impacts with respect to relevant State Plan goals, objectives, policies, and priority guidelines.

Section 226-5, Objectives and policies for population.

(b)(1) *Manage the population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.*
(b)(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 project is located in Central O'ahu, which is designated in the City and County of Honolulu General Plan as an urban fringe area. Central O'ahu is identified by the City and County of Honolulu in its CO SCP as the location for up to 25,000 new homes in master planned residential communities. Among the communities identified are the Castle & Cooke Waiawa and Koa Ridge Makai projects.

The CWRM set the sustainable yield for the underlying aquifer system at 104 mgd. Currently, about 19 mgd of the sustainable yield is unallocated and another 35 mgd has been allocated (permitted) but is not being used. Based on the aquifer's sustainable yield and its present supply, the availability of potable water for the Proposed Action appears adequate. Water use, well construction, and pump installation permits will be obtained from the CWRM prior to development of the resource.

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

(a)(1) *Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.*

Discussion: The proposed project will have positive short-term benefits to the local economy from the increased expenditures for construction, off-site infrastructure improvements, and construction-related and operational period jobs and tax revenue. In the long term, the new residential homes, medical, commercial, light industrial, extended stay hotel, and schools will

create job opportunities in various sectors and will contribute to increases in State income and general excise tax revenue, and in County property tax revenues.

Section 226-7, Objectives and policies for the economy – agriculture.

(a)(1) *Viability of Hawaii's sugar and pineapple industries.*
(a)(2) *Growth and development of diversified agriculture throughout the State.*
(b)(10) *Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.*

Discussion: The Petition Area has been identified for future urban development by the City and County of Honolulu in its CO SCP. None of the project area lands is being cultivated in sugar cane or pineapple. About 325 acres at Koa Ridge Makai are being cultivated in diversified agriculture crops, but this operation will be relocated to the North Shore by early 2010. The project area lands are not essential to the continuation of current pineapple production or diversified agriculture on the island due to the ample supply of former plantation agriculture lands now available for alternative agricultural uses. Existing cattle grazing operations at Castle & Cooke Waiawa will be relocated to adjacent vacant agricultural lands.

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

(b)(2) *Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.*
(b)(3) *Take into account the physical attributes of areas when planning and designing activities and facilities.*

Discussion: Potential surface water quality impacts during construction of the project will be minimized by compliance with Federal, State and City water quality regulations, as well as conditions imposed by the permits required for construction and operation (e.g., USACE CWA Section 404 permit, CWRM Stream Channel Alteration Permit, DOH NPDES permit and Section 401 Water Quality Certification). The City and County of Honolulu's grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil disturbing activities in grading, grubbing and stockpiling. Construction-period erosion controls are regulated under the City's Rules Relating to Soil Erosion Standards and Guidelines. As part of the construction permitting process, drainage and erosion control plans are prepared by the developer and approved and monitored by the City and County of Honolulu. Stormwater quality at Koa Ridge Makai and Castle & Cooke Waiawa will be addressed either through the use of dry-extended detention ponds or flow through-based treatment devices meeting City drainage requirements depending on the site specific flow, topography and site constraints. These facilities will mitigate the potential adverse effects of the change in land use from agriculture/grazing/fallow to urban development by detaining off-site flows and allowing particulates they may contain--and the pollutants associated with them--to settle out of the water column.

The off-site drainage detention basins in Kīpapa Gulch will serve to attenuate peak discharge into Kīpapa Stream that is presently being contributed by developed and undeveloped lands upstream of Koa Ridge Makai. When implemented, the detention basins will either result in no net increase or a net reduction from existing flows in design storm conditions (i.e., 100-year storm) at points downstream of Koa Ridge Makai. Impacts to nearshore coastal waters (located about three miles away) from changes in the quantity and quality of runoff generated on-site will be minimized by proposed drainage improvements (detention basins and water quality treatment facilities) designed to comply with the City standards requiring storm drainage systems to incorporate BMPs that address both runoff quantity (flood control) and water quality.

Wastewater generated from the project will be conveyed to and treated at the municipal Honouliuli WWTP prior to deep ocean discharge.

Section 226-12, Objectives and policies for the physical environment – scenic, natural beauty, and historic resources.

(b)(1) *Promote the preservation and restoration of significant natural and historic resources.*
(b)(3) *Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.*
(b)(4) *Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.*

Discussion: Due to the historic long-term commercial agricultural use of the Petition Area, the Petition Area is relatively clear of significant historic sites. With the exception of Waiāhole Ditch which crosses the Petition Area, all of the significant historic sites identified during the archaeological inventory surveys are located within the off-site infrastructure improvements areas. The archaeological inventory survey conducted for the previously proposed Koa Ridge development (which includes the Petition Area) was reviewed by SHPD in 2002. As documented by a letter dated November 22, 2002, SHPD determined that the survey was performed acceptably, and that development of these lands would have "no effect" on significant historic sites due to the past intensive cultivation that has altered the project area (see Appendix E).

The Proposed Action may potentially affect significant historic sites identified within the project area boundaries, which include the construction of off-site infrastructure. Land-disturbing activities such as grubbing, grading, and excavation associated with the construction of the proposed improvements may potentially alter or remove the historic sites. Minor alterations to Waiāhole Ditch and the Oahu Sugar Company irrigation structures in Kīpapa Gulch may be needed, depending on project engineering. SHPD will be consulted to determine what mitigation would be required. Construction activities associated with the proposed sewer line has the potential to adversely affect subsurface historic resources, including human burials, which may be located within the sewer line alignment. Construction of this sewer line would proceed under an archaeological monitoring program to be reviewed and approved by SHPD. The use of microtunneling technology to install the proposed sewer line would minimize the impact to any subsurface historic resources.

A cultural resource preservation plan would be prepared to address buffer zones and identify protective measures for the historic sites recommended for preservation. The SHPD would be consulted on any significant historic sites – such as the Waiāhole Ditch – requiring further archaeological work or documentation prior to future construction activities.

In the event that any significant archaeological resources are encountered during future construction activities, all work in the immediate area would be halted and consultation with the SHPD would be sought in accordance with applicable regulations. The treatment of any remains or artifacts would be in accordance with procedures required by the O'ahu Burial Council and the SHPD.

The proposed project is not expected to have a significant adverse impact on any significant vistas identified in the City and County of Honolulu's CO SCP. Although the project area extends along about 1.8 miles of the H-2 Freeway, views of the upland areas and the Ko'olau Mountains from the freeway are limited by local topography and vegetation. The development will not impede views of Pearl Harbor and the 'Ewa Plain from the H-2 Freeway in the southbound direction. Views of the Wai'anae Mountain Range will be prominent from the developed areas of the project.

Section 226-15, Objectives and policies for facility systems – solid and liquid wastes.

(b)(1) *Encourage the adequate development of sewerage facilities that complement planned growth.*

Discussion: There is no municipal wastewater collection system in the project area. Wastewater generated from Castle & Cooke Waiawa and adjacent Waiawa Ridge development will be conveyed to the Honouliuli WWTP via the Pearl City WWPS. Wastewater generated at Koa Ridge Makai will be conveyed to the Waipahu WWPS, and then to the Honouliuli WWTP. Effluent from the WWTP is reused for irrigation or industrial uses or discharged into the Pacific Ocean through a marine outfall. The capacity of the Honouliuli WWTP is 38 mgd, and the plant currently receives and treats 27 mgd.

Section 226-16, Objective and policies for facility systems – water.

*(**b)(1)** Coordinate development of land use activities with existing and potential water supply.*

Discussion: An analysis of the potable water supply for the development, which also examines potential sources and availability, has been prepared. Due to the availability of unallocated sustainable yield, there should be an adequate supply of water within the aquifer system to support project demand. Actual water commitments will not be issued until building permit applications are submitted. Under current Honolulu BWS policy, water use allocations are granted in incremental amounts as construction plans are approved or building permits are obtained.

Section 226-19, Objectives and policies for socio-cultural advancement – housing.

(a)(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.*
(a)(2) *The orderly development of residential areas sensitive to community needs and other land uses.*
(b)(3) *Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.*
(b)(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.*

Discussion: The proposed development will provide approximately 5,000 residential units in a variety of densities, styles and sizes that will be available to buyers and residents with a range of incomes. A percentage of the residential development will provide affordable housing opportunities in accordance with City and County of Honolulu requirements. The topography of the Petition Area is generally flat to gently sloping, providing excellent home sites, with access to existing transportation facilities. The quality of the homes and community amenities will be equal to or surpass those of Mililani and Mililani Mauka, CCHH's other award-winning Central O'ahu developments.

Section 226-21, Objective and policies for socio-cultural advancement – education.

(b)(2) *Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.*

Discussion: To satisfy all DOE fair-share requirements for the project, CCHH will contribute to the provision of public school facilities, as agreed upon with the DOE through the Education Contribution Agreement of June 2008. Per the terms of the Agreement, CCHH will 1) provide a cash contribution to DOE on an agreed upon schedule, based on residential units built; and 2) dedicate land to the DOE for two 12- acre elementary school sites in mutually agreed upon locations, as well as provide all necessary off-site infrastructure.

Section 226-104, Population growth and land resources priority guidelines.

(a)(1) *Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.*
(b)(1) *Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.*

Discussion: The proposed project is intended to accommodate projected growth rates on O‘ahu and is not intended to influence growth rates throughout the State. Central O‘ahu has historically been a desirable residential location for Hawai‘i residents. The proposed project supports City and County of Honolulu urban growth policies over the next 20 years. The project area is within the Urban Community Boundary identified by the CO SCP and is contiguous with existing urban development (Gentry Waipio) to the south, adjacent to the entitled Waiawa Ridge development’s urban development to the east, and separated only by Kīpapa Gulch from Mililani and Mililani Mauka to the west and north.

Section 226-104, Population growth and land resources priority guidelines.

(b)(2) *Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.*

Discussion: The majority of the Petition Area is classified as Prime lands under the Agricultural Lands of Importance to the State of Hawai‘i system. However, they are nonessential to the continuation of current pineapple production or diversified agriculture on the island due to the ample lands available for alternative agricultural uses elsewhere. The City’s land use policies for Central O‘ahu identify the Petition Area for future urban development, while preserving 10,350 acres elsewhere in Central O‘ahu for agriculture.

Section 226-104, Population growth and land resources priority guidelines.

(b)(5) *In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.*
(b)(7) *Pursue rehabilitation of appropriate urban areas.*
(b)(9) *Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.*

Discussion: The City’s CO SCP identifies the project site for urban uses, indicating that there is a compelling public interest in converting this area to urban development. The City and County of Honolulu General Plan identified the Primary Urban Center for the bulk of O‘ahu’s population growth in the next 20 years. In 1989, changes were approved for the General Plan which designated the urban fringe areas in Central O‘ahu as one of O‘ahu’s principal residential development areas. Since then, Central O‘ahu, along with the Primary Urban Center, the Secondary Urban Center at Kapolei and urban fringe areas of ‘Ewa, have provided the bulk of the new housing developed on O‘ahu. The project area does not contain critical environmental areas of concern such as wetlands or habitat for threatened or endangered species of flora or fauna.

Section 226-104, Population growth and land resources priority guidelines.

(b)(12) *Utilize Hawaii’s limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the*

environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.
***(b)(13)** Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.*

Discussion: The project will accommodate the island's projected population growth by helping to relieve urban development pressures and protect environmentally sensitive areas, conservation lands, and rural lifestyles in other communities. The project area will be converted from agricultural and undeveloped land to urban forms, changing the views from parts of the H-2 Freeway. However, the project is not expected to have a significant adverse impact on any significant vistas identified in the City and County of Honolulu's CO SCP.

Section 226-106, Affordable housing.

***(8)** Give higher priority to the provision of quality housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.*

Discussion: The project will comply with the City's requirements for the provision of affordable housing opportunities. Historically, the vast majority of homebuyers at Castle & Cooke communities on O'ahu have been Hawai'i residents. CCHH residential sales also have a one-year owner- occupancy requirement.

5.1.2 State Functional Plans

The Statewide planning system requires the development of State Functional Plans which are approved by the Governor of Hawai'i. The State Functional Plans guide the implementation of State and County actions in the areas of agriculture, conservation lands, education, energy, health, higher education, historic preservation, housing, recreation, tourism, water resources development, transportation, employment, and human services. The proposed project is consistent with the following objectives, policies and implementing actions of the respective State Functional Plans.

5.1.2.1 State Housing Functional Plan

The Hawai'i Housing Finance and Development Corporation coordinated the preparation of this functional plan. The Plan includes homeownership, rental housing, and rental housing for the elderly and other special needs groups as issue areas.

Issue Area: Homeownership
Policy A(2): Encourage increased private sector participation in the development of affordable for-sale housing units.
Policy (A)(3): Ensure that 1) housing project and 2) projects which impact housing provide a fair share/adequate amount of affordable homeownership opportunities.

Discussion: The project would provide for-sale housing units in a variety of styles and prices. The housing program will comply with City and County of Honolulu's requirements for pricing and percentage of affordable homes to market homes.

Issue Area: Rental Housing
Policy B(2): Encourage increased private sector participation in the development of affordable rental housing.

Discussion: Affordable units will be provided in accordance with the City's affordable housing policies. A portion of the proposed multi-family units is being planned for senior housing units.

Issue Area: Rental Housing for the Elderly and Other Special Needs Groups
Policy C(7): Integrate special needs housing in new and existing neighborhoods.

Discussion: CCHH will give consideration to including special needs housing in the development as needs arise during the development process.

5.1.2.2 State Education Functional Plan

Preparation of the Education Functional Plan was coordinated by the State Department of Education.

A(4): Services and Facilities
Policy: Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

Implementing Action A(4)(c): Pursue actions with other agencies which will insure adequate and appropriate services and facilities on a timely basis.

Discussion: Elementary school sites have been strategically placed near the center of each community so they will be within walking distance of the greatest number of families in each community. To satisfy all DOE fair-share requirements for the project, CCHH will contribute to the provision of public school facilities, as agreed upon with the DOE through the Education Contribution Agreement of June 2008. Per the terms of the Agreement, CCHH will 1) provide a cash contribution to DOE on an agreed upon schedule, based on residential units built; and 2) dedicate land to the DOE for two 12- acre elementary school sites in mutually agreed upon locations, as well as provide all necessary off-site infrastructure.

5.1.2.3 State Transportation Functional Plan

The preparation of the Transportation Functional Plan was coordinated by the State Department of Transportation.

Issue Area I: Congestion
Policy I.B.1.: Close the gap between where people live and work through decentralization, mixed zoning and related initiatives.

Policy I.C.3.: Develop park-and-ride facilities.

Discussion: Koa Ridge Makai will offer a range of housing styles and densities to accommodate residents of all ages and life stages. Neighborhood parks, recreation centers, and pedestrian-oriented shopping and entertainment centers will be located within easy walking distances of higher densities of residential populations to reduce dependence on automobile use. The project will include bike lanes on major streets, pedestrian paths linking residential areas with community and commercial facilities, and streets designed to accommodate City buses. The proposed medical complex, commercial, and light industrial areas provide substantial opportunities for on-site employment that offset the need for some residents to commute to metro Honolulu for work or health care.

Likewise, Castle & Cooke Waiawa includes the development of a neighborhood retail center, which will provide employment opportunities within the community as well as adjacent to the project in the business, industrial and mixed-use communities in Waipi‘o and Waiawa. Community facilities such as an elementary school, parks, and a recreation center are centrally located within the development in order to provide convenient access for residents.

5.1.2.4 State Agriculture Functional Plan

Preparation of the Agriculture Functional Plan was coordinated by the State Department of Agriculture. The Plan identified land and water as one of four issue areas, which is discussed below. The proposed project is not relevant to the other three issue areas (Industry Research and Development; Agricultural Pests and the Environment; and Services and Infrastructure).

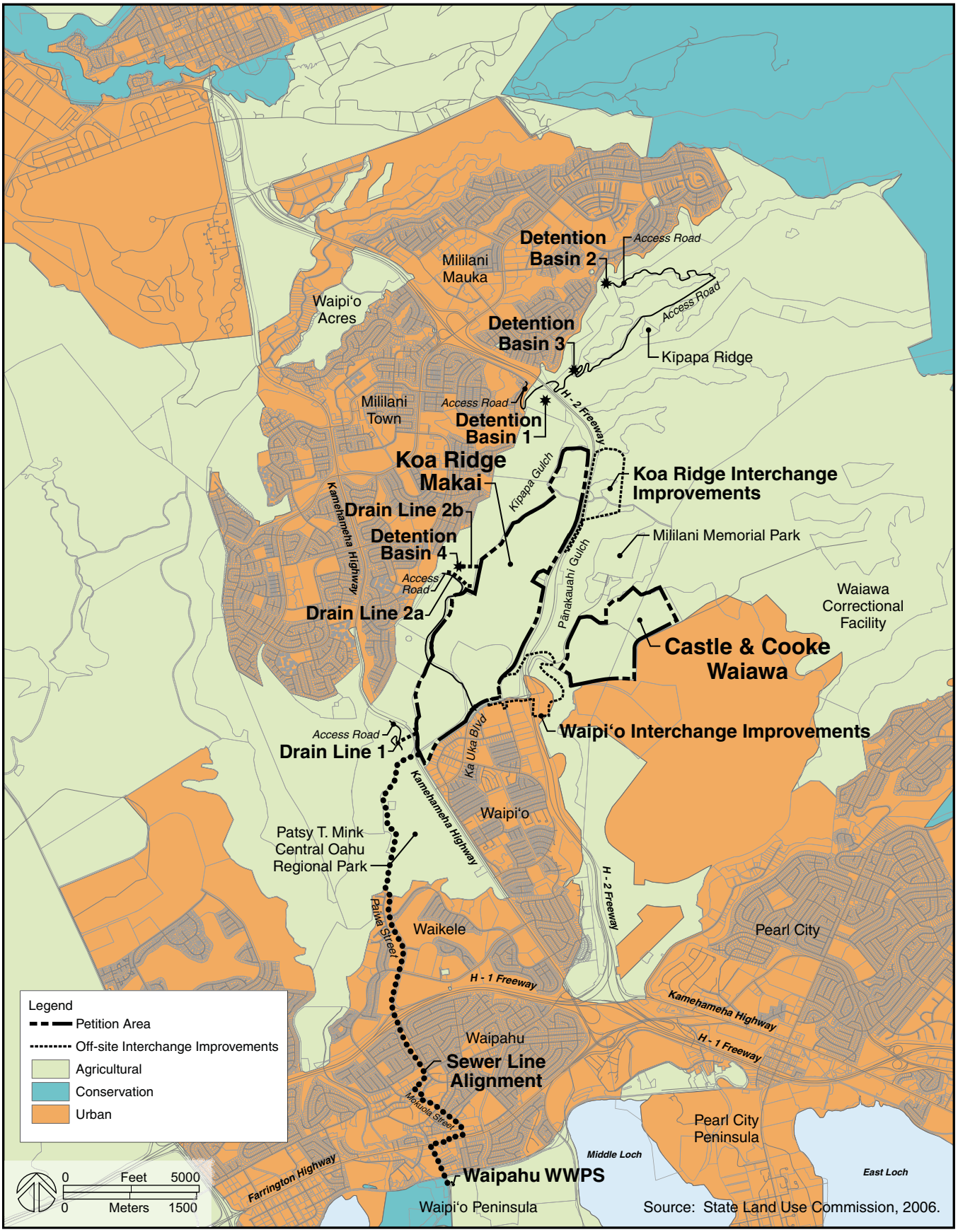
Issue Area: Land and Water
Implementing Action H(2)(c): Administer land use district boundary amendments, permitted land uses, infrastructure standards, and other planning and regulatory functions on important agricultural lands and lands in agricultural use, so as to ensure the availability of agriculturally suitable lands and promote diversified agriculture.

Discussion: The project will not have a detrimental effect on the diversified agriculture industry in Hawai‘i, since the supply of agricultural lands far exceeds its demand due to the contraction in plantation agriculture.

5.1.3 State Land Use Law

The State Land Use Law, Chapter 205, HRS, is intended to preserve, protect and encourage the development of lands in the State for uses that are best suited to the public health and welfare of Hawai‘i’s people. The State LUC classifies all lands in the State into four land use districts: Urban, Agricultural, Conservation, and Rural. The proposed area is within the State Agricultural District as shown in Figure 5-1.

The proposed project will require a State Land Use District Boundary Amendment to reclassify lands from the State Agricultural District to the State Urban District. A petition requesting the subject reclassification has been filed with the State LUC in conjunction with this EIS.



Existing State Land Use Districts **Figure 5-1**

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

The State LUC, in accordance with Chapter 15-15, HAR, must specifically consider the extent to which the proposed reclassification conforms to the applicable District standards. The standards for determining the boundaries for the Urban District include eight (8) areas which are listed below, followed by a discussion of how the proposed reclassification conforms to these standards.

(1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related land uses;

Discussion: The master planned communities will have approximately 5,000 residential units, elementary schools, a medical complex, mixed uses in a higher density core area, commercial, light industrial, neighborhood retail, community centers, and a network of parks and trails. Consistent with the principles of "smart growth" and "sustainability," the project will be built at a density that is higher than typical suburban residential developments, particularly in the Village Center of Koa Ridge Makai.

(2) It shall take into consideration the following specific factors:
(A) Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;
(B) Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection; and
(C) Sufficient reserve areas for foreseeable urban growth;

Discussion: The project is in close proximity to various centers of trading and employment (Gentry Waipio Business Park, Gentry Waipio Shopping Center, Waikele Shopping Center, Mililani Technology Park, the Town Center of Mililani, Mililani Shopping Center, military installations of Wheeler Army Airfield and Schofield Barracks). Services such as sewer, water, sanitation, schools, parks and police and fire protection are or will be available to serve the project. The Applicant will finance or construct off-site water, wastewater and drainage improvements required for the project and participate in fair-share contributions for public school and regional transportation facilities. Adjacent lands to the south are zoned for urban use and infrastructure and development approvals are being sought by the Waiawa Ridge development.

(3) It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil conditions, and other adverse environmental effects;

Discussion: The project area is readily developable, with satisfactory topography and drainage, and is free from natural hazard potential such as flooding or tsunami inundation.

(4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on State or County general plans;

Discussion: The Castle & Cooke Waiawa Petition Area is contiguous with the planned Waiawa Ridge development, located to the south, which is designated in the State Land Use Urban District. The Koa Ridge Makai Petition Area is contiguous to the urbanized area of Waipi‘o.

(5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the State and County general plans;

Discussion: The project site is within the Urban Community Boundary as designated on the City and County of Honolulu’s CO SCP Urban Land Use Map. Adjacent land to the south is classified for the Urban District on the State Land Use District Map.

(6) It may include lands which do not conform to the standards in paragraphs (1) to (5):
(A) When surrounded by or adjacent to existing urban development; and
(B) Only when those lands represent a minor portion of this district;

Discussion: The project site conforms to or will conform to the standards in paragraphs (1) to (5).

(7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services; and

Discussion: The Petition Area is adjacent to existing and planned urban developments and will not contribute toward scattered spot urban development. CCHH will construct or participate in developing all additional infrastructure required to service the proposed development, and public infrastructure and support services will not be unreasonably burdened by or require any unreasonable investment as a result of the project.

(8) It may include lands with a general slope of twenty percent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction of controls, as adopted by any federal, state, or county agency, are adequate to protect the public health, welfare and safety, and the public’s interests in the aesthetic quality of the landscape.

Discussion: Slopes within the project site are generally within the 0 to 5 percent range, with some steeper sections near the edges of the adjacent gulches. Development of the site will not require any special design or construction controls pertaining to slope.

5.1.4 Hawai‘i Coastal Zone Management Program

The National Coastal Zone Management (CZM) Program was created through passage of the Coastal Zone Management Act of 1972. Hawai‘i’s Coastal Zone Management Program, adopted as Chapter 205A, HRS, provides a basis for protecting, restoring and responsibly developing coastal communities and resources. The objectives and policies of the Hawai‘i CZM Program

encompass broad concerns such as impact on recreational resources, historic and archaeological resources, coastal scenic resources and open space, coastal ecosystems, coastal hazards, and the management of development.

The project area lies within the State's CZM Area, which includes all lands of the State and the area extending seaward of the shoreline. Potential impacts from the project to the coastal zone relate to storm drainage and wastewater disposal. The project's conformance with objectives of the CZM Program is discussed below:

RECREATIONAL RESOURCES
Objective: *Provide coastal recreational opportunities accessible to the public.*

Discussion: The Proposed Action will include park and recreational facilities in the form of community and neighborhood parks, pedestrian trails and bikeways for the development's residents.

HISTORIC RESOURCES
Objective: *Protect, preserve, and where desirable, restore those natural and man-made historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

Discussion: Due to the historic long-term commercial agricultural use of the Petition Area, the Petition Area is relatively clear of significant historic sites. With the exception of Waiāhole Ditch which crosses the Petition Area, all of the significant historic sites identified during the archaeological inventory surveys are located within the off-site infrastructure improvements areas. The archaeological inventory survey conducted for the previously proposed Koa Ridge development (which includes the Petition Area) was reviewed by SHPD in 2002. As documented by a letter dated November 22, 2002, SHPD determined that the survey was performed acceptably, and that development of these lands would have "no effect" on significant historic sites due to the past intensive cultivation that has altered the project area (see Appendix E).

The Proposed Action may potentially affect significant historic sites identified within the project area boundaries, which include the construction of off-site infrastructure, including a new trunk sewer line to the Waipahu WWPS. Construction of this sewer line would proceed under an archaeological monitoring program to be reviewed and approved by SHPD. The use of microtunneling technology to install the proposed sewer line would minimize the impact to any subsurface historic resources.

A cultural resource preservation plan would be prepared to address buffer zones and identify protective measures for the historic sites recommended for preservation. SHPD would be consulted on any significant historic sites – such as the Waiāhole Ditch – requiring further archaeological work or documentation prior to future construction activities.

In the event that any significant archaeological resources are encountered during future construction activities, all work in the immediate area would be halted and consultation with

SHPD would be sought in accordance with applicable regulations. The treatment of any remains or artifacts would be in accordance with procedures required by the O‘ahu Burial Council and the SHPD.

SCENIC AND OPEN SPACE RESOURCES
Objective*: Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.*

Discussion: The project will alter some upland views from the H-2 Freeway of what are presently cultivated lands or undeveloped areas. Longer range views of the Ko‘olau and Wai‘anae Mountain Ranges ridgelines will not be significantly affected. Views of the southern shore of O‘ahu from the H-2 Freeway will not be affected.

COASTAL ECOSYSTEMS
Objective: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

Discussion: Potential surface water quality impacts during construction of the project will be minimized by compliance with Federal, State and City water quality regulations, as well as conditions imposed by the permits required for construction and operation. The Applicant will also prepare drainage and erosion control plans, which will be approved and monitored by the City and County of Honolulu. Stormwater quality at Koa Ridge Makai and Castle & Cooke Waiawa will be addressed either through the use of dry-extended detention ponds or flow through-based treatment devices meeting City drainage requirements depending on the site specific flow, topography and site constraints. These facilities will mitigate the potential adverse effects of the change in land use from agriculture/grazing/fallow to urban development by detaining off-site flows and allowing particulates they may contain--and the pollutants associated with them--to settle out of the water column.

The off-site drainage detention basins in Kīpapa Gulch will serve to attenuate the peak discharge rates into Kīpapa Stream that is presently being contributed by developed and undeveloped lands upstream of Koa Ridge Makai. When implemented, the detention basins will either result in no net increase or a net reduction from existing flows in design storm conditions (i.e., 100-year storm) at points downstream of Koa Ridge Makai. Impacts to nearshore coastal waters (located about three miles away) from changes in the quantity and quality of runoff generated on-site will be minimized by proposed drainage improvements (detention basins and water quality treatment facilities) designed to comply with the City standards requiring storm drainage systems to incorporate BMPs that address both runoff quantity (flood control) and water quality.

Wastewater generated from the project will be conveyed to and treated at the municipal Honouliuli WWTP prior to deep ocean discharge.

ECONOMIC USES
Objective: *Provide public or private facilities and improvements important to the State’s economy in suitable locations*.

Discussion: The proposed project does not involve coastal dependent development and is thus not affected by this Economic Uses category.

COASTAL HAZARDS
Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution*.

Discussion: The Petition Area is not in an identified flood hazard area or area known for subsidence or erosion. The Petition Area in Central O'ahu is not in the tsunami inundation zone. Construction of the proposed project or its off-site infrastructure improvements is not anticipated to result in increasing the risk of flooding at the project site or surrounding properties. The planned on- and off-site drainage improvements will attenuate peak discharge from the site and from existing runoff in the upper reaches of the Kīpapa Stream drainage basin so the total does not exceed pre-development conditions. The new trunk sewer will be located underground and would not affect existing floodways. A geotechnical engineer will perform a slope stability analysis of the top of gulch areas adjacent to Kīpapa Gulch prior to detailed design. Most of the lands between the Koa Ridge Makai parcel and Kīpapa Stream are undeveloped. The only exception is the cluster of about ten homes in Kīpapa Acres adjacent to Kamehameha Highway. The geotechnical engineer will evaluate the necessity for and appropriateness of various mitigative measures in this area.

MANAGING DEVELOPMENT
Objective*: Improve the development and review process, communication and public participation in the management of coastal resources and hazards*.

Discussion: The Proposed Action has been presented at a number of Neighborhood Board meetings over a period of years to facilitate participation in the planning and review process. A community visioning process has also been initiated and continues to progress during project development, with emphasis on timely issues such as smart growth development and the incorporation of sustainable green building elements into the project. Periodic newsletters and brochures have been broadly distributed to raise awareness of the Proposed Action. A web site is maintained to keep the community informed of progress (http://www.castle-cooke.com/Koaridge).

PUBLIC PARTICIPATION
Objective: *Stimulate public awareness, education, and participation in coastal management.*

Discussion: As mentioned above, CCHH has presented the project to several Neighborhood Boards including Pearl City #21, Mililani Mauka/Launani Valley #35, Mililani/Waipio/Melemanu #25, Wahiawa-Whitmore Village #26, and Waipahu #22. CCHH will continue to participate in community meetings during the development process. CCHH also organized and is continuing a community participation visioning process (see description in Section 2.4) that consists of a series of community workshops beginning in March 2003. CCHH continues to meet with these participants to gain feedback and to update and involve them in the development planning process. Periodic newsletters and brochures have been broadly distributed

to raise awareness of the Proposed Action. A web site is maintained to keep the community informed of progress (http://www.castle-cooke.com/Koaridge).

According to the Revised Ordinances of Honolulu (ROH), 99-12, zone change applicants shall present the project to the neighborhood board of the district where the project will be located, and make a good faith effort to notify all owners of property within 300 feet of the affected property's boundaries of the applicant's proposed use of the property. CCHH will carry out this notification at the appropriate time as required by the City and County of Honolulu Land Use Ordinance, Chapter 21, ROH, as amended.

BEACH PROTECTION
Objective: *Protect beaches for public use and recreation.*

Discussion: The project will neither interfere with public recreational and shoreline activities nor result in beach erosion as it is located approximately three miles away from the nearest shoreline resources.

MARINE RESOURCES
Objective: *Implement the State's Ocean Resources Management Plan.*

Discussion: This project is approximately three miles distant from the waters of Pearl Harbor and has minimal impact on ocean processes apart from stormwater flows to Waiawa Stream and Waikele Stream. Impacts to nearshore coastal waters (located about three miles away) from changes in the quantity and quality of runoff generated on-site will be minimized by proposed drainage improvements (detention basins and water quality treatment facilities) designed to comply with the City standards requiring storm drainage systems to incorporate BMPs that address both runoff quantity (flood control) and water quality. The project will comply with NPDES and Clean Water Act, Section 401 Water Quality Certification permit conditions. The project will not affect the State's implementation of its Ocean Resources Management Plan.

5.2 CITY AND COUNTY OF HONOLULU

5.2.1 General Plan

The General Plan for the City and County of Honolulu (adopted 1977) and last amended in October 2002, is a statement of the long-range social, economic, environmental, and design objectives for the general welfare and prosperity of the people of O'ahu. The Plan is also a statement of the broad policies that facilitate the attainment of the objectives of the Plan. Eleven (11) subject areas provide the framework for the City's expression of public policy concerning the needs of the people and functions of government. These areas include population; economic activity; the natural environment; housing; transportation and utilities; energy; physical development and urban design; public safety, health and education; culture and recreation; and government operations and fiscal management. This section analyzes the impacts of the project with respect to the relevant General Plan objectives, policies, and programs.

I. Population

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

Policy 2: *Encourage development within the secondary urban center at Kapolei and the Ewa and Central Oahu urban-fringe areas to relieve developmental pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.*

Policy 3: *Manage physical growth and development in the urban-fringe and rural areas so that:*

a. *An undesirable spreading of development is prevented; and*
b. *Their population densities are consistent with the character of development and environmental qualities desired for such areas.*

Policy 4 (Amended, Resolution 02-205, CD1): *Direct growth to Policies 1, 2, and 3 above by providing land development capacity and needed infrastructure to seek a 2025 distribution of Oahu's residential population as follows:*

Distribution of Residential Population

LOCATION	% SHARE OF 2025 ISLANDWIDE POPULATION
Primary Urban Center	46.0%
ʻEwa	13.0%
Central Oʻahu	17.0%
East Honolulu	5.3%
Koʻolaupoko	11.6%
Koʻolauloa	1.4%
North Shore	1.7%
Waiʻanae	4.0%
	100%

Discussion: The Petition Area is located in Central Oʻahu, which the General Plan identifies as an urban fringe area to relieve developmental pressures and meet housing needs. Urbanization of these lands will comply with City and County of Honolulu plans to have Central Oʻahu provide moderate residential growth in master planned residential communities, while preserving sufficient lands for agricultural production in other areas of Central Oʻahu.

II. Economic Activity

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

Policy 1: *Encourage the growth and diversification of Oahu's economic base.*

Policy 2: *Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of Oahu residents.*

Policy 3: *Encourage the development in appropriate locations on Oahu of trade, communications, and other industries of a nonpolluting nature.*

Discussion: The Proposed Action will have positive short-term benefits to the local economy from the increased expenditures for construction, off-site infrastructure improvements, and construction-related jobs and tax revenue. In the long term, the new homes, commercial and light industrial uses, medical complex, extended stay hotel, and schools will create a variety of job opportunities in various service sectors and will contribute to increases in State income and general excise tax revenue, and in City and County of Honolulu property tax revenues.

Objective C*: To maintain the viability of agriculture on Oahu.*

Policy 2: *Support agricultural diversification in all agricultural areas on Oahu.*

Discussion: The project will have a small but negative impact on meeting this policy. The project will have negligible impacts to the growth of diversified agriculture on the island due to the ample supply of former plantation agriculture lands now available for alternative agricultural uses. The limiting factor to the growth of diversified agriculture is not the land supply, but rather the size of the market for crops that can be grown profitably in Hawai‘i. (See the discussion of agricultural impacts in Section 4.4.) Furthermore, the CO SCP Urban Community Boundary preserves agricultural lands in Central O‘ahu in Mililani South and in Kunia, along Kunia Road.

Policy 4: *Provide sufficient agricultural land in Ewa, Central Oahu, and the North Shore to encourage the continuation of sugar and pineapple as viable industries.*

Discussion: Due to the closures of the last two sugar plantations on O‘ahu, this policy is no longer relevant with respect to the sugar industry. The proposed developments will not adversely impact the pineapple industry as pineapple is no longer farmed on the project area. Dole Food Company has relocated its operations formerly on the project area to other lands north of Wahiawā. This relocation would have occurred with or without the proposed project. The CO SCP identifies about 10,500 acres in the Kunia area of Central O‘ahu for long term agricultural use.

Objective G: *To bring about orderly economic growth on Oahu.*

Policy 2: *Permit the moderate growth of business centers in the urban-fringe areas.*

Discussion: The Proposed Action is expected to be directly associated with approximately 2,460 direct FTE jobs during the operational period. Most of these jobs would be on-site, such as at the medical complex, extended stay hotel, commercial, retail and office space. The development and marketing of the project will also generate opportunities in real estate brokerage,

management, and sales that may be based off-site. These estimates do not include employees of public or community facilities that may be developed.

III. Natural Environment

***Objective A**: To protect and preserve the natural environment.*

***Policy 1:** Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*

Discussion: The Proposed Action is located on topographically flat land away from the shoreline, valleys and mountain range ridges.

***Policy 7:** Protect the natural environment from damaging levels of air, water, and noise pollution.*

Discussion: Urban developments may result in increased levels of air and water pollutants and noise levels, but these adverse impacts would be minimized and mitigated through compliance with applicable Federal, State and County requirements.

***Policy 8:** Protect plants, birds, and other animals that are unique to the State of Hawaii and the Island of Oahu.*

Discussion: The project will not have an impact on threatened or endangered species of flora and fauna. No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543), were found in the project area.

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

***Policy 2**: Protect Oahu's scenic views, especially those seen from highly developed and heavily traveled areas.*

Discussion: The Proposed Action will replace currently undeveloped or cultivated land with urban uses. Consequently, views of these lands will be altered from sections of the H-2 Freeway. Views of the distant Koʻolau and Waiʻanae Mountain Ranges ridgelines, along with views of Pearl Harbor looking south from the H-2 Freeway will not be adversely affected by the proposed developments.

IV. Housing

***Objective A**: To provide decent housing for all the people of Oahu at prices they can afford.*

***Objective C**: To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.*

***Policy 1**: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.*

***Policy 3**: Encourage residential development near employment centers.*

Discussion: The project will provide 5,000 homes in a variety of types, sizes and prices. The project will include affordable housing opportunities in compliance with City requirements. It will have a neighborhood commercial center and recreation areas for residents. Utility systems will be provided to serve the planned community support facilities.

V. Transportation & Utilities

***Objective A:** To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.*

***Policy 11**: Make public, and encourage private, improvements to major walkway systems.*

Discussion: The Proposed Action will provide a multi-modal transportation system to accommodate walking, biking, transit and private automobiles. A basic design intent is to create a walkable and bikeable community that encourages a healthy lifestyle and the use of alternative transportation modes.

***Objective C**: To maintain a high level of service for all utilities.*

***Policy 3:** Plan for the timely and orderly expansion of utility systems.*

***Objective D:** To maintain transportation and utility systems which will help Oahu continue to be a desirable place to live and visit.*

Discussion: The project will include construction of improvements to the Waipi‘o Interchange, construction of a new (Koa Ridge) H-2 Interchange, and water and wastewater infrastructure to serve the additional population to be supported.

VII. Physical Development and Urban Design

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

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

Policy 7: *Locate new industries and new commercial areas so that they will be well related to their markets and suppliers, and to residential areas and transportation facilities.*

Policy 8: *Locate community facilities on sites that will be convenient to the people they are intended to serve.*

Discussion: The Proposed Action will be appropriately designed to account for physical features such as slope of the site, average rainfall, solar angles, and prevailing wind direction. The Applicant will secure the needed water allocation and will integrate roadways and other infrastructure with surrounding existing and planned developments. Community facilities, including commercial areas, will be conveniently located and accessible.

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

Policy 1: *Develop and maintain urban-fringe areas as predominantly residential areas characterized by generally low-rise, low-density development which may include significant* levels of retail and service commercial uses as well as satellite institutional and public uses geared to serving the needs of households.

Discussion: The proposed project is within the CO SCP's Urban Community Boundary. The development concept for Castle & Cooke Waiawa is that of a low-rise, low-density community with local amenities and public uses in close proximity to area residences. The development concept for Koa Ridge Makai is a mix of higher density, mixed use core area with medical, commercial and light industrial uses that transition to lower-density single-family residential development. Locating neighborhood parks, recreation centers, and pedestrian-oriented shopping and entertainment centers within easy walking distances of higher densities of residential populations will reduce dependence on automobile use. Retail, commercial, and light industrial districts are included to serve the neighborhoods and surrounding communities and to provide a variety of employment opportunities within Koa Ridge Makai. These retail and commercial uses are located to be conveniently accessed from the regional transportation corridors.

IX. Health and Education

Objective A, Policy 1*: Encourage the provision of health-care facilities that are accessible to both employment and residential centers.*

Discussion: The proposed Koa Ridge Medical Complex will be in an excellent location to serve the residential and employment centers in Waipahu, Wahiawā, Mililani, Koa Ridge, Waiawa, and the North Shore.

X. Culture and Recreation

Objective D: *To provide a wide range of recreational facilities and services that are readily available to all residents on Oahu.*

Policy 9: *Require all new developments to provide their residents with adequate recreation space.*

Discussion: The Proposed Action includes 36 acres of park space, which exceeds City Park Dedication requirements.

5.2.2 City and County of Honolulu Central Oʻahu Sustainable Communities Plan

The City and County of Honolulu's Development Plan (DP) program provides a conceptual framework for implementing the objectives and policies of the General Plan on an area-wide basis. Eight (8) geographical DP areas have been established on Oʻahu of which community-oriented plans have been established for each area, including the Central Oʻahu DP area where the project is located. The eight (8) community-oriented plans respond to specific conditions and community values of each region, and are intended to help guide public policy, investment, and decision-making over the next 25 years.

The CO SCP was adopted in 2002 and is codified as Ordinance No. 02-62, Revised Ordinances of Honolulu. Central Oʻahu encompasses the plateau located between the Waiʻanae and Koʻolau mountain ranges, and includes the towns of Waipahu and Wahiawā, and the residential communities between them. The CO SCP's vision statement and implementing policies support sustaining Central Oʻahu's unique character, lifestyle, and economic opportunities by focusing future residential development on master planned suburban communities within an Urban Community Boundary.

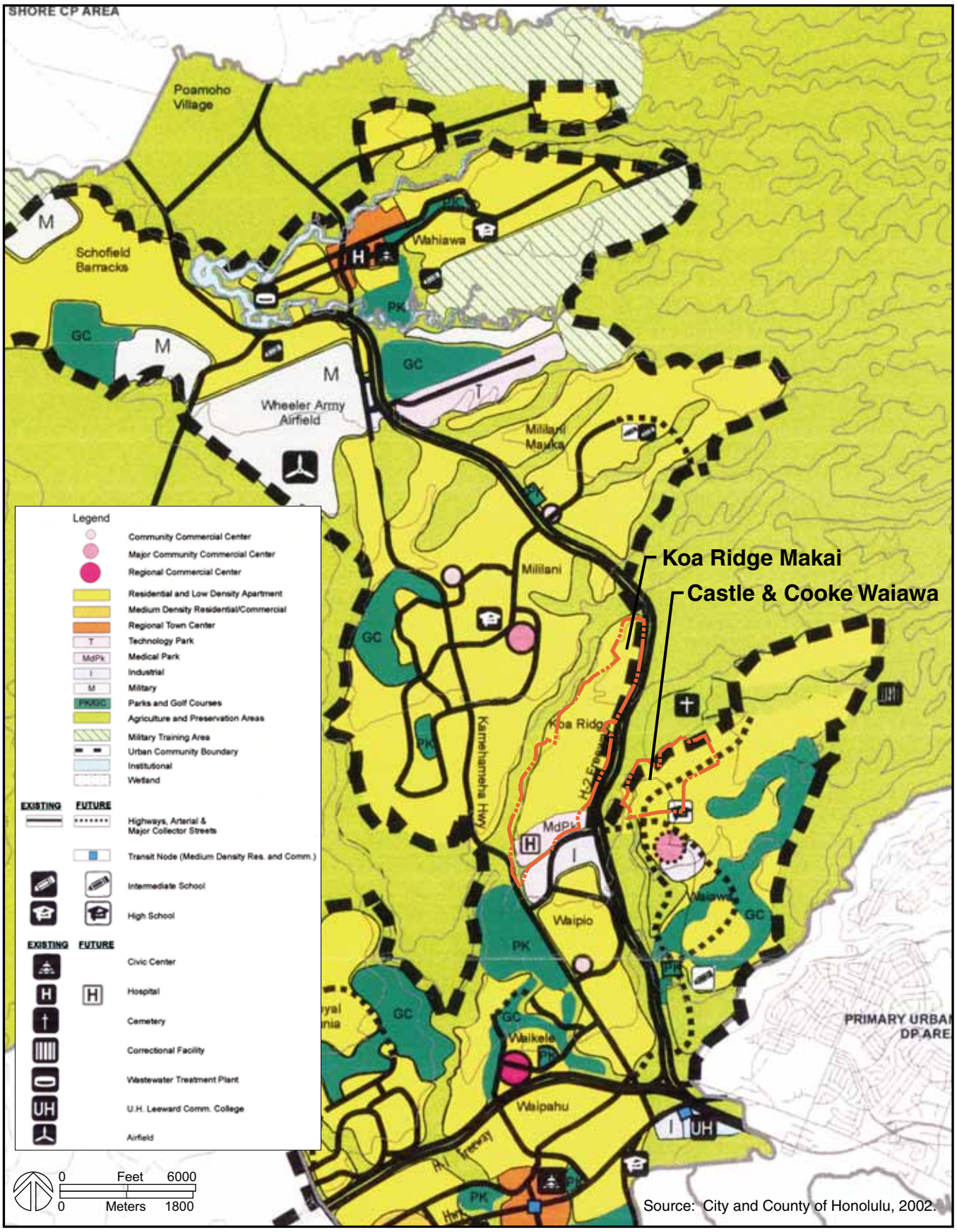
Among the elements which help to implement the vision for Central Oʻahu's future is the Urban Community Boundary, depicted in Figure 5-2. The Urban Community Boundary was established to provide long-range protection from urbanization for 10,500 acres of prime and unique agricultural lands and for preservation of open space, while providing adequate land for residential, commercial and industrial uses needed in Central Oʻahu for the foreseeable future. It is intended that urban zoning not be approved beyond this Boundary. The Petition Area is situated within the Urban Community Boundary.

The CO SCP's Urban Land Use Map illustrates the desired long-range land use pattern for Central Oʻahu. The Urban Land Use Map indicates a master planned residential development in the Waiawa area, as shown on Figure 5-2.

The CO SCP's Public Facilities Map illustrates the major infrastructure needed to implement the vision for Central Oʻahu. Within the project site, the Public Facilities Map includes symbols for a major collector street, a bike path, and a high school.

The CO SCP's Phasing Map depicts existing urban areas and areas proposed for urban expansion. The proposed urban expansion area includes the Castle & Cooke Waiawa site.

The following section provides an overview of the vision and guidelines of the CO SCP as it relates to the proposed project.



Central Oahu Sustainable Communities Plan Urban Land Use **Figure 5-2**

Central O'ahu's Role in O'ahu's Development Pattern

The CO SCP states that the regional role of Central O'ahu in the island's development pattern is to promote diversified agriculture and pineapple on 10,500 acres of prime and unique agricultural lands; provide a variety of housing types in master planned suburban residential communities and mixed-use medium density centers in Waipahu; and provide new employment in existing commercial and industrial areas, in new commercial areas designed to support their surrounding residential communities, and in a new medical park at Koa Ridge.

Discussion: The Proposed Action supports the role of and vision for Central O'ahu described in the CO SCP by providing primarily residential, mixed use, and medical complex development in areas identified in the Plan for future urban growth. The project would also provide new jobs in the neighborhood commercial areas intended to serve the surrounding residential communities.

Due to the smaller footprint of the medical complex (than what was anticipated at the Plan's formulation), additional employment-generating uses such as commercial, and light industrial and hotel are also proposed.

Key Elements of the Vision

Urban Community Boundary
The CO SCP establishes an Urban Community Boundary (UCB) to carry out long-range protection from urbanization for 10,500 acres of prime and unique agricultural lands, and for preserving open space while providing adequate land for urban development requirements in Central O'ahu for the foreseeable future.

Discussion: The Petition Area is within the UCB for Central O'ahu, and supports the vision and role of the CO SCP by providing residential development to meet the island's housing needs for the next 20 years.

Retention of Agricultural Lands
The CO SCP identifies about 10,500 acres in Central O'ahu which should be preserved for agricultural uses. These lands are among the most productive in the State for diversified agriculture and pineapple.

Discussion: The Petition Area is not included among the 10,500 acres of agricultural land identified for preservation in the CO SCP.

Open Space Network
The CO SCP promotes the 1) preservation of ravines from further urbanization and suggests their future use as a recreational network of trails and passive open space; 2) use of drainage, transportation and utility corridors as linear greenbelts; 3) development of a major regional park at Waiola; and 4) the development of the Waipahu Shoreline Park.

Discussion: The northern edge of the Castle & Cooke Waiawa Petition Area nearest the Pānakauahi Gulch is designated for park and open space uses. This area will double as a

drainage corridor. Use of the area for recreational trails will be integrated as possible. A variety of open space areas are planned along the edges of the Koa Ridge Makai Petition Area, both along the H-2 Freeway and the western property boundary. Pedestrian and bikeways will connect these open spaces--which also provide a buffer to the freeway--with the surrounding neighborhoods.

Revitalization of Waipahu and Wahiawā
Special Area Plans for these communities will guide redevelopment. Commercial development outside of these towns will be limited to Mililani Technology Park and neighborhood-level commercial centers rather than regional or islandwide centers.

Discussion: Neighborhood-level commercial centers will support new residential communities. Due to the smaller footprint of the medical complex (than what was anticipated in the CO SCP's original formulation), additional employment-generating uses such as commercial, light industrial and hotel, are also proposed along the southern end of Koa Ridge Makai, opposite and adjacent to existing commercial and light industrial areas in Waipi‘o.

Wahiawa General Hospital was established in 1944 as a community hospital. For over 60 years, it has provided health care services for Central O‘ahu, and North Shore families. However, in the early 1990's, Wahiawa General Hospital was faced with changes in health care, reducing reimbursements, decreasing revenues, a 50 year old facility, and lack of expansion room at its existing four-acre Wahiawā site and needed to take action to ensure the future of the hospital. It could either increase market share and renovate, relocate, or shutdown. Expanding Wahiawa Hospital Association's services at Koa Ridge will allow room for a large campus, providing area residents with more comprehensive, convenient health care services. The economic stability and vitality of the new facility would enable Wahiawa General Hospital to continue their services to the senior population in Wahiawā and as well as the Wahiawā population at large.

Master Planned Residential Communities
According to the CO SCP, new developments should provide a wide variety of housing types and accommodate the need for affordable housing. These developments should incorporate the preservation of historic and cultural values, establish open space and greenway networks, and create well-designed, livable communities.

Discussion: The Proposed Action will provide a variety housing types that appeal to a wide-range of potential residents. The new Koa Ridge Makai community incorporates principles of smart growth design and sustainable development into its design, through a mixed use, higher density core area. The Castle & Cooke Waiawa community also incorporates these principles through higher residential densities and centralized community and retail facilities within walking distance of most of its residents. Both communities will provide convenient and enjoyable pedestrian and bicycle facilities that link residences with on-site community, commercial and recreational facilities. The proposed project will comply with City and County of Honolulu affordable housing requirements to accommodate the full range of housing needs.

Communities Designed to Support Non-Automotive Travel
The CO SCP calls for master planned residential communities to support, through their design and development, pedestrian and bicycle use within the community and transit use for trips outside the community.

Discussion: The proposed project will incorporate compact development measures in the design of the internal circulation systems to support pedestrian and bicycle trips. Where appropriate, the project will include access to public transportation, such as a transit center to support the City's bus and rail transit systems.

Conservation of Natural Resources
Natural resources in Central O'ahu will be conserved by identifying and protecting endangered species habitat; restricting further development of ravines and minimizing disturbance to their walls; minimizing non-point source pollution; and protecting prime watershed recharge areas and the Pearl Harbor aquifer.

Discussion: The Proposed Action will not impact endangered species habitats since none occur on the Project Area. The project will minimize non-point source pollution by incorporating stormwater detention basins and water quality treatment facilities into project design. The development will receive a water allocation from the CWRM, which is contingent upon allocations from the aquifer being available.

Preservation and Enhancement of Historic and Cultural Resources
Historic and cultural resources in Central O'ahu will be preserved and enhanced by:

- Preserving significant historic and prehistoric features;
- Retaining visual landmarks and significant vistas; and,
- Limiting building heights outside of Waipahu and Wahiawā to low-rise structures to protect panoramic views and the character of the built environment.

Discussion: Due to the former intensive cultivation of the land and absence of any apparent archaeological resources, the proposed development should not impact significant historic or prehistoric features. Likewise, the proposed project will not have a significant adverse impact on the significant vistas listed in the CO SCP. Views of the upland areas from the H-2 Freeway are limited by local topography and vegetation near the Waipi'o Interchange. The proposed development will not impede views of Pearl Harbor and the 'Ewa Plain from the H-2 Freeway, in the southbound direction. Building heights in most of the proposed residential areas will be of a low-rise nature (1-2 stories). However, in order to implement smart growth principles of higher densities and compact development, the southern portion of Koa Ridge Makai will include taller buildings (four to five stories or up to 75 feet at the medical complex).

Development Priorities/Adequate Infrastructure

Development priorities identified by the CO SCP include:

- completion of existing and approved master planned residential developments and proposed developments at Koa Ridge Makai and Waiawa;
- moderate growth of commercial centers in Central O'ahu Urban Fringe Areas;

- adequate facilities requirements; and
- coordinated public-private infrastructure and project development that supports the growth strategy of the General Plan.

The Phasing Conceptual Map shows where urban development has already occurred in Central O'ahu, the areas where new development will take place, and Special Area Plan areas.

Discussion: Completion of the Koa Ridge Makai and Castle & Cooke Waiawa master planned communities supports this development priority. Project infrastructure will be provided via coordination with public and private entities, as necessary.

Land Use Policies

Land use policies, principles and guidelines in the CO SCP are intended to be used in the review and approval of projects in Central O'ahu to help implement the vision for Central O'ahu's development.

Open Space Preservation and Development
According to CO SCP policies, open space will be used to:

- Provide long-range protection for diversified agriculture and pineapple;
- Protect scenic views and provide recreation;
- Define the boundaries of communities;
- Provide a fire safety buffer where developed areas border wildlands;
- Preserve natural gulches and ravines as drainageways and storm water retention areas; and,
- Create linkages between communities through a network of greenways along transportation and utility corridors and drainage ways.

Discussion: The proposed project will not impact long-range protection of diversified agriculture and pineapple since no pineapple is farmed on the Petition Area and there is an ample supply of land for diversified agriculture without the Castle & Cooke Waiawa and Koa Ridge Makai lands. The proposed developments will be restricted to the level terrain, and will provide appropriate landscaping and streetscaping along major roadways within and between developed areas. The gulches on the peripheries will continue to serve as open space (preservation) and drainageways, as identified in the CO SCP's Open Space Map. The project will provide adequate buffer areas between structures and any adjacent grasslands to minimize risk of damage or destruction by wildland fires. Where appropriate, transportation, utility and drainage corridors will be used as greenway linkages.

Community-Based Parks
General policies for community-based parks and recreation areas include:

- Adequacy: Provision of adequate parks to meet residents' recreational needs.
- Parks Standard: Provision of a minimum of two acres of park per 1,000 residents by new residential developments.
- Recreational Access: Protection and expansion of access to mountain, shoreline and ocean recreational resources (including access to ravines and mountain trails).

Discussion: The Proposed Action includes community and neighborhood parks and other recreational facilities that will meet the City's park dedication requirements. As currently envisioned, a total of 36 acres is planned as park space. This is in excess of the park standard of two acres of park per 1,000 residents outlined in the CO SCP. It also exceeds the City and County's park dedication ordinance standard of 110 square feet of park space per multi-family dwelling unit, and 350 square feet of park space per single-family dwelling unit. Opportunities for trails and pathways along the adjacent ravines will also be explored where land ownership and topography make them feasible.

Historic and Cultural Resources

General policies for historic and cultural resources include:

- Emphasis of physical references to Central O'ahu's history and cultural roots;
- Preservation of significant historic features from the plantation era and earlier periods;
- Protection of Kukaniloko; and,
- Retain significant vistas whenever possible.

Parts of the project area lie within the viewplane of the Ko'olau and Wai'anae Mountains from the H-2 Freeway, identified as significant views and vistas in the CO SCP:

Discussion: Due to the historic long-term commercial agricultural use of the Petition Area, the Petition Area is relatively clear of significant historic sites. With the exception of Waiāhole Ditch which crosses Koa Ridge Makai, all of the significant historic sites identified during the archaeological inventory surveys are located within the off-site infrastructure improvements areas. The Proposed Action may potentially affect significant historic sites identified within the project area boundaries, which include the construction of off-site infrastructure, including a new trunk sewer line to the Waipahu WWPS. Construction of this sewer line would proceed under an archaeological monitoring program to be reviewed and approved by SHPD. The use of microtunneling technology to install the proposed sewer line would minimize the impact to any subsurface historic resources.

A cultural resource preservation plan would be prepared to address buffer zones and identify protective measures for the historic sites recommended for preservation. SHPD would be consulted on any significant historic sites – such as the Waiāhole Ditch – requiring further archaeological work or documentation prior to future construction activities. In the event that any significant archaeological resources are encountered during future construction activities, all work in the immediate area would be halted and consultation with SHPD would be sought in accordance with applicable regulations. The treatment of any remains or artifacts would be in accordance with procedures required by the O'ahu Burial Council and SHPD.

Some views of the lower sections of the Ko'olau and Wai'anae Mountain Ranges may be obscured by the proposed development from the H-2 Freeway and Ka Uka Boulevard, but views of the ridgelines from these roadways will not be adversely impacted.

Existing and Planned Residential Communities

The CO SCP lists the following general policies that may be applied to the development of new residential communities, or the expansion and renovation of existing communities:

- Overall aggregate density should be in the range of 10 to 15 units per acre (including streets). Residential areas should have densities of 5 to 12 units per acre, while Low-Density Apartment areas should have densities of 10 to 30 units per acre.
- Neighborhoods should have physical definition of their boundaries, with the focus of neighborhood activity being the local street, common pedestrian right-of-way or recreation area. An open space/landscaped buffer should be provided where urban development abuts the H-2 Freeway.
- Provide compatible mix of building forms and densities.
- Provide transit-oriented street patterns and rights-of-way.
- Encourage pedestrian and bicycle travel to neighborhood commercial, education and recreation centers. Encourage physical and visual connections between communities through integration of linear corridors.
- Provide land for community facilities.

Discussion: The planned densities of the single-family and multi-family residential areas will conform to the CO SCP guidelines for residential density (e.g., aggregate Petition Area residential density is approximately 13.7 units per acre). The Castle & Cooke Waiawa Petition Area is buffered from the H-2 Freeway by a distance of approximately 1,000 feet. At Koa Ridge Makai, appropriate buffers will be provided along its frontage with the H-2 Freeway.

The various residential neighborhoods within the Petition Area will have unique architectural design concepts and streetscapes contributing to separate identities. Because of the linear nature of the Koa Ridge Makai site, physical features of the land will play a large role in defining the neighborhood boundaries. Major internal streets will be designed to facilitate transit access and convenience with pedestrian-friendly walkways and bike lanes. Roadways, utility corridors and shallow ravines will serve as landscaped linkages between neighborhoods. Building forms, massing and densities will be mixed to create varied streetscapes, and ample space will be provided for community facilities.

The main roadways within Koa Ridge Makai and Castle & Cooke Waiawa will be designed to accommodate City buses, and will include bus shelters and bus pull-outs. CCHH will work with the City to ensure that convenient transit service is provided to the proposed commercial/Village Center site.

Planned Commercial Retail Centers

- Provide basic retail shopping and services for the surrounding community, and limit uses that need to draw shoppers from other areas of O‘ahu
- Concentrate uses in central locations rather than in strips along arterial roads
- Emphasize pedestrian and transit access to and within commercial centers
- Withhold approval for development that would compete with the objectives of redeveloping the commercial areas of Waipahu and Wahiawā and developing regional shopping attractions in the City of Kapolei

- Limit office uses in community commercial centers outside Waipahu and Wahiawā to those providing services to the local community
- Focus development on Waipahu, Wahiawā, the Mililani Technology Park, and the Koa Ridge Medical Park

Industrial Centers

- Allow limited industrial development in Central O‘ahu to accommodate services and storage for surrounding residential communities.

Discussion: The Proposed Action includes neighborhood commercial areas in both Koa Ridge Makai and Castle & Cooke Waiawa, as well as larger scale community commercial and light industrial uses located adjacent to an existing commercial/light industrial area along Ka Uka Boulevard. These larger scale commercial/light industrial uses will reduce commuting trips to metro Honolulu by providing jobs and retail goods and services nearby for Central O‘ahu residents.

Public Facilities and Infrastructure Policies and Principles

The CO SCP sets forth policies and principles to guide the planning and construction of proposed public and private public facility projects and infrastructure systems. The CO SCP includes general policies and planning principles for the following infrastructure systems and public facilities.

Transportation Systems

General Policies for the transportation system in Central O‘ahu include:

- Inclusion of conditions as part of zone change approvals, when needed, to assure adequacy of transportation capacity based on the timing of any necessary improvements;
- Provision of adequate access between jobs, shopping and recreation centers in Central O‘ahu;
- Improved access to adjacent areas, especially ‘Ewa and the employment centers of the Secondary Urban Center in ‘Ewa;
- Provision of adequate capacity for peak-hour commuting to work in the Primary Urban Center;
- Reduction in automobile use through provision of circulation systems with separated pedestrian and bicycle paths and convenient routes for public transit service; street layouts facilitating bus routes and pedestrian travel; facilities and amenities supporting pedestrian, bicycle and public transit use; and
- Expansion of transit and transportation demand management to meet projected demand for peak hour transportation in the place of adding more capacity for single occupant automobile use.

Discussion: Preliminary planning concepts and guiding principles for the Proposed Action place a major emphasis on alternative forms of transportation to reduce the reliance on the private automobile, conserve energy, decrease pollution and provide safe accommodation for their users. This includes reducing the length of the trips out of the home (provision of neighborhood parks, recreation centers, and pedestrian-oriented shopping and entertainment centers within the

Petition Area and within easy walking distances of higher densities of residential populations), providing alternative transportation modes for these shorter trips (bike lanes on all major streets, pedestrian paths and networks and accommodation of the City buses), and reducing the number of private automobiles on regional transportation routes (e.g., proximity to express bus terminals with links to the proposed transit system),

Transit capacity, high-occupancy vehicle facilities and reduction in transportation demand are regional transportation capacity issues that impact and are impacted by existing and planned developments beyond the Proposed Action. As regional issues, planning and analysis of necessary improvements and concurrency of their implementation are the under the jurisdiction of City and County of Honolulu and State transportation agencies, not individual developers. CCHH will provide its fair share contribution toward the improvements needed to accommodate the project's traffic impacts, as determined by these transportation agencies.

Water Allocation and System Development

The CO SCP recommends the following general policies be followed in developing potable and non-potable water systems to meet projected demand.

- Inclusion of conditions as part of zone change approvals, when needed, to assure adequacy of water capacity based on timing of any necessary improvements;
- Protection of the watershed;
- Coordination by the Board of Water Supply under the guidance of the State Water Commission, of the development and allocation of potable water for urban use;
- Development of adequate non-potable water supplies for suitable uses;
- Provision of sufficient amount of water for diversified agricultural needs and recharge of the Pearl Harbor aquifer;
- Reclamation and distribution of wastewater effluent, if demand and quality permit; and,
- Integration of water resource management.

Discussion: The project site overlies the Waipahu-Waiawa Aquifer System within the Pearl Harbor Groundwater Management Area. The project will require a water use allocation from the CWRM. Ultimate full use of the well source is contingent upon allocations from the aquifer being available.

There are two potential non-potable water sources for use in landscaping in the project vicinity: Waiāhole Ditch and R-1 treated water from the Wahiawa WWTP. The stream flow issues of Windward O'ahu related to the waters of Waiāhole Ditch may preclude use of its waters for landscape irrigation in Koa Ridge Makai and Castle & Cooke Waiawa. The use of R-1 treated water from the Wahiawa WWTP is feasible and may be considered if and when it becomes available. The BWS has proposed the installation of a non-potable transmission main down Kamehameha Highway to the Patsy T. Mink CORP that could potentially serve the Petition Area. Before committing to such use, the quality of this water and its effects on down gradient well sources would need to be evaluated to ensure that no threat is posed to the basal water aquifers within the Pearl Harbor Sector. As expressed in the CO SCP, experiences with increasing chloride, nitrate and pesticide contamination of groundwater indicate that activities on the surface of the land can have a detrimental effect on the quality of drinking water.

Wastewater Treatment

General CO SCP policies for wastewater treatment include:

- Connection to a regional or municipal sewer service system of all wastewater produced by new developments;
- Treatment and use of effluent as source of non-potable water for irrigation and other uses where feasible; and
- Location of new wastewater treatment plants generally in areas planned for industrial use on the Urban Land Use Map.

Discussion: The proposed development will be serviced by a new trunk sewer to convey flows to the existing Pearl City WWPS and the Waipahu WWPS. Project flows will be treated at the existing Honouliuli WWTP.

CCHH has assessed potential sources of non-potable water for project landscape irrigation. However, it is not feasible at this time to use treated effluent for landscape irrigation since there are no available transmission systems to the project vicinity.

Electrical Power Development

General CO SCP policies for electrical power development include:

- Basing the analysis of major system improvements on islandwide studies;
- Consideration of placing new transmission lines underground; and,
- Location of new electrical power plants in areas planned for industrial use on the Urban Land Use Map.

Discussion: Electrical power supply for the Castle & Cooke Waiawa project will be supplied by the existing power grid, consisting of an existing 11.5 kV overhead line that traverses the northern end of the site. The overhead line will be relocated underground for distribution beneath roadways throughout the development. At Koa Ridge Makai, sections of the HECO 46 kV Line A and Line B and 11.5 kV Waipio #1 circuits that traverse the project will be relocated underground along the roadways within the development; the portions of the pole lines that are beyond the project will remain overhead. A new substation will be constructed to ultimately serve this area and the existing 46 kV lines crossing the development extended to the substation site. The Applicant will coordinate the necessary land acquisition and equipment procurement processing with HECO so a substation will be in place and ready to serve the project loads. The existing 138 kV transmission circuits will be relocated from the Kīpapa Gulch frontage to the H-2 frontage through the Koa Ridge Makai project area.

Solid Waste Handling and Disposal

General policies for solid waste handling and disposal include:

- Basing the analysis of siting and/or expansion of sanitary landfills on islandwide studies and
- Review and approval, which includes public notification and input, of new or significant modifications to major solid waste handling or disposal facilities.

Discussion: The project will not involve the siting or expansion of sanitary landfills or any significant modifications to major solid waste handling or disposal facilities.

Drainage Systems

- General policies for drainage systems include:
- Emphasis on control and minimization of non-point source pollution and the retention and/or detention of storm water in drainage system design;
- Consideration of storm water as a potential irregular source of water for aquifer recharge;
- Use of natural and man-made vegetated drainageways and retention basins to promote water recharge, control non-point source pollutants, and provide passive recreation.

Relevant planning principles which guide the development of Central O‘ahu drainage systems include:

- Use of open space, landscaped areas, parks, and golf courses to detain storm water flows, where feasible;
- Integration of drainage system improvements with the regional open space network;
- Preservation of gulches for natural drainageways;
- Preservation of flood plain capacity around Pearl Harbor; and
- Restrictions on stream channelization wherever possible, except when necessary to prevent urban flooding.

Discussion: No streams will be channelized as a result of this project. Runoff from the northeastern portion of the Castle & Cooke Waiawa Petition Area will be collected and conveyed to a natural depression that forms a tributary to Pānakauahi Gulch. A detention basin in this location will provide sufficient hydraulic detention for the entire developed site and will limit peak discharge from the site to pre-developed conditions. Discharge from the detention basin will follow the natural drainage patterns, crossing under the Mililani Memorial Park access road through the existing box culverts before joining up with Pānakauahi Gulch.

The southwestern drainage area will be slightly enlarged to better direct flows over the proposed street network and toward the southwestern corner of the project site. A water quality treatment facility will be sited in this corner to remove silt prior to discharge into Pānakauahi Gulch.

Both on- and off-site drainage improvements will be constructed at Koa Ridge Makai, consisting of on-site storm water quality treatment facilities and off-site detention basins. Drainage improvements for the project will be designed in accordance with the City and County of Honolulu’s Rules Relating to Storm Drainage Standards. The proposed on- and off-site detention basins and water quality treatment facilities will be privately-owned and maintained by the project’s community association(s). It is anticipated that the project’s on-site streets and drainage infrastructure will be dedicated to the City for maintenance purposes.

School Facilities

General policies for school facilities include:

- State DOE review of the adequacy of school facilities prior to approval of new residential developments and
- Payment of fair share costs by developers to ensure provision of adequate school facilities for new residents.

Relevant planning principles include:

- Design of school facilities to accommodate community use during non-school hours;
- Co-location of elementary and intermediate schools with neighborhood or community parks;
- Coordination of development and use of athletic facilities between the DOE and the City's Department of Design and Construction, where duplication can be reduced; and
- City support of DOE's requests for developer fair share contributions via its zoning powers.

Discussion: To satisfy DOE fair-share requirements for the project, CCHH will contribute to the provision of public school facilities, as agreed upon with the DOE through the Education Contribution Agreement of June 2008. Per the terms of the Agreement, CCHH will 1) provide a cash contribution to DOE on an agreed upon schedule, based on residential units built; and 2) dedicate land to the DOE for two 12- acre elementary school sites in mutually agreed upon locations, as well as provide all necessary off-site infrastructure.

A site for a 12-acre elementary school is proposed to be centrally located within Koa Ridge Makai. For the Castle & Cooke Waiawa development, a new elementary school is proposed to be located adjacent to a neighborhood park and community center.

The development and phasing of new school capacity is a regional issue, which takes into consideration enrollment projections of existing and planned developments beyond the project area. The DOE determines the proportions of school capacity provided by redistricting, portables and multi-tracking, which also involve existing and planned developments surrounding the project site. Therefore, because of the regional nature of the issue, the DOE is the appropriate agency to determine the timing of new school construction. CCHH will do all it can to ensure that the needed school capacity will be provided within a reasonable time, including keeping the DOE well-informed of probable construction phasing and target markets and providing its fair share contribution to the provision of adequate public school facilities according to a schedule to be determined by the DOE.

Public Safety Facilities

A general policy related to public safety facilities is that new development should be approved only if staffing and facilities will be adequate to provide fire and police protection and emergency medical services.

Discussion: The project will impact existing police and fire protection services and increases in staffing and expansion of facilities may be required.

The project will provide a water system where all appurtenances, hydrant spacing and fire flow requirements meet Board of Water Supply standards; and provide a fire department access road to within 150 feet of the first floor of the most remote structure. Construction plans will be submitted to the Fire Department and the Department of Planning and Permitting for approval.

5.2.3 City and County of Honolulu Land Use Ordinance

The City and County of Honolulu Land Use Ordinance (LUO) regulates land use in accordance with adopted land use policies, including the General Plan and Development Plans. The provisions are also referred to as the zoning ordinance. Zoning designations are shown on the zoning maps for the City.

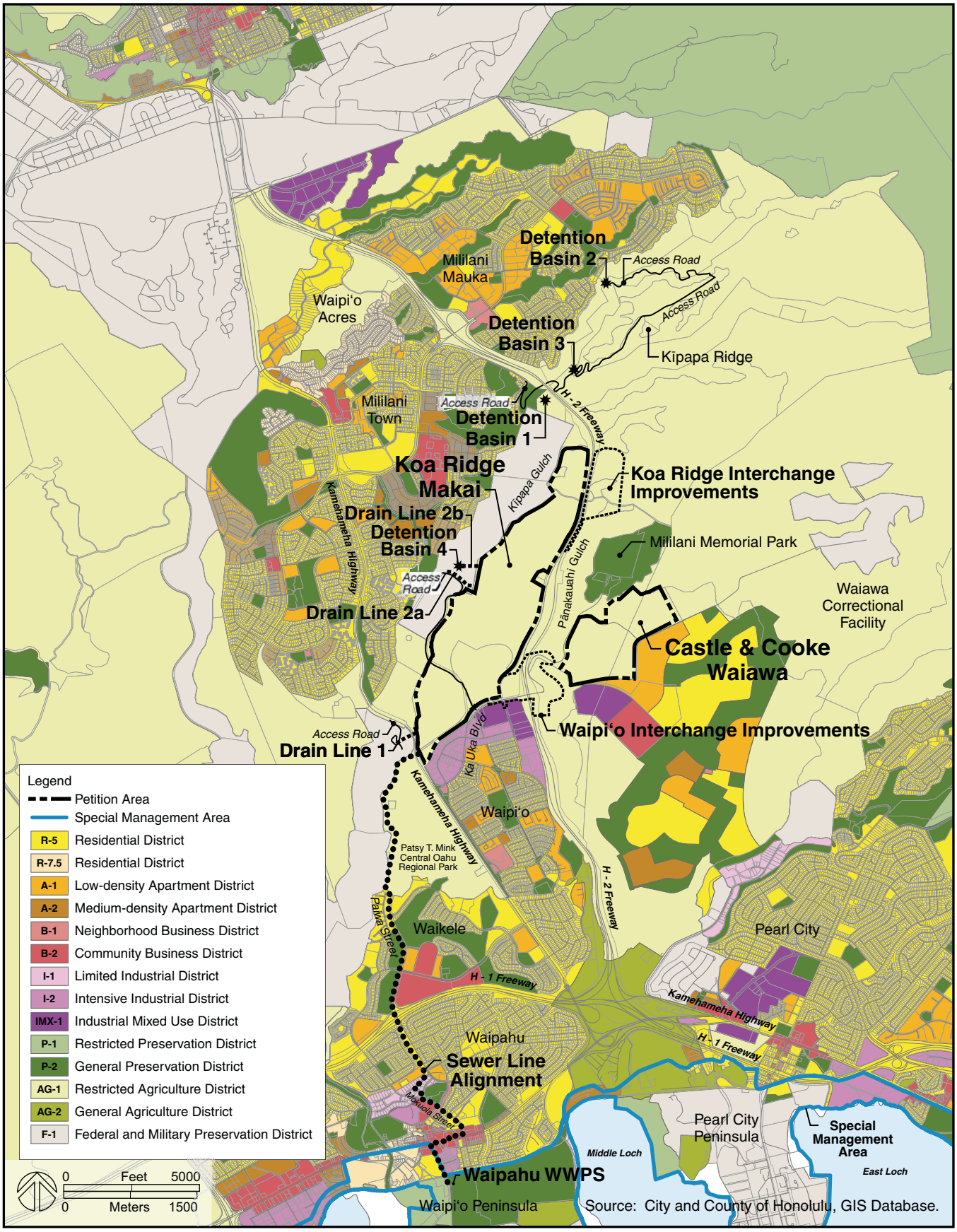
The Petition Area is zoned AG-1 Restricted Agricultural as shown on Figure 5-3. Project implementation will require rezoning of the development area to be consistent with the proposed land uses. Proposed zoning districts for the project may include: R-3.5 & R-5 Residential, A-1 Low Density Apartment, AMX-1 and AMX-1 Low and Medium Density Apartment Mixed Use, B-1 Neighborhood Business, BMX-3 Community Business Mixed Use, and P-2 General Preservation. The proposed zoning designations for the project will be established at the time that the zone change application is filed with the City and County of Honolulu Department of Planning and Permitting.

Under the CO SCP, projects involving significant zone changes will require an Environmental Assessment along with a project master plan when 25 or more acres are involved. As previously indicated, this EIS is also prepared in support of a zone change application to be filed with the City Department of Planning and Permitting following the State Land Use District boundary amendment process.

5.2.4 City and County of Honolulu Special Management Area

The Hawai‘i Coastal Zone Management Program embodied in Chapter 205A, HRS contains the general objectives and policies upon which all Counties within the State have structured specific legislation and designated Special Management Areas (SMA). Any development within the SMA requires a SMA Use Permit which is administered by the City and County of Honolulu Department of Planning and Permitting pursuant to Ordinance No. 84-4.

The Petition Area is outside of the SMA boundaries (see Figure 5-3). A portion of the off-site sewer line is within the SMA, but may be exempt as it is an underground utility located within a road right-of-way.



Existing Zoning and Special Management Area Map — Figure 5-3

KOA RIDGE MAKAI and WAIAWA DEVELOPMENT
CASTLE & COOKE HOMES HAWAI'I, INC.

6.0 | Alternatives Considered

Chapter 6: ALTERNATIVES CONSIDERED

This section has been prepared following guidance provided by Chapter 343, HRS, §11-200-17 (F) HAR; the National Environmental Policy Act and its implementing regulations, 40 Code of Federal Regulations (CFR) Sec. 1502.14 (a).
In addition to the Proposed Action, several alternatives were considered and evaluated:

- No Action Alternative (i.e., the no-build plan);
- Alternative Land Uses for the Site;
- Other Alternatives

6.1 NO ACTION ALTERNATIVE

The No Action Alternative assumes only uses permitted within the State Agricultural District under HRS §205-2 (d) would occur within the Petition Area. Urbanization of the Petition Area would be delayed until a future, undetermined date. The new homes and jobs that would be provided by the Proposed Action are assumed to be provided elsewhere on O‘ahu to meet market demands. Under this alternative, land uses within the Petition Area could remain the same or they could be converted to other uses permitted under HRS §205-2 (d). Under current use, the existing cattle grazing and farming operations would remain and the attendant ranch job and 34 agricultural jobs would be retained. The open space currently provided would be retained and stormwater runoff volumes from the site would be kept at pre-development levels. The potential for agricultural use would remain intact which would continue to contribute to the local agricultural economy. The site would not be irretrievably committed to urban development and typical impacts associated with urban development would not occur at that site. The No Action alternative would allow the Petition Area to remain undeveloped, and preserve open space and mauka views for the public travelling along the freeway.

Because most of the homes associated with the Proposed Action are assumed to be built elsewhere on O‘ahu, many potential environmental effects would simply be shifted to other unidentified areas of the island. For example, short-term construction-related impacts, long-term impacts to public facilities and services and consumption of natural and man-made resources such as fossil fuels and construction materials would still occur on O‘ahu, but not generated by or at the Petition Area. Human labor for planning, design and construction, and financial capital would still be expended on O‘ahu but not in the Petition Area. The No Action alternative would increase pressure to develop needed housing in other urban, suburban and rural areas of O‘ahu. The significant employment opportunities provided within the Petition Area would be shifted to other parts of the island. The no-action alternative is not consistent with the City’s growth policy, which is to direct growth to areas within the Urban Community Boundary and in the context of the CO SCP, to the Petition Area. Most importantly, the no-action alternative would not meet the project purpose and objectives and thus cannot be considered a “reasonable” alternative.

6.2 ALTERNATIVE LAND USES FOR THE SITE

A wide mix of land uses is proposed for the Petition Area (e.g., single and multi-family homes, commercial uses such as retail, office, dining, services, medical/healthcare facilities, hotel, light industrial, elementary schools, open space, churches, parks and recreation centers). This mix is an important part of the overall plan to establish a sense of place and to create an integrated, vibrant and sustainable community. The majority of the Petition Area is identified in the CO SCP as "residential – low density apartment," and entirely within the Urban Community Boundary (the Ka Uka Boulevard end of Koa Ridge Makai is designated as "medical park," including a "hospital" designation). Other urban land uses identified in the CO SCP for development within Central O'ahu include regional and major community commercial centers, technology parks, industrial, military, and parks and golf courses.

In its EIS Preparation Notice comments, the Sierra Club Hawai'i Chapter requested that the Draft EIS consider "a small scale development that uses renewable energy, has more open space, additional bike and walking paths, and that maintains the most productive portions of the proposed project lands for agricultural use." Such an image evokes a rural or farm-like setting or even a cooperative type of community where residents are directly involved in farming operations. An alternative model would be the modern agricultural cluster type of development where residential uses are clustered together in a compact area and adjacent agricultural lands are leased to professional farmers. A third model would be the State Agricultural Park concept where large tracts of land are leased to farmers along with the right to construct their own farm dwellings and related appurtenances. These models are appropriate in a rural or agricultural context although there are few, if any, successful examples in Hawai'i due to high development costs and limited demand for farm products.

The Proposed Action seeks to establish an urban scale and density to support a substantial population base and a city-like concentration of services. This is simply not achievable at a "small scale" given the significant offsite investment in infrastructure, protracted land use regulatory process, and pent up demand for housing and new jobs in the Central O'ahu region. Certainly, the integration of renewable energy sources, bicycle and walking paths and proximity to local parks and open space -- hallmarks of quality development -- are included in the proposed plan. Large scale agricultural activities are not compatible with suburban and urban residential areas as many Central O'ahu residents will testify to, having coexisted for years with plantation agriculture. Fugitive dust, mud and noise generated by farm vehicles are often considered a nuisance to residents. Use of modern pesticides, herbicides and fertilizers becomes problematic for the farmer. Fortunately, as the project agricultural impact assessment points out (Appendix H), O'ahu still has vast areas of high quality agricultural lands that can accommodate diversified agricultural activities.

An alternative to the proposed land use plan could be to develop the Petition Area as a "traditional" lower-density residential subdivision. The current land use plan designates about 364 acres of the Petition Area for residential use to accommodate 5,000 homes, achieving an overall residential density of about 13.7 dwelling units per acre. If this land area were developed at a density of 6 units per acre (typical for an R-5 zoned subdivision), then only about 2,200 housing units would be developed, less than half of the stated purpose of the action. This type of

housing, with its low density character, larger lots and homes, wide streets and ample parking has significant market appeal. On the other hand, the lower density translates to higher home prices, and encourages urban sprawl with its higher infrastructure costs and emphasis on automobile use. This type of residential development also decreases the viability of commercial uses and does not provide on-site employment opportunities. Vehicle trip generation rates are higher for lower density residential uses and it is far more difficult to support viable public transit. There would also be less housing choice and fewer units available to meet projected demands.

Another hypothetical scenario would be to replace the medical/healthcare uses with regional or major commercial uses. This would change the type of the jobs provided within the Petition Area and would prevent Wahiawa Hospital from implementing its plans to create a new medical/healthcare complex in Central O‘ahu. Another option would be to incorporate an 18-hole golf course into the Koa Ridge Makai parcel, effectively reducing available residential land by more than half. The economics and politics associated with golf course development have changed markedly in the past ten years, increasing development risk and decreasing potential economic returns.

CCHH has explored these and a number of other alternative site configurations with its Community Vision Group, leading up to the selection of the proposed land use program and plan. The proposed configuration provides the optimal residential and commercial density, mix of housing and job types and mix of civic amenities to achieve the project purpose and objectives. Planning concepts such as “smart growth” and “sustainability” were carefully considered by the project planners and the community vision group and were woven into the plan. The resulting land use plan and program creates a compact, walkable residential community incorporating a mix of recreational, neighborhood commercial and educational uses. The compact nature and higher density of the project preserves open space, prevents sprawl, capitalizes on infrastructure investments, reduces infrastructure maintenance costs, and improves the viability of neighborhood commercial uses.

6.3 OTHER ALTERNATIVES

Postponing the Project Pending Further Study. This is another of the alternative examples provided in §11-200-17 (F) HAR. Postponing the project to conduct further technical studies and discussions with the community should be considered if more time is needed to resolve issues that may arise. Although there are unresolved issues affecting the project identified in Section 7.7, these can be appropriately resolved through the environmental review and entitlements process without further delaying the project. State and County agencies, Neighborhood Boards, other community groups and community leaders will continue to be consulted as the project moves forward, following a tradition of responsible development established by the applicant over its 40+ years as a Central O‘ahu developer. The land use regulatory process (e.g., State Land Use District Boundary Amendment and County Zoning) provides the appropriate venue for resolving and apportioning public and private sector responsibilities and establishing mechanisms for ensuring high quality and responsible development. Postponing action would not improve the quality of the project and would unduly penalize the applicant.

Alternative Locations for the Project. Another of the alternative examples provided in §11-200-17 (F) HAR, this scenario would be most appropriate in considering the siting of a public facility such as a landfill or power generation facility. This is essentially a variation of the No Action alternative where the proposed Petition Area uses are constructed at another location. There are many locational attributes of the Petition Area that make it suitable for development that would ignored under this alternative including 1) location near existing communities, 2) availability of infrastructure, 3) absence of sensitive environmental areas and physical constraints to development, 4) location in a region with a strong demand for residential use, and 5) location within the CO SCP Urban Community Boundary. While it is hypothetically possible that the project could be developed elsewhere, it is not reasonable to expect that the applicant would be able to acquire another site that possesses all of the favorable attributes of the proposed site.

7.0 | Contextual Issues

Chapter 7: CONTEXTUAL ISSUES

7.1 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short–term uses and long-term productivity consist of the project's short-term construction phases and the long-term benefits of the project after construction.

During construction, there will be short-term uses involving temporary and permanent alteration of land for grading, site work and building construction. Short-term construction impacts can be avoided or mitigated by implementation of construction BMPs. Best management practices may include erosion and sedimentation control measures, directing storm water run-off to detention/retention basins, and preventing the release of fuel or other contaminants. The trade-offs among these short-term losses are the increase in employment and immediate economic benefits of construction-related activities.

In the long-term, the Proposed Action will commit 766 acres of agricultural land to urban developments, some lands of which have not been farmed since 1993 (i.e., Castle & Cooke Waiawa Petition Area). Development of the project would foreclose the future option of reinstating large-scale agricultural use of the Petition Area. However, due to the ample supply of suitable land available for diversified agriculture and the difficulty of developing a major new export crop in Hawai‘i that would require land on the scale of that released by plantation agriculture, it is unlikely that the Petition Area would be returned to large-scale agricultural use. In efforts to mitigate the loss of agriculture, CCHH maintains a long-term commitment to preserve agriculture through the use of more suitable lands elsewhere on O‘ahu, owned through its affiliate, Dole Food Company. Additionally, CCHH has provided replacement lands for the Koa Ridge Makai Petition Area lessee (Aloun Farms), which will transfer its operations to the new site by early 2010.

In addition to the change to a non-agricultural use, there will also be a long-term loss of open space and certain existing views of the foothills of the Ko‘olau Range and long-range views of the Wai‘anae Range from the H-2 Freeway. Existing views at the Castle & Cooke Waiawa Petition Area, however, will be altered to a more urban form regardless of the Proposed Action as the neighboring Waiawa Ridge development is implemented.

There will be long-term changes associated with regional traffic patterns and volumes, and increased demands on infrastructure and public services. The project's infrastructure improvements and increased tax base will help to balance the impacts related to increased infrastructure maintenance cost and required public services.

With regard to maintenance and enhancement of long-term productivity, the Petition Area is suitable to accommodate urban type uses. The development as proposed by CCHH will increase the range of beneficial uses of the environment by providing a quality residential neighborhood, educational, medical, community, and recreational facilities. There will be long-term productivity gains through the project's provision of quality, desirable homes within a master planned community to meet the shortage of housing needs for O‘ahu's residents. Other proposed

uses would improve the social well-being of Central O‘ahu residents through the increased employment opportunities in the area and conveniently located medical facilities and services.

The Petition Area possesses desirable attributes, including a superior location with regard to its gentle slope, views, climate and proximity to existing infrastructure and urban employment centers. Studies performed in the preparation of this EIS indicate that the project will have no significant adverse environmental impacts that cannot be mitigated to insignificant levels.

The project will comply with all applicable Federal, State and City and County of Honolulu regulations governing project development and implementation. The project site is not in an area with known hazards such as flooding or tsunami inundation.

In the long term, the Proposed Action will provide substantial positive economic and social benefits as discussed throughout this EIS. As a result, the Proposed Action will contribute to the maintenance and enhancement of long-term productivity for the people of O‘ahu in general**.**

7.2 CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Together with other existing and anticipated future development in the area, the project has the potential to generate cumulative impacts including increases in traffic volumes on regional transportation facilities, demand for school facilities, police and fire protection services, drinking water supply, and impacts to agriculture and open space.

A description of baseline human and natural environmental conditions in the region is found in Chapters 3 and 4. Baseline conditions involve all of the surrounding land uses listed in Chapter 2.

The analysis of impacts on natural and human resource areas described in this EIS has also taken into account other future development in Central O‘ahu, where known and relevant. In particular, the discussion of traffic impacts includes additional traffic generated by build-out of the Waiawa Ridge development as well as local traffic growth from infill projects and trips to/from existing land uses. The following describes these types of cumulative impacts:

***Groundwater*.** As discussed in Section 3.6.2.1 Groundwater Availability, the Proposed Action will not have a significant impact on the availability of potable groundwater in Central O‘ahu. The Proposed Action would not have a significant cumulative impact on groundwater resources when it is considered cumulatively with other future entitled projects (i.e., “reasonably foreseeable future actions”) that would draw water from the Waipahu-Waiawa Aquifer. As seen in Table 7-1, the aquifer’s unallocated sustainable yield appears to be more than adequate to meet the cumulative requirements of the entitled but unbuilt projects in Central O‘ahu as well as the proposed Castle & Cooke Waiawa and Koa Ridge Makai communities.

Table 7-1
Waipahu-Waiawa Aquifer: Unallocated Sustainable Yield

Project	Demand (MGD)	Source
Royal Kunia Phase II	1.718	Wanket 1989
Waiawa Ridge Development	3.300	Environmental Communications, Inc. 1987
Koa Ridge Makai	2.006	Water Resource Associates 2008
Castle & Cooke Waiawa	0.704	Water Resource Associates 2007
Total	**7.728**	
Unallocated Waipahu-Waiawa Aquifer Groundwater	19.144	Water Resource Associates 2008
Balance of Unallocated Sustainable Groundwater Yield	**11.420**	

Open Space. The Petition Area is located within the CO SCP's Urban Community Boundary (UCB), in which significant acreage will be retained in open space, in the form of parks, wildlife habitats, golf courses, agricultural lands, and natural and grass-lined drainage ways (City and County of Honolulu 2002). Even with the development of the Proposed Action and other Central O'ahu projects that are planned or have been approved but not yet built in the areas within Central O'ahu that have been identified for urban development by the City, over 5,000 acres--or 24 percent of the land within the UCB--will remain in open space. Furthermore, the CO SCP Land Use Map designates approximately 10,350 acres of prime and unique agricultural lands and preservation areas.

Agricultural Lands. The withdrawal of the Castle & Cooke Waiawa lands from potential agricultural use will not significantly impact agricultural production in the State, nor will it have a cumulative impact on agriculture, as sufficient supply exists to meet the historical rate of demand for diversified agricultural lands. The information presented in Section 4.4 Agricultural Impacts makes it clear that it is not the land supply, but rather the market (or lack thereof) that is the limiting factor to the viability of diversified agricultural production. Even if alternative crops become cost effective (which may or may not happen in the foreseeable future), there are thousands of acres of former sugar lands elsewhere on O'ahu and on the Neighbor Islands, which would be available for these crops.

Traffic. The estimation of future impacts is important for cumulative impact analysis. However, the focus must be on "reasonably foreseeable" actions which are those that are likely to occur or probable, rather than those that are merely possible or subject to speculation. The prediction of reasonably foreseeable impacts thus requires judgment based on information obtained from reliable sources such as adopted plans and similar documents. Based upon this framework, the methodology used in the project Traffic Impact Analysis Report (TIAR) (Appendix I) takes into account and evaluates the cumulative impacts on transportation infrastructure. The methodology used in the TIAR to evaluate and account for cumulative impacts is explained below.

Establish the geographic scope for the analysis. The scope of the study was regional in nature and included several major intersections, interchanges, the Interstate H-2 Freeway, and Kamehameha Highway. The study area was also determined based upon consultations with the State DOT. An assessment was also undertaken of the Waiawa Interchange (H-1/H-2 merge) in terms of commuter travel time effects.

Establish the timeframe for the analysis. The timeframe for the analysis included the project's build-out year of 2025 along with an interim study year of 2016.

Characterize the infrastructure system. The relevant segments of the existing transportation system and present levels of operation were described in the TIAR.

Identify other developments or improvements affecting the transportation infrastructure in the study area. The study fully incorporates Waiawa Ridge development's schedule over the project period. Information from the O'ahu Regional Transportation Plan 2030 (ORTP) was also utilized because it serves as a comprehensive guide for the development of the major surface transportation facilities and programs to be implemented on O'ahu. For longer range studies, use of the ORTP information more accurately reflects the anticipated impacts of traffic growth in the region than the use of historical traffic count data because it is based upon statewide population, employment, and visitor forecasts, and is thus a reliable source.

Define a baseline condition for the infrastructure system for which future impacts can be identified and evaluated. The traffic study developed a baseline condition based on future projections without the project, against which project impacts could be identified and evaluated.

Determine the magnitude and significance of cumulative effects. Traffic projections were then updated to include the project related traffic over the without project conditions to identify project impacts. Therefore, these results identify the cumulative effects of the project since it includes the impacts of other developments and growth affecting the study area.

A number of regional highway improvements identified in the ORTP were discussed in the TIAR. However, they could not be reasonably included in the analysis because: 1) implementation of the improvements is programmed based on available transportation funds and priorities which are difficult to establish; and 2) determining which of the many identified improvements would be completed by a certain timeframe is difficult to estimate. Nevertheless, the traffic analysis represents a more conservative assessment for determining impacts and necessary mitigation improvements. Having any of the regional improvements implemented within the study period would result in improved conditions over that indicated. Thus, the traffic analysis conducted already incorporates methods to assess the cumulative impacts associated with the proposed project.

7.3 SECONDARY IMPACTS

Secondary impacts include those that are caused by the project and occur later in time or farther removed in distance but are still reasonably foreseeable. They may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density

or growth rates, regardless of who initiates the action. Potential secondary impacts or indirect effects are discussed earlier in this chapter and include: potential air quality impacts associated with the project's electrical power and solid waste disposal requirements (H-POWER combustion emissions); indirect and induced employment both during the construction and operational periods; indirect and induced workforce incomes and indirect fiscal effects upon government services and revenues.

Air Quality Emissions. Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with the project's electrical power and solid waste disposal requirements. Based on the estimated project demand levels and emission rates involved, any impacts to air quality near the power generation plant and solid waste disposal facilities will likely be negligible. Regardless of outcome, the project will incorporate energy conservation design features and promote conservation and recycling programs to further reduce any associated impacts.

Employment and Workforce Income. The project will bring about positive benefits to the local economy, including increased expenditures for construction, off-site infrastructure improvements, and construction-related jobs and tax revenue. During construction, the project could generate development-related employment for some 1,990 FTE persons per year. During the subsequent years of the community's build-out, it could support some 1,730 FTE development-related jobs per year through its direct, indirect and induced impacts. These jobs are expected to generate annual personal earnings of some $119 million (2009 and 2015) to $100 million (2016 to 2025) per year, at about $58,000 to $60,000 per FTE job (Mikiko November 2008).

By the time of its full build-out in about 2025, the project could also be expected to have generated about 2,460 direct FTE jobs on-site at its retail, office, industrial, hotel, medical and school facilities. Statewide, the project may be expected to generate up to 1,490 jobs that would be new to O'ahu and the State. These could include professional, technical, managerial and other staff positions at Koa Ridge Medical Center, the hotel and the proposed office and retail areas; sales and marketing positions supported by the on-going resales and releasing of property at the Project; and myriad other positions generated throughout the economy (Mikiko November 2008).

Public Services and Revenues. The project will incur increase demand for public services and facilities operating costs for the State and the City and County of Honolulu. However, these costs are likely to be much less than government revenues generated by the project. By 2025, the project will generate about $13.7 million in revenues per year to the State. City and County of Honolulu property taxes at full build-out are expected to reach approximately $11 million annually. Annual revenues for both City and State associated with the Proposed Action are estimated to be well above costs incurred by the respective governments during project construction, at buildout and into the operational period.

Population Growth and Density. With regard to secondary population impacts, planned infrastructure improvements (e.g., water, wastewater, drainage, transportation) will mitigate project needs only and are not expected to stimulate or induce growth outside the project area.

Based on historical CCHH buyer origin patterns at representative other developments in Central O‘ahu, the Koa Ridge Makai and Castle & Cooke Waiawa communities are expected to primarily attract existing island residents, with minimal (~3 percent) in-migrants. Therefore, the project will not induce significant population growth through out of state in-migration.

The context of considering secondary impacts of the project with other existing and future developments in the area is that the area is planned for growth by the City and County of Honolulu. Central O‘ahu has been identified in the General Plan (Population Objective C, Policy 2) to support growth to relieve developmental pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center. As such, the CO SCP accommodates future development in Central O‘ahu, including the Proposed Action and the planned Waiawa Ridge development.

Traffic. The traffic methodology utilized in the project TIAR accounted for likely secondary effects associated with the project. Information from the ORTP incorporates land use information on a regional scale that was factored into the traffic projections and subsequent analysis. The regional roadway network for the project was modeled using transportation software to develop the forecasts which thus accounted for changes in traffic assignments as development progressed out to the 2025 build-out year.

7.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The project would result in the irreversible and irretrievable commitment of certain natural and fiscal resources. Major non–renewable resource commitments include the project site and the financing, construction material, labor, and energy required for the project’s completion. The impacts represented by the commitment of these resources, however, should be weighed against the positive socio-economic benefits that could be derived from the project versus the consequences of either taking no action or pursuing another less beneficial use of the property.

The proposed project will transform agricultural land into urban uses and irreversibly limit the potential use of the project area for agricultural production. The project will also result in the irretrievable loss of open space and alter some views of the Ko‘olau and Wai‘anae Mountain Ranges from the H-2 Freeway, though the ridgelines should remain visible.

As with any construction activity, resources such as fossil fuels and construction material will be irrevocably committed. Labor will be required for planning, engineering, and construction. Once occupied, the new housing will generate increases in the demand for water, electricity, and sewer service. However, these increases will accompany any new housing development, regardless of location. Homes that are built elsewhere on O‘ahu to satisfy the demand for new housing will generate the same or greater demand for these resources.

Providing potable water for the project would commit additional groundwater resources, but the groundwater resources and supply study has shown that there is an adequate supply of water available from the aquifer’s sustainable yield. It should be noted that the project is intended to meet existing and projected housing demand by O‘ahu residents, not new demand from

elsewhere, and these residents would generate demand for new water resources regardless of their location.

There is always the risk of environmental accidents resulting from any phase of project implementation which may cause irreversible damage to the environment. The possibility of environmental accidents will be mitigated by observing all applicable environmental laws and regulations and following BMPs to help prevent and respond to any environmental accidents.

7.5 PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

This section describes the project's long-term adverse impacts that may be unavoidable and the rationale for proceeding notwithstanding the unavoidable effects.

Agriculture. The project will result in the loss of 766 acres of agricultural land which currently provides 34 diversified agriculture jobs (Koa Ridge Makai Petition Area) and a fraction on one ranch job (Castle & Cooke Waiawa Petition Area). In practice, however, the project will result in little or no loss of existing or potential agricultural employment since the tenant farmer, Aloun Farms, will transition to comparably-sized farmlands in the near future.

Views/Open Space. The proposed action will convert the project area from its current fallow agriculture/open space condition to urban forms. The project may obscure views of the lower sections of the Koʻolau and Waiʻanae Mountains from the H-2 Freeway, but views of the Koʻolau ridgeline are not expected to be adversely impacted. Some of the impacts will be offset by open space features along the east boundary of the Koa Ridge Makai Petition Area (i.e., a 19-acre community park), as well as landscaping along the residential developments bordering the H-2 Freeway.

Traffic. The project will increase traffic demands and congestion in the vicinity of the Petition Area. There would be increased traffic during peak hours at the intersection of Ka Uka Boulevard and the H-2 Freeway and with Kamehameha Highway. However, implementation of the intersection and roadway improvements as outlined in project TIAR should accommodate the anticipated increases in traffic at the study intersections at acceptable levels of service. From the perspective of a commuter using the H-2/H-1 Freeway, commute time will increase due to the overall growth of traffic in the corridor (i.e., with or without the project). The H-1 and H-2 freeways will continue to operate at LOS F and morning peak period commute times between the Mililani Interchange with H-2 and the Kaahumanu Street Overpass of H-1 would increase from 8-16 minutes in the morning peak period (existing condition) to between 11-23 minutes (projected 2025 condition). New employment opportunities and transportation demand management strategies implemented within the Petition Area, expanded public bus service and the implementation of proposed rail service will expand the range of choices available to Central Oʻahu residents, indirectly mitigating the projected increase in longer commute trips for private vehicles.

7.6 RATIONALE FOR PROCEEDING WITH THE PROJECT NOTWITHSTANDING UNAVOIDABLE EFFECTS

In light of the above mentioned unavoidabable effects, the project should proceed because adverse impacts will be minimized, mitigated to insignificant levels, or offset by substantial benefits. The proposed project will have numerous benefits to offset its potential unavoidable adverse impacts. The potential loss to agriculture and open space will be offset by the following benefits:

- approximately 5,000 new single family and multi-family homes in a live-work-play setting to meet islandwide housing needs
- provision of master-planned community featuring quality homes in desirable neighborhoods
- provision of homes for a variety of income ranges, including affordable units
- provision of medical facilities and services
- increased housing choices for O‘ahu’s residents
- increased job opportunities at a variety of skill levels
- provision of construction and related jobs
- generation of government revenues and personal income for Hawai‘i residents
- provision of school sites and fair share contributions the to State DOE
- provision of a community centers, parks, walking trails and open space
- implementation of traffic and infrastructure improvements and fair share contribution toward regional traffic facilities

7.7 UNRESOLVED ISSUES

There are several issues that remain unresolved at the time of the preparation of this EIS. They are described below. They are expected to be resolved prior to undertaking the Proposed Action.

Proposed Water Storage Tank. Since both the Castle & Cooke Waiawa development and the planned Waiawa Ridge development have potable water system requirements at the 785-foot water service zone, improvements must be coordinated. Storage facility requirement for the Waiawa Ridge development will require a 2.0 MG reservoir. The proposed project water demand will require 1.0 MG of storage. Depending on scheduling, either a single 3.0 MG storage tank will be constructed to serve both projects, or two smaller storage tanks will be constructed to serve each project independently.

Identification of Specific Regional Transportation Improvements. CCHH has committed to participate in the funding, design and construction of local and regional transportation improvements and programs necessitated by the proposed project, on a fair-share basis, as determined and approved by the State Department of Transportation and the City and County of Honolulu Department of Transportation Services. Regional improvements and programs have not yet been identified by these State and City and County agencies, but could specify roadway improvements, studies of regional transportation requirements, dedication of rights-of-way to the State and/or City and County at no cost; donation of lands for park-and-ride facilities; and

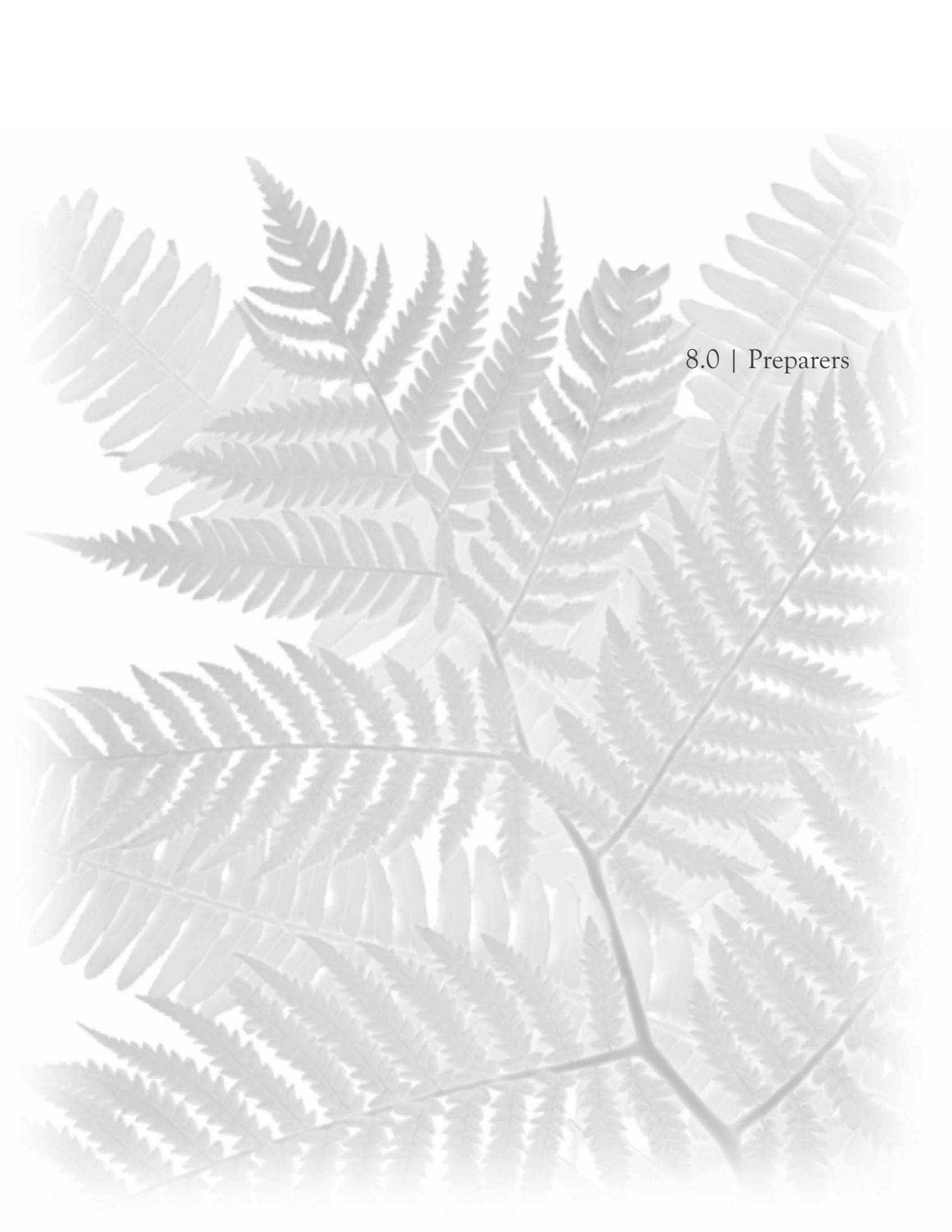
establishment of bikeways and/or lanes. City bus transit services and routing relative to the proposed developments are also undetermined at this time.

New Access Point for Mililani Memorial Park Road. Access to Mililani Memorial Park is currently provided via a paved, private two-lane road that is connected to the eastern terminus of Ka Uka Boulevard. The Access Road may need to be relocated as part of the Ka Uka Boulevard extension and proposed improvements to the Waipi'o Interchange being undertaken by the Waiawa Ridge development. Should relocation be necessary, CCHH will assist the Waiawa Ridge development in its efforts to relocate the road.

Waiawa Correctional Center Access Road. The State's roadway access easement extending from the eastern terminus of Ka Uka Boulevard to the correction facility will remain in place during construction of the project until primary access to the facility site is established from the extension of Ka Uka Boulevard. Access to the correctional facility will be maintained at all times during the construction period. The roadway access easement will be eliminated when the project's road network is completed and roadways are dedicated as public streets. Permanent access will be made available by the Waiawa Ridge development as development progresses into its mauka lands.

Off-Site Drainage Improvements. Although four off-site drainage detention basins are evaluated in this EIS, only three are required to address the projected increases in the peak discharge into Kīpapa Stream for the 100-year, 24-hour design storm. The third basin will either be DB 3 on CCHH property or DB 4 on U.S. Army property. If DB 4 is determined to be needed, an easement or real estate transfer will be required. Two stormwater drainlines will also cross U.S. Army property to discharge into Kīpapa Stream from the Koa Ridge Makai Petition Area. These drainlines will also require easements from the U.S. Army. The location and design of the drainage facilities may also be modified with the pending stream and water quality permits required.

Archaeological and Historic Resources. The archaeological inventory surveys and related work have been submitted to SHPD, and are currently pending SHPD review and approval. The project would preserve two sites recommended for preservation (SIHP No. 50-80-09-7053, the Old Kamehameha Highway alignment; and SIHP No. 50-80-09-7046, a plantation-era clearing platform that is significant to native Hawaiians). However, the extent of the impact that the Proposed Action will have on remaining archaeological and historic resources – including the number of sites that will be altered or removed, and the extent to which Waiāhole Ditch and the irrigation infrastructure in Kīpapa Gulch would be modified – is not known at this time because design and engineering of the infrastructure improvements are still in the preliminary stages. Ongoing discussions with SHPD to minimize impacts to archaeological and historic resources are expected to continue as more information becomes available. A cultural resources preservation plan would be prepared for SHPD approval following the preliminary engineering phase.



8.0 | Preparers

Chapter 8: PREPARERS

EIS PREPARER	
Helber Hastert & Fee, Planners	Thomas Fee, AICP Gail Renard Corlyn Olson Orr
FLORA	
Isle Botanica	Art Whistler, Ph.D.
FAUNA and ARTHROPODS	
Rana Productions, Ltd.	Reginald E. David
Steven Lee Montgomery, Ph. D.	Steven Lee Montgomery, Ph.D., Anita Manning
ARCHAEOLOGICAL IMPACTS	
Cultural Surveys Hawaii	Hallet Hammatt, Ph.D. David W. Shideler, M.A.
CULTURAL IMPACTS	
Cultural Surveys Hawaii	Hallet Hammatt, Ph.D. David W. Shideler, M.A.
AGRICULTURAL IMPACTS	
Decision Analysts Hawaii, Inc.	Bruce Plasch, Ph.D.
MARKET ASSESSMENT AND ECONOMIC & FISCAL IMPACTS	
Mikiko Corporation	Ann Bouslog, Ph.D.
GROUNDWATER RESOURCES	
Water Resource Associates	Dan Lum
LAND PLANNING	
Odermatt Group	Bob Odermatt
Van Meter Williams Pollack	Tim Van Meter
TRAFFIC	
Wilson Okamoto Corporation	Pete Pascua, Ronald Sato
Weslin Consulting Services, Inc.	Wes Frysztacki
NOISE	
D.L. Adams Associates	Dana Dorsch

AIR QUALITY	
B.D. Neal & Associates	Barry Neal
INFRASTRUCTURE	
Park Engineering	Keith Uemura
	Russell Arakaki
Engineering Concepts, Inc.	Ken Ishizaki
Ronald Ho & Associates	Gary Funasaki
PHASE I ENVIRONMENTAL SITE ANALYSIS	
EnviroServices & Training Center, LLC	Sharla M. Horiuchi

9.0 | References

Chapter 9: REFERENCES

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10.0 | Parties Consulted During the Preparation of the Draft EIS

Chapter 10: PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT EIS

10.1 Pre-Assessment Consultation

The following agencies were consulted during the pre-assessment phase of the EIS Preparation Notice.

State of Hawaii
DBEDT - Land Use Commission
Office of Planning
Department of Transportation, Highways Division
Department of Education

City and County of Honolulu
Board of Water Supply
Department of Planning and Permitting

Community Organizations
Koa Ridge Community Visioning Group
Mililani/Waipio/Melemanu Neighborhood Board No. 25
Mililani Mauka/Launani Valley Neighborhood Board No. 35
Pearl City Neighborhood Board No. 21
Waipahu Neighborhood Board No. 22
Wahiawa-Whitmore Village Neighborhood Board No. 26

10.2 Draft EIS Preparation

The following agencies, organizations and public utilities were consulted in the preparation of the Draft EIS. Copies of the EIS Preparation Notice were sent to the agencies, organizations, and individuals listed below, with a request for their comments on the project. The public comment period on the EIS Preparation Notice ran from June 23, 2008 to July 23, 2008. Those who formally replied with comments to the EIS Preparation Notice are indicated with a ✓. Copies of comments received and responses provided are included at the end of this chapter.

Federal
U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers
✓ U.S. Department of Agriculture Natural Resources Conservation Service
✓ U.S. Geological Survey
U.S. Army Engineer Division
15th Air Base Wing/DE
Department of the Army
Department of Housing & Urban Development

State of Hawaii

- Department of Agriculture
- ✓ Department of Accounting and General Services
- Department of Business, Economic Development, and Tourism
- Department of Business, Economic Development, and Tourism Land Use Commission
- ✓ Department of Business, Economic Development, and Tourism, Office of Planning
- ✓ Department of Defense (Civil Defense)
- ✓ Department of Education
- ✓ Department of Health, Environmental Planning Office
- ✓ Department of Health, Environmental Management Division
- Department of Health, Office of Environmental Quality Control
- Department of Health, Safe Drinking Water Branch
- Department of Human Services
- ✓ Department of Land and Natural Resources
- Department of Land and Natural Resources, Historic Preservation Division
- ✓ Department of Public Safety
- ✓ Department of Transportation
- ✓ Office of Hawaiian Affairs
- University of Hawaii, Environmental Center
- University of Hawaii, Water Resources Research Center
- Oahu Metropolitan Planning Organization

City and County of Honolulu

- ✓ Board of Water Supply
- ✓ Department of Design and Construction
- ✓ Fire Department
- ✓ Department of Parks and Recreation
- ✓ Police Department
- ✓ Department of Facility Maintenance
- Department of Transportation Services
- Department of Environmental Services
- Economic Development Office
- ✓ Department of Emergency Management
- Department of Human Resources
- ✓ Department of Planning and Permitting
- Department of Community Services

Public Utility Agencies

- Hawaiian Telcom
- ✓ Oceanic Time Warner Cable of Hawaii
- ✓ Hawaiian Electric Company, Inc.

Islandwide Organizations

- ✓ Sierra Club
- Common Cause/Hawaii
- Hawaii's Thousand Friends

Land Use Research Foundation
League of Women Voters
Outdoor Circle
APA Hawaii Chapter
Hawaii Building & Construction Trade Council
Hawaii Farm Bureau Foundation
Life of the Land

Community Organizations

Koa Ridge Visioning Group
Mililani/Waipio/Melemanu Neighborhood Board No. 25
Mililani Mauka/Launani Valley Neighborhood Board No. 35
Pearl City Neighborhood Board No. 21
Waipahu Neighborhood Board No. 22
Wahiawa-Whitmore Village Neighborhood Board No. 26
Leeward Oahu Transportation Management Association
Mililani Town Association
Wahiawa Community and Businessmen's Association
Waipahu Community Association

Individuals

Michael Dau

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 50004 Rm. 4-118
Honolulu, HI 96850
808-541-2600

July 16, 2008

Gail Renard, Project Manager
Helbert Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu HI 96813

Subject: USDA- NRCS Review of the Environmental Impact Statement Preparation Notice, Koa Ridge Makai & Waiawa Development.

Dear Ms. Renard,

Thank you for providing the NRCS the opportunity to review the Environmental Impact Statement Preparation Notice for the Koa Ridge Makai & Waiawa Development. Please find enclosed the NRCS Soil Survey Map, soil reports, and a map indicating areas of Important Farmlands. The important Farmlands map has been enclosed for your aid in determining if a Farmland Impact Conversion Rating Form (AD-1006) is needed for this project. Typically, this form is required on projects that convert farmlands into non-farmland uses, and have federal dollars attached to the project. See the website link below for more information on the Farmland Protection Policy Act, and a copy of the AD-1006 form, with instructions. The soil mapping does not identify any hydric soils in this project area. Hydric soils identify potential areas of wetlands. If wetlands do exist, any proposed impacts to these wetlands would need to demonstrate compliance with the "Clean Water Act", and may need an Army Corp of Engineers 404 permit.

1

The enclosed Soil Survey Map identifies all soil map units in the project area. The soil reports provide selected soil properties and interpretations, e.g., limitations for roads, dwellings without basements, soil layers with USDA textures, and engineering classifications. The limitation ratings for the selected uses, dwellings without basements and local roads and streets, range from slight to severe and somewhat limited to very limited respectively. These ratings do not preclude the intended land use, however they do identify potential limitations for the use, which may require corrective measures, increase costs, and/or require continued maintenance.

2

The NRCS Soil Survey is a general planning tool and does not eliminate the need for an onsite investigation. If you have any questions concerning the soils or interpretations for this project please call, Tony Rolfes, Assistant State Soil Scientist, (808) 541-2600 x129, or email, Tony.Rolfes@hi.usda.gov.

Helping People Help the Land

An Equal Opportunity Provider and Employer

NRCS - Farmland Protection Policy Act Website:
http://www.nrcs.usda.gov/programs/fppa/

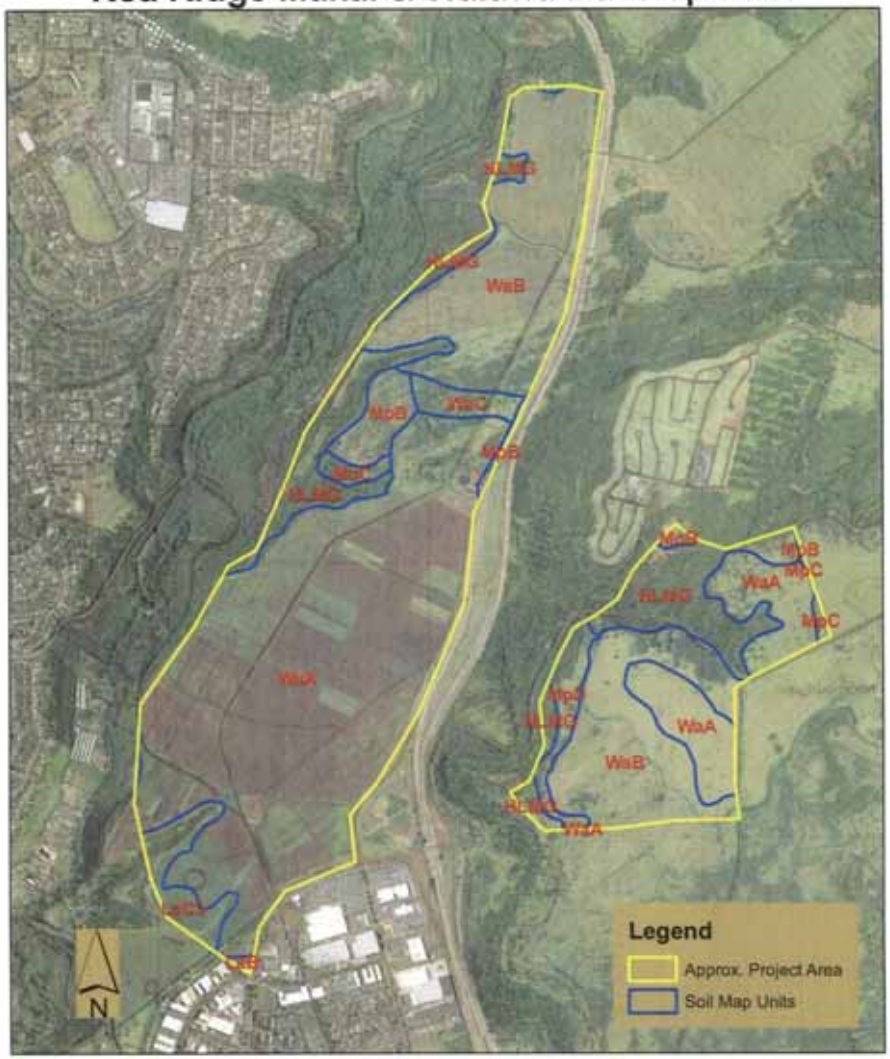
Sincerely,

LAWRENCE T. YAMAMOTO
Director
Pacific Islands Area

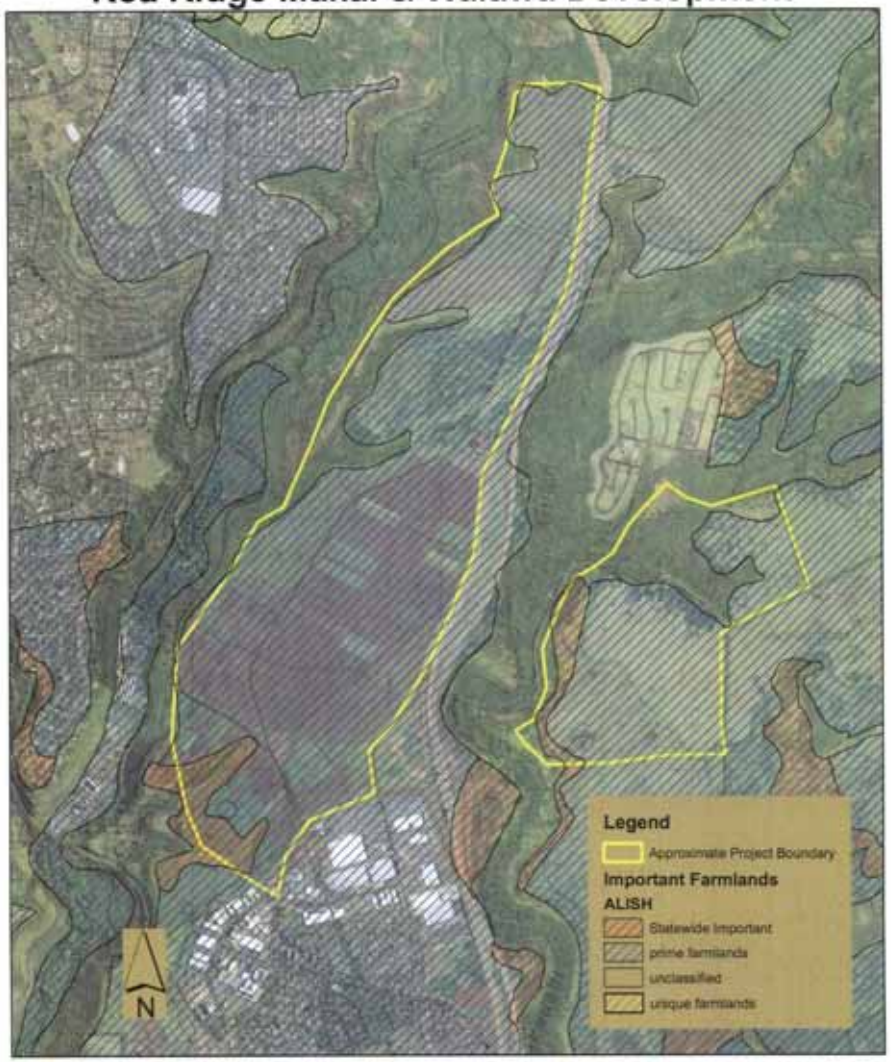
cc: Michael Robotham, Assistant Director for Soil Science and Natural Resource Assessments
Mr. Orlando Davidson, Executive Officer, Land Use Commission, Honolulu, HI
Ms. Laura Kodama, Director of Planning & Development, Castle & Cooke Homes, Mililani, HI
The Office of Environmental Quality Control, Honolulu, HI

Enclosures:

Soils Map
Koa Ridge Makai & Waiawa Development



Important Farmlands
Koa Ridge Makai & Waiawa Development



Map Unit Legend

Island of Oahu, Hawaii

Map symbol	Map unit name
HLMG	Helemano silty clay, 30 to 90 percent slopes
LaB	Lahaina silty clay, 3 to 7 percent slopes
LaC3	Lahaina silty clay, 7 to 15 percent slopes, severely eroded
MoB	Manana silty clay loam, 2 to 6 percent slopes
MoC	Manana silty clay loam, 6 to 12 percent slopes
MpB	Manana silty clay, 3 to 8 percent slopes
MpC	Manana silty clay, 8 to 15 percent slopes
MpD	Manana silty clay, 15 to 25 percent slopes
WaA	Wahiawa silty clay, 0 to 3 percent slopes
WaB	Wahiawa silty clay, 3 to 8 percent slopes
WaC	Wahiawa silty clay, 8 to 15 percent slopes

Selected Soil Interpretations

Island of Oahu, Hawaii

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

"This soil interpretation was designed as a "limitation" as opposed to a "suitability". The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation.

Map symbol and soil name	Pct. of map unit	ENG - Dwellings W/O Basements (HI) *		ENG - Small Commercial Buildings (HI) *	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HLMG:					
Helemano	100	Severe Slopes > 15%	1.00	Severe Slopes > 8%	1.00
LaB:					
Lahaina	100	Slight		Moderate Slopes are from 4 to 8%	0.26
LaC3:					
Lahaina	100	Moderate Slopes 8 to 15%	0.43	Severe Slopes > 8%	1.00
MoB:					
Manana	100	Slight		Moderate Slopes are from 4 to 8%	0.02
MoC:					
Manana	100	Moderate Slopes 8 to 15%	0.15	Severe Slopes > 8%	1.00
MpB:					
Manana	100	Slight		Moderate Slopes are from 4 to 8%	0.50
MpC:					
Manana	100	Moderate Slopes 8 to 15%	0.57	Severe Slopes > 8%	1.00
MpD:					
Manana	100	Severe Slopes > 15%	1.00	Severe Slopes > 8%	1.00
WaA:					
Wahiawa	100	Slight		Slight	
WaB:					
Wahiawa	100	Slight		Moderate Slopes are from 4 to 8%	0.50

Selected Soil Interpretations

Island of Oahu, Hawaii

Map symbol and soil name	Pct. of map unit	ENG - Dwellings W/O Basements (HI) *		ENG - Small Commercial Buildings (HI) *	
		Rating class and limiting features	Value	Rating class and limiting features	Value
WaC:					
Wahiawa	100	Moderate		Severe	
		Slopes 8 to 15%	0.57	Slopes > 8%	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

Island of Oahu, Hawaii

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HLMG:							
Helemano	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	0.10	Too clayey	0.50	Too clayey	1.00
				Cutbanks cave	0.10	Large stones content	0.03
LaB:							
Lahaina	100	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.10	Too clayey	0.50	Too clayey	1.00
				Cutbanks cave	0.10		
LaC3:							
Lahaina	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Too clayey	0.50	Too clayey	1.00
		Low strength	0.10	Slope	0.37	Slope	0.37
				Cutbanks cave	0.10		
MoB:							
Manana	100	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.72		
				Cutbanks cave	0.10		
MoC:							
Manana	100	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.72	Slope	0.04
		Slope	0.04	Cutbanks cave	0.10		
				Slope	0.04		
MpB:							
Manana	100	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Too clayey	0.72	Too clayey	1.00
				Cutbanks cave	0.10		
MpC:							
Manana	100	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Too clayey	0.72	Too clayey	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
				Cutbanks cave	0.10		
MpD:							
Manana	100	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too clayey	1.00
		Low strength	1.00	Too clayey	0.72	Slope	1.00
				Cutbanks cave	0.10		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

Island of Oahu, Hawaii

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WaA:							
Wahiawa	100	Somewhat limited		Very limited		Very limited	
		Low strength	0.10	Too clayey	1.00	Too clayey	1.00
				Cutbanks cave	0.10		
WaB:							
Wahiawa	100	Somewhat limited		Very limited		Very limited	
		Low strength	0.10	Too clayey	1.00	Too clayey	1.00
				Cutbanks cave	0.10		
WaC:							
Wahiawa	100	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Too clayey	1.00	Too clayey	1.00
		Low strength	0.10	Slope	0.63	Slope	0.63
				Cutbanks cave	0.10		

Engineering Properties

Island of Oahu, Hawaii

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HLMG:												
Helemano	0-10	Silty clay	MH-K (proposed)	A-7	0-5	0-10	95-100	95-100	80-100	85-95	55-80	20-25
	10-41	Paragravelly silty clay	MH-K (proposed)	A-7	0-10	0-10	80-100	80-90	75-90	70-85	55-80	20-25
	41-60	Very paragravelly silty clay	MH-K (proposed)	A-7	5-20	5-20	70-90	70-80	65-80	65-75	55-80	20-25
LaB:												
Lahaina	0-15	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	15-31	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	31-60	Silty clay, Stony silty clay, Stony silty clay loam	ML-K (proposed)	A-7	0-10	5-10	100	95-100	95-100	85-95	40-50	10-20
LaC3:												
Lahaina	0-5	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	5-21	Silty clay	ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	40-50	10-20
	21-60	Stony silty clay, Stony silty clay loam	ML-K (proposed)	A-7	0-10	5-10	100	95-100	95-100	85-95	40-50	10-20

Engineering Properties

Island of Oahu, Hawaii

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
MoB:												
Manana	0-15	Silty clay loam	MH-O (proposed)	A-7	0	0	100	95-100	90-100	85-100	50-65	10-20
	15-60	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	85-100	50-65	10-20
MoC:												
Manana	0-15	Silty clay loam	MH-O (proposed)	A-7	0	0	100	95-100	90-100	85-100	50-65	10-20
	15-60	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	85-100	50-65	10-20
MpB:												
Manana	0-15	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	90-100	50-65	10-20
	15-60	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	85-100	50-65	10-20
MpC:												
Manana	0-15	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	90-100	50-65	10-20
	15-60	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	85-100	50-65	10-20

Engineering Properties

Island of Oahu, Hawaii

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
MpD:												
Manana	0-15	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	90-100	50-65	10-20
	15-60	Silty clay	MH-O (proposed)	A-7	0	0	100	95-100	95-100	85-100	50-65	10-20
WaA:												
Wahiawa	0-12	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20
	12-60	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20
WaB:												
Wahiawa	0-12	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20
	12-60	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20

Engineering Properties

Island of Oahu, Hawaii

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number–				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WaC:												
Waiawa	0-12	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20
	12-60	Silty clay	MH-K (proposed), ML-K (proposed)	A-7	0	0	100	100	95-100	90-100	45-55	10-20

Tabular Data Version: 6
Tabular Data Version Date: 12/31/2006

This report shows only the major soils in each map unit. Others may exist.

USDA Natural Resources Conservation Service

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Lawrence T. Yamamoto, Director
U.S. Department of Agriculture
Pacific Islands Area
Natural Resources Conservation Service
P.O. Box 50004 Rm. 4-118
Honolulu, HI 96850

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Yamamoto,

We are in receipt of your letter dated July 16, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses to your comments.

1. The Draft EIS will describe the soil types affected by the project. It is unknown at this time whether a Farmland Impact Conversion Rating form (AD-1006) will be required for the project. If it is determined at a later time that Federal lands or funds will be used in the proposed action, (e.g., for off-site drainage facilities and/or freeway interchange improvements), Castle & Cooke Homes Hawaii will submit Form AD-1006 and coordinate with the appropriate federal agencies, as appropriate. Biological surveys were conducted for the project, including assessments of the presence/absence of wetland indicators. No wetlands were identified on the project area, including the off-site drainage improvement areas in Kipapa Gulch. Results of the biological surveys will be reported in the Draft EIS. If any wetlands or jurisdictional waters are determined to be affected, applicable Army Corps of Engineers permits will be obtained prior to construction, and appropriate mitigation measures will be implemented.

2. The soil survey information included with your letter provides general information on the properties of the soil. In a later stage of the development process, a geotechnical engineer will conduct an extensive geotechnical exploration of the project site to analyze soil samples collected from borings at various locations within the site. Results of the testing along with soils recommendations will be documented in a report to provide design parameters for the proposed improvements.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Pacific Islands Water Science Center
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

July 10, 2008

Ms. Gail Renard, Project Manager
Helber Hastert & Fee, Planners
733 Bishop St., Suite 2590
Honolulu, HI 96813

Dear Ms. Renard:

Subject: Koa Ridge Makai and Waiawa Development, Ewa, Oahu, Hawaii, Koa Ridge Makai: (1)9-4-06: 038, pors. 001, 002, 005, 039; and (1) 9-5-03: pors. 001 and 004; Waiawa: (1) 9-4-06: pors. 029 and 031; and (1) 9-6-04: 021

Thank you for forwarding the subject Environmental Impact Statement for review and comment by staff of the U.S. Geological Survey, Pacific Islands Water Science Center. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document.

We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon Tribble
Center Director

cc: Mr. Orlando Davidson, Executive Officer
State of Hawaii
Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Ms. Laura Kodama, Director of Planning & Development
Castle & Cooke Homes, Hawaii, Inc.
1000 Kahelu Avenue, 2nd Floor
Mililani, Hawaii 96789

Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Helber Hastert & Fee
Planners, Inc.

June 20, 2008

Dear Participant:

Attached for your review is an Environmental Impact Statement (EIS) Preparation Notice which was prepared pursuant to the EIS law (Hawaii Revised Statutes, Chapter 343) and the EIS rules (Administrative Rules, Title 11, Chapter 200).

TITLE OF PROJECT: Koa Ridge Makai and Waiawa Development
LOCATION: Ewa, Oahu, Hawaii
TAX MAP KEY NO.: Koa Ridge Makai: (1) 9-4-06: 038, pors. 001, 002, 005, 039; and (1) 9-5-03: pors. 001 and 004; Waiawa: (1) 9-4-06: pors. 029 and 031; and (1) 9-6-04: 021

YOUR COMMENTS MUST BE RECEIVED OR POSTMARKED BY JULY 23, 2008. PLEASE SEND ORIGINAL COMMENTS TO:

CONSULTANT: Helber Hastert & Fee, Planners
ADDRESS: 733 Bishop Street, Suite 2590, Honolulu, HI 96813
CONTACT: Gail Renard, Project Manager PHONE: (808) 545-2055

COPIES OF THE COMMENTS SHOULD BE SENT TO: THE OFFICE OF ENVIRONMENTAL QUALITY CONTROL (235 South Beretania Street, Suite 702, Honolulu, HI 96813); **AND THE FOLLOWING:**

ACCEPTING AUTHORITY: Land Use Commission, State of Hawai'i
ADDRESS: PO Box 2359, Honolulu, HI 96804-2359
CONTACT: Mr. Orlando Davidson, Executive Officer PHONE: (808) 587-3822

APPLICANT: Castle & Cooke Homes Hawaii, Inc.
ADDRESS: 100 Kahelu Avenue, 2nd Floor, Mililani, HI 96789
CONTACT: Ms. Laura Kodama, Director of Planning & Development
PHONE: (808) 548-4811

If you have no comments but wish to receive a copy of the Draft EIS and participate in the environmental review process, please contact Gail Renard at (808) 545-2055 or via e-mail at grenard@hhf.com.

Thank you for your participation in the EIS process. We look forward to receiving your comments, questions, and suggestions.

Sincerely,

HELBER, HASTERT AND FEE, PLANNERS

Thomas A. Fee, AICP
President

Enclosure

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

Environmental Impact Statement Preparation Notice
Koa Ridge Makai & Waiawa Development
Waipio and Waiawa, Oahu, Hawaii

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Gordon Trimble, Center Director
U.S. Geological Survey
Pacific Islands Water Science Center
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Trimble,

We are in receipt of your letter to dated July 10, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice and note that you were unable to review the document. We will provide your agency with a copy of the Draft EIS for review at a later date.

We appreciate your input and participation in the EIS process.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1192.8

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

JUL - 7 2008

RECEIVED
JUL - 8 20
HELBER, HASTERT & FEE
PLANNERS

Ms. Gail Renard, Project Manager
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement Preparation Notice
Castle & Cooke Koa Ridge Makai and Waiawa Development
Ewa, Oahu, Hawaii
Tax Map Key: [1] 9-4-06: 038, por. 001, 002, 005, 039; and [1] 9-5-03: pors. 001 and 004; Waiawa: [1] 9-4-06: por. 029 and 031; and [1] 9-6-04: 021

Thank you for the opportunity to review the Environmental Impact Statement Preparation Notice for the subject project. While this proposed project does not directly impact any of the Department of Accounting and General Services' facilities, we oversee construction projects at the Waiawa Correctional Center and note that the access road appears to transverse the Waiawa portion of your proposed project. We request that you keep us apprised, and consult with the State of Hawaii, Department of Public Safety, as the Waiawa Correctional Facility is under their jurisdiction.

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

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

BB:vca
c: The Honorable Clayton Frank, Director, Department of Public Safety
Ms. Katherine Kealoha, DOH-OEQC
Mr. Orlando Davidson, State Land Use Commission
Ms. Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Ernest Y. W. Lau
Public Works Administrator
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, HI 96810

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Lau,

We are in receipt of your letter dated July 7, 2008 (P1192.8) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

The Draft EIS will describe the potential impacts to the Waiawa Correctional Facility access road. Castle & Cooke Homes Hawaii will continue to coordinate the issue with your department and the State Department of Public Safety.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
ABBEY SETH MAYER
DIRECTOR
OFFICE OF PLANNING

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

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-12193

July 23, 2008

Ms. Gail Renard
Project Manager
Helber, Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Koa Ridge Makai & Waiawa Development
Environmental Impact Statement Preparation Notice (EISPN)
TMK(s) (1) 9-4-06: 038 portions of 001, 002, 005, 039; and (1) 9-5-03: portions of 001 and 004; Waiawa (1) 9-4-06: portions 029 and 031; and (1) 9-6-04:021
Waipio and Waiawa, O`ahu, Hawai`i

Thank you for sending the Office of Planning the EISPN for the above referenced proposal related to the State Land Use Commission Docket No. A07-775.

The Office of Planning will be coordinating the State's position on areas crosscutting State concern. I am writing to request that the draft EIS consider the impacts of the proposed project on the following issues:

1. **Agricultural Lands:** Preservation of important agricultural lands is a priority for the State and counties. Please discuss how the loss of these lands can be justified or how other lands of equal importance can be protected.

2. **Affordable Housing:** Increasing the supply of affordable housing is a critical State and county issue. Please discuss specifically how the Petitioner plans to meet the County's affordable housing requirements.

3. **Water Supply:** Water resource protection is a critical State issue. If the proposed project is within a designated Water Management Area, please include information on the drinking water and non-potable water sources that will be available for the project.

4. **Public Health:** If the project will be subjected to or have a potential to generate hazardous materials or result in the possible contamination of the air, soil, or water, please discuss how public health and safety will be protected.

5. **Cultural/Historic Resources:** Please include an inventory survey of cultural and historic sites, with monitoring and preservation plans approved by the State Historic Preservation Division. Please discuss how access for Native Hawaiians for traditional and customary practices will be preserved to include visual landmarks if applicable.

6. **Environmental, Recreational and Scenic Resources:** Please include an inventory of flora and fauna on the project site and any required protections. Consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. A description of scenic resources should also be included.

7. **Coastal Zone Management:** The State oversees protection of natural, cultural, and economic resources within the coastal zone. Please discuss how the proposed project will balance the competing values of economic development, watershed management, non point source pollution and preservation of coastal resources, including protection from hurricane, storm surge, flood hazard, volcanic action, and soil erosion as applicable.

8. **Public Safety:** The State Department of Public Safety operates a correctional facility whose access and continued operations may be affected by the proposed development. Please discuss potential impacts and mitigation measures to address these concerns.

The Office of Planning looks forward to receiving the DEIS with the potential impacts and mitigation measures for the above issues addressed. If you have any questions, please call Scott Derrickson in the Land Use Division at 587-2805.

Sincerely,

Abbey Seth Mayer
Director

c: Katherine Kealoha, OEQC
Orlando Davidson, LUC
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Abbey Seth Mayer, Director
Office of Planning
State of Hawaii
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, HI 96804

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Mayer,

We are in receipt of your letter dated July 23, 2008 (Ref. No. P-12193) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses to your comments.

1. **Agricultural Lands.** The Draft EIS will discuss the project's potential impacts on the state- and island-wide supply of agricultural lands, along with the rationale for converting the petition area from agricultural to urban uses. Regarding the protection of other lands of equal importance, the Petitioner supported recent legislation (Act 233, SLH 2008) relating to important agricultural lands (IAL), which provides incentives and protections to establish and sustain viable agricultural operations on important agricultural lands.

2. **Affordable Housing.** City and County of Honolulu affordable housing policies are presently under review, however, the project will comply with City policies in effect at the time of rezoning. These agreements are likely to consider household income, family size, development types and other factors. The proposed residential product mix includes a substantially greater percentage of multi-family units (about 70-80% of total units) than were developed in Mililani or Mililani Mauka, with densities ranging from about 10 to 30 units per gross acre. These units are consistent with the Petitioner's goal to maintain relatively affordable price points. The proposed development includes both for-sale and rental units. The specific number, type and pricing of affordable housing will be established based on future agreements to be made with City and State agencies.

3. **Water Supply.** An assessment of groundwater resources was prepared for the project. The Draft EIS will describe the potable and non-potable water sources planned to serve the project and the project's impacts on groundwater resources.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

4. **Public Health.** The Draft EIS will discuss the project's potential to generate hazardous materials, and potential impacts on air quality, water quality, and soils, including any proposed mitigation measures.

5. **Cultural/Historic Resources.** The Draft EIS will include archaeological inventory surveys of the project area. Archaeological monitoring and preservation plans will be prepared at a later time, as required by and in coordination with the State Historic Preservation Division's review and acceptance of the inventory surveys.

6. **Environmental, Recreational and Scenic Resources.** The Draft EIS will include biological surveys of the project area, including terrestrial and stream biota, botanical resources, and invertebrates. Wet and dry season surveys were not conducted; however, the timing of the surveys is considered adequate to account for the resources potentially affected by the project, and rationale for the survey timing will be described in the Draft EIS.

7. **Coastal Zone Management.** The Draft EIS will include a discussion of the project's consistency with relevant objectives and policies of the States CZM Program. The project will comply with all Federal, State and City requirements for erosion control including the implementation of appropriate construction and permanent best management practices.

8. **Public Safety.** The Draft EIS will discuss access issues regarding the State's Waiawa Correctional Facility.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

PHONE (808) 733-4300
FAX (808) 733-4287

August 5, 2008

Ms. Gail Renard
Project Manager
Helber Haster & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Environmental Impact Statement Preparation Notice (EISPN)
Koa Ridge Makai and Waiawa Development, Oahu, Hawaii

1 Thank you for the opportunity to comment on these developments. After careful review of the documents provided for these projects, we recommend that the developer install at least three (3) outdoor warning sirens. We also recommend that the sirens be solar powered with omni-directional sound properties of 121-decibel sound level rating. Placement of these sirens will be determined after the developer has finalized the subdivision's plans.

2 Also, because of the general slope of the area, there may be a need to mitigate all building construction for possible wind amplification. Beyond that, we have no further comments to make at this time and we will await the draft Environmental Impact Statement to be sent to us for review.

If you have any questions, please call Mr. Norman Ogasawara, Assistant Telecommunications Officer, at (808) 733-4300, ext. 531.

Sincerely,

for EDWARD T. TEIXEIRA
Vice Director of Civil Defense

c: Department of Emergency Management, City and County of Honolulu
The Office of Environmental Quality Control
Land Use Commission, State of Hawaii
Castle & Cook Homes Hawaii, Inc
State Civil Defense Radio Shop

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Edward T. Teixeira
Vice Director for Civil Defense
State of Hawaii
Department of Defense
Office of the Director of Civil Defense
3949 Diamond Head Road
Honolulu, HI 96816-4495

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Teixeira,

We are in receipt of your letter dated August 5, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. Your letter and recommendation that the developer install at least three outdoor warning sirens has been forwarded to the Petitioner, Castle & Cooke Homes Hawaii, for use during detailed master-planning. Castle & Cooke Homes Hawaii will coordinate directly with your office on this matter at the appropriate time after State and City entitlements are obtained and preparation of subdivision and construction planning begins.

2. All structures will be designed by a licensed structural engineer and will conform to the accepted building code requirements for the locality, which includes consideration for wind loads.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

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

OFFICE OF THE SUPERINTENDENT

July 7, 2008

Ms. Gail Renard, Project Manager
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement Preparation Notice for
Koa Ridge Makai and Waiawa Development, Ewa, Oahu, Hawaii

The Department of Education (DOE) has reviewed the Environmental Impact Statement Preparation Notice (EISPN) for Koa Ridge Makai and Waiawa Development.

A final educational contribution agreement between the DOE and Castle & Cooke Homes Hawaii, Inc. was executed on June 13, 2008. The provisions of this agreement mitigate, to the satisfaction of the DOE, impacts of the development on public school enrollment.

We look forward to receiving and reviewing the Draft Environmental Impact Statement. Should you have any questions, please call Heidi Meeker of our Facilities Development Branch at 377-8307.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:jmb

c: Randolph Moore, Assistant Superintendent, OSFSS
Duane Kashiwai, Public Works Administrator, FDB
Patricia Ann Park, CAS, Leilehua/Mililani/Waialua Complex Areas
Keith Hayashi, CAS, Nanakuli/Pearl City/Waipahu Complex Areas
Katherine Puana Kealoha, Director, OEQC
Orlando Davidson, Executive Officer, SLUC
Laura Kodama, Director of Planning & Development, CCHI

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Ms. Patricia Hamamoto, Superintendent
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, HI 96804

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Ms. Hamamoto,

We are in receipt of your letter dated July 7, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice.

We acknowledge your comment that the educational contribution agreement executed between the DOE and Castle & Cooke Homes Hawaii satisfactorily mitigates the proposed development's impacts on public school enrollment. This will be discussed in the Draft EIS.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. 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:
EPO-08-099

July 31, 2008

Mr. Gail Renard, Project Manager
Helber Hastert & Fee, Planners, Inc.
722 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Mr. Renard:

SUBJECT: Environmental Impact Statement Preparation Notice (EISPN) for Koa Ridge Makai and Waiawa Development, Ewa, Oahu, Hawaii.
TMK: (1) 9-4-006: 001, 002, 005, 039, and 038 (portion); 029 and 021
(1) 9-5-003: 001 (portion) and 004
(1) 9-6-004: 021

Thank you for allowing us to review and comment on the subject application. The document was routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Safe Drinking Water Branch and Total Maximum Daily Load Program and General comments.

Safe Drinking Water Branch

The Safe Drinking Water Branch has the following comments:

Page 3-4, Groundwater Impacts and Mitigation measures.

The City & County of Honolulu Board of Water Supply (HBWS) indicates that the project is located within the State Department of Health's (DOH) proposed well head protection area. Please note that these are not proposed wellhead protection area(s) but are delineated source water assessment/ protection areas that were modeled for the Hawaii Department of Health to meet federal safe drinking water requirements that all drinking water sources in the State be assessed to determine the potential/ susceptibility to contamination. The HBWS drinking water source(s) that would have source water assessment/ protection areas that may be within the project site are Waipio II, Waipio III, and Waipahu III. In addition, several non-HBWS drinking water source(s) that may also have source water assessment/protection areas within the project site include the Kipapa Acres and the Navy Waiawa Shaft sources.

According to the project proposed action, the developments will include residential, commercial, light industrial, and medical and health care components. The residential components would

include single- and multi- family homes, sites for parks, recreation centers, and schools. The medical and health care services potentially including a hospital, skilled nursing, physicians' offices, diagnostic and treatment facilities, and other specialized centers. There will also be neighborhood and community commercial development to serve the residents and surrounding region, e.g., gas stations. Please note that these components may comprise activities that may utilize chemicals and hazardous materials and possibly general waste that under the State's Source Water Assessment/Protection Plan would be considered a "Potential Contaminating Activity" (PCA) to the public drinking water sources (including groundwater resources). Furthermore, activities associated with the construction of the project may include activities that would also utilize chemicals and hazardous materials and possibly generate waste materials that could impact the groundwater resource. Therefore, the Department of Health Safe Drinking Water Branch does not view the proposed project as one that is not considered a potential source of contamination to the underlying groundwater.

The assumption that the groundwater is protected from the proposed development primarily by the natural processes that occur in the vertical travel distance of the infiltrated water should not be considered acceptable. Based on the occurrence of groundwater contamination events/incidents both here in Hawaii and nationwide, the perception that the soil acts as a natural filter to remove potential contaminants from impacting the groundwater resource would no longer be valid. The fact that groundwater resources have been contaminated by various activities that were once believed to not be a threat has led to the need to implement best management practices (BMPs) and pollution prevention (PP) measures that would minimize potential and actual threats to our drinking water resources. The project needs to evaluate its operation and components and include BMP and PP measures to ensure minimal potential groundwater contamination impacts.

3.21.1 Water System

The development of any required additional water source, storage, and transmission facilities should also meet Hawaii Department of Health Safe Drinking Water requirements for drinking water systems (Hawaii Administrative Rules, Chapter
11-20), as well as meeting requirements for conducting a Source Water Assessment of the new drinking water source.

We look forward to reviewing the draft EIS and participating in the environmental review process for this project. If you require any clarification or further information on our comments, please feel free to contact Melvin Hamano or Daniel Chang of my staff at (808) 586-4258.

Total Maximum Daily Load (TMDL)

Receiving waters for the proposed project appear to include impaired water bodies in the Waikele stream system (Kipapa tributary) and Waiawa stream system (Panakauahi Gulch tributary), and TMDLs addressing these impairments are scheduled to be established over the next year. Please visit our website at: http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html/EPO-standardcomment.pdf for the program's standard comments but we would like to bring to your attention to the Part 5 of the standard comments as excerpted below:

"If the proposed project involves potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*, identify and quantify expected changes in the following site and watershed conditions and characteristics:

- surface permeability
- hydrologic response of surface (timing, magnitude, and pathways)
- receiving water hydrology
- runoff and discharge constituents
- pollutant concentrations and loads in receiving waters
- aquatic habitat quality and the integrity of aquatic biota

Where TMDLs are yet to be established and implemented, a first step in achieving TMDL objectives is to prevent any project-related increases in pollutant loads. This is generally accomplished through the proper application of suitable best management practices in all phases of the project and adherence to any applicable ordinances, standards, and permit conditions. In these cases we suggest that the submittal specify how the proposed project would contribute to reducing the polluted discharge and runoff entering the receiving waters, including plans for additional pollutant load reduction practices in future management of the surrounding lands and drainage/discharge systems."

This implies a significant effort to demonstrate exactly how "The project's proposed drainage system will be designed to minimize impacts to nearshore coastal waters" (EISPN p. 7-4), and to inland minimize impacts to inland waters as well. In this regard, please note that "limiting off-site discharge to pre-development levels," mitigating construction period impacts, minimizing drainage system impacts to near shore coastal waters, and complying with City Drainage Standards doesn't necessarily equate with satisfactory TMDL implementation and long-term attainment of state water quality standards in associated receiving waters. Also, please clarify the ownership status of the proposed drainage system – will it be a private system or will it become part of the NPDES-regulated municipal systems (MS4s) serving the area? If it will be a private system, will it connect with MS4s? If so, the connection license(s) should be added to the list of permits and approvals required.

General

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

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

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
SDWB
Abbey Seth Mayer, Office of Planning, DBEDT

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Kelvin H. Sunada, Manager
State of Hawaii
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, HI 96801-3378

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Sunada,

We are in receipt of your letter dated July 31, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

Safe Drinking Water Branch

Potential Groundwater Impacts. The Draft EIS will describe the existing potable water sources that may be affected by the proposed development, and potential impacts to these sources. As planning and engineering for the project proceeds, appropriate best management practices and pollution prevention measures will be identified to minimize potential groundwater contamination impacts. The Draft EIS will disclose that the urban land uses and their associated activities may involve the use or application of chemicals and other materials that would be considered "potentially contaminating activities" to public drinking water sources under the State's Source Water Assessment/Protection Plan.

Water System. Additional water source, storage and transmission facilities developed for the project will comply with all applicable State regulations.

Total Maximum Daily Load (TMDL)

The Draft EIS will identify all potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under clean Water Act §303(d)*. We acknowledge that TMDLs have not yet been established for the project's stormwater receiving waters, and that the project will have to comply with applicable TMDL requirements once they are established prior to approval of State DOH permits. The project will require NPDES and Clean Water Act, Section 401 Water Quality Certification from State DOH. Specific information on how the proposed project will meet applicable TMDL program requirements will be described during the DOH permit application process, when more detailed information is available on project design.

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Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

The proposed drainage system will be privately-owned by a community association of owners and not connect to MS4s NPDES-regulated municipal systems serving the area.

General – Standard Comments

We reviewed your agency's standard comments and found the following to be specifically applicable to the proposed project.

Hazardous Evaluation and Emergency Response Office. A Phase I Environmental Site Assessment (ESA) is being conducted for the proposed project. The Draft EIS will discuss the findings of the ESA.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
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 23, 2008

Castle & Cooke Homes Hawaii, Inc.
100 Kahelu Avenue 2nd Floor
Miliilani, Hawaii 96789

Attention: Ms. Laura Kodama

Gentlemen:

Subject: Environmental Impact Statement Preparation Notice for Koa Ridge Makai and Waiawa Development, Ewa, Oahu, Tax Map Key: (1) 9-4-6:38, por. 1, 2, 5, 39, 9-5-3:por. 1, 4; 9-4-6:por. 29, 31; 9-6-4:21

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

Other than the comments from Division of Forestry & Wildlife, Division of State Parks, Commission on Water Resource Management, Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Morris M. Atta
Administrator

Cc: State Land Use Commission
Helber Hastert & Fee
Office of Planning

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
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 24, 2008

MEMORANDUM

RECEIVED
08 JUN 26 A8:52
COMMISSION ON WATER RESOURCE MANAGEMENT

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

FROM: Morris M. Atta, Administrator
SUBJECT: Environmental Impact Statement Preparation Notice for the proposed Koa Ridge Makai & Waiawa Development
LOCATION: Waipio and Waiawa, Island of Oahu, Hawaii
TMK: Koa Ridge Makai: (1) 9-4-006:038, pors. 001, 002, 005,039; and (1) 9-5-003:pors. 001 and 004
Waiawa: (1) 9-4-006:pors. 029 and 031; and (1) 9-6-004:021
APPLICANT: Helber, Hastert & Fee Planners on behalf of Castle & Cooke Homes Hawaii, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 18, 2008.

A copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed: _____
Date: _____

cc: Central Files

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIIKE, M.D., J.D.

KEN C. KAWAHARA, 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 17, 2008

REF: Koa Ridge Makai EISPN.dr

TO: Morris Atta, Administrator
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Environmental Impact Statement Preparation Notice for the Proposed Koa Ridge Makai & Waiawa Development

FILE NO.: N/A

RECEIVED
2008 JUL 18 P 3:34
DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
RECEIVED
LAND DIVISION

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://www.hawaii.gov/dlnr/cwrm*.

Our comments related to water resources are checked off below.

☒ 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.

☐ 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. 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.

Permits required by CWRM: Additional information and forms are available at *www.hawaii.gov/dlnr/cwrm/forms.htm*.

☒ 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.

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

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

DRF-IA 06/19/2008

☒ 7. 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.

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

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

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

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

☐ 12. 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.

☒ 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

☒ OTHER:

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.

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 www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/pp/index.htm.

We recommend the report identify both potable and non-potable projected demands and the proposed water sources to meet these demands.

Page 3-20 discusses potential decommissioning of the inactive Air Force aviation fuel pipeline that runs from Wheeler to Hickam. The notice states that the pipeline is "...within easements aligned through the Koa Ridge Makai area." It also states that there is a potential for historical releases of fuel along the pipeline corridor. The U.S. Air Force should be added as one of the federal agencies that will be consulted during draft EIS preparation (the Air Force is omitted from the list on pg 8-2).

We also request that Department of Land and Natural Resources, Commission on Water Resource Management be added to the list of agencies to be consulted.

If there are any questions, please contact Roy Hardy at 587-0225.

RH:ss

c: DBEDT, Office of Planning

51847

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
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
STATE PARKS DIV
'08 JUN 25 A10:36

June 24, 2008

DEPT OF LAND & NATURAL RESOURCES

MEMORANDUM

RECEIVED
LAND DIVISION
2008 JUL -9 A 10:28
DEPT OF LAND & NATURAL RESOURCES, STATE OF HAWAII

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_x_Engineering Division
_x_Div. of Forestry & Wildlife
_x_Div. of State Parks
_x_Commission on Water Resource Management
___Office of Conservation & Coastal Lands
_x_Land Division – Oahu District

FROM: for Morris M. Atta, Administrator Darlene
SUBJECT: Environmental Impact Statement Preparation Notice for the proposed Koa Ridge Makai & Waiawa Development
LOCATION: Waipio and Waiawa, Island of Oahu, Hawaii
TMK: Koa Ridge Makai: (1) 9-4-006:038, pors. 001, 002, 005,039; and (1) 9-5-003:pors. 001 and 004
Waiawa: (1) 9-4-006:pors. 029 and 031; and (1) 9-6-004:021
APPLICANT: Helber, Hastert & Fee Planners on behalf of Castle & Cooke Homes Hawaii, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 18, 2008.

A copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed:
Date: 7/7/08

cc: Central Files

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
LAND DIVISION

2008 JUL 11 P 1:48

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

June 24, 2008

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
✓ x Engineering Division
x Div. of Forestry & Wildlife
x Div. of State Parks
x Commission on Water Resource Management
___Office of Conservation & Coastal Lands
x Land Division – Oahu District

FROM: for Morris M. Atta, Administrator Darlene
SUBJECT: Environmental Impact Statement Preparation Notice for the proposed Koa Ridge Makai & Waiawa Development
LOCATION: Waipio and Waiawa, Island of Oahu, Hawaii
TMK: Koa Ridge Makai: (1) 9-4-006:038, pors. 001, 002, 005,039; and (1) 9-5-003:pors. 001 and 004
Waiawa: (1) 9-4-006:pors. 029 and 031; and (1) 9-6-004:021
APPLICANT: Helber, Hastert & Fee Planners on behalf of Castle & Cooke Homes Hawaii, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 18, 2008.

A copy of the document is available for your review in Land Division office, Room 220.

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 Darlene Nakamura at 587-0417. Thank you.

Attachments

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

Signed:
Date: 7/11/08

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/MorrisAtta
Ref.: EISPNKoaRidgeMakai&WaiawaDev
Oahu.627

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) Please take note that the project sites, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone D. The Flood Insurance Program does not have any regulations for developments within Flood Zone D.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include water demands and infrastructure required to meet project needs. Please note that 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 should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed:
for ERIC T. HIRANO, CHIEF ENGINEER
Date: 7/11/08

Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 ▯ Honolulu, HI 96813 ▯ (808) 587-0166 ▯ Fax: (808) 587-0160

June 26, 2008

MEMORANDUM

TO: Darlene Nakamura
Land Division

FROM: Paul J. Conry, Administrator
Division of Forestry and Wildlife

SUBJECT: EISPN for the proposed Koa Ridge Makai and Waiawa Development.

We have reviewed the subject proposal and provide the following comments for your consideration. This area contains flashy fuels in a highly flammable area, especially during the dry summer months. DOFAW recommends that the developer adopt firewise prescriptions as described in the attached brochure. Firewise communities have protected their homes from the threat of wildland fires by creating survivable space around their homes. These prescriptions have been tested with good results. Please contact Denise Laitinen, community liaison at (808) 281-3497 for assistance. Thank you for the opportunity to comment on your project.

C: Denise Laitinen, Hawaii Firewise Coordinator

Attachment

FIREWISE COMMUNITIES™

ARE YOU FIREWISE

HAWAII

?

WHAT TO DO IF ...

1 **Call for help** • CALL 911

2 **Close all entrances, windows and other openings.** Close shutters, heavy drapes, Venetian blinds, or other window coverings. This action is recommended to prevent sparks from blowing inside your house and igniting there.

3 **Turn off residential fuel.** If you use gas or butane, turn it off at the tank or the meter.

4 **Dress to protect yourself.** Wear cotton clothing including long pants, long-sleeved shirt, gloves and a handkerchief to protect your face.

Firewise Landscaping

Survivable Space

With Firewise landscaping, you can create survivable space around your home that reduces your threat to wildfire.

Creating survivable space around your home also allows firefighters room to put out fires. Do you have 10–30 feet of space around your home that is lean, clean and green?

Be Lean, Clean and Green

Lean – Prune shrubs and cut back tree branches. Large trees and shrubs should be pruned so that the lowest branches are at least 6–10 feet above the ground to prevent a fire spreading from the ground to the tree tops.

Clean – Remove all dead plant material from around your home, including dead leaves and dry vegetation. Clear away flammable plants that contain oily resins and replant with fire-resistant plants. If you have firewood, stack it away from the house. Avoid using dead banana fronds as shade covering.

Green – Plant healthy fire–resistant vegetation. Ask a local landscape specialist for suggestions.

Firewise Construction

Fire Resistant Building Materials

Using fire-resistant building materials is a key component of being **Firewise.**

Roof

Your roof is the number one source of ignition. Something as simple as making sure that your roof is clear of debris will reduce your fire threat. So will using fire resistive roofing materials, such as Class-A asphalt shingles, metal, tile and concrete products.

Siding

Wall materials that resist heat and flames include brick, cement, stucco, and concrete masonry. Tempered and double pane windows can make a home more resistant to wildfire heat and flames.

Lanais/Fences/Ohana Units

A wooden lanai or fence can act as a wick, bringing fire directly to the home. Make sure lanais, fences, and ohana units are also made of fire-resistant materials.

Fire Officials need your help.

PREPARE your home and

PROTECT your family and pets.

BEWARE of accidentally starting a wildfire!

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Morris M. Atta, Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Atta,

We are in receipt of your letter dated July 23, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses, which are numbered to correspond with your agency's comments.

Commission on Water Resource Management (REF: Koa Ridge Makai EISPN.dr)

1. Castle & Cooke Homes Hawaii (the Petitioner) will coordinate the proposed project's water supply and demand with the City and County of Honolulu.

3. The Petitioner will comply with State Department of Health water quality requirements that may be identified in the future.

4-6. The Draft EIS will acknowledge that the project's proposed water supply source is in a designated ground water management area, and that Water Use, Well Construction, and Pump Installation permits will be required.

7. If wells located on or adjacent to the project area are not planned to be used and would be affected by new construction, they would be properly sealed prior to abandonment. The Draft EIS will identify any wells meeting these criteria.

13. The Draft EIS will identify non-potable water supply sources feasible for the project, if any exist.

OTHER: The project will comply with all Federal, State and County requirements for stormwater management including the implementation of appropriate construction and permanent best management practices.

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Water efficient fixtures will be utilized and Castle & Cooke Homes Hawaii is also looking at other means to reduce water consumption, including those eligible for credit under LEED certification.

The Draft EIS will describe the project's potable and non-potable water demands and proposed water sources.

The U.S. Air Force was consulted during the Draft EIS process (listed as 15th Air Base Wing/DE on page 8-1 of the EISPN).

DLNR CWRM will be added to the list of consulted agencies in the Draft EIS, and will be sent a separate copy of the Draft EIS.

Engineering Division (REF: EISPNKoaRidgeMakai&WaiawaDevOahu.627)

The Draft EIS will include discussion of the flood zones in which the project components are located.

Division of Forestry & Wildlife

The Petitioner will consider the firewise prescriptions provided by your division when the project moves into the detailed design phase.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

No. 2008-1607

July 15, 2008

Ms. Gail Renard, Project Manager
Helber, Hastert and Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, HI 96813

Dear Ms. Renard:

SUBJECT: Environmental Impact Statement Preparation Notice
Castle & Cooke Koa Ridge Makai and Waiawa Development
Tax Map Key: Waiawa: [1] 9-4-06: por. 029 and 031; and
[1] 9-6-04: 021

Thank you for transmitting to the Department of Public Safety (PSD) a copy of the aforementioned Environmental Impact Statement Preparation Notice. Although the Department was apparently overlooked in the distribution of this document prepared for the Castle & Cooke proposed developments, we, nevertheless, are interested in any proposed developments adjacent to or in close proximity of the Waiawa Correctional Facility (WCF).

The access roadway leading to WCF appears to be adversely impacted by the proposed Waiawa development. Accordingly, we expect that the ensuing environment planning process will adequately address these impacts and the mitigating measures intended to be taken to ensure the facility is accessible to road traffic at all times. We are also interested in the proposed development of water, sewer, power and telecommunications for this area. 1 2

Please add PSD to the Draft EIS Consultation (Section 8.2) list to enable the Department to participate.

Should you have any questions, please call John Borders, CIP Coordinator, at 587-3463.

Sincerely,

Clayton A. Frank
Director

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Clayton A. Frank, Director
State of Hawaii
Department of Public Safety
919 Ala Moana Boulevard, 4th Floor
Honolulu, HI 96814

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Frank,

We are in receipt of your letter dated July 15, 2008 (No. 2008-1607) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

The Draft EIS will describe the potential impacts to the Waiawa Correctional Facility access road. Castle & Cooke Homes Hawaii will continue to coordinate access with your department.

The Draft EIS will describe the proposed water, sewer, power and telecommunications for both the Waiawa and Koa Ridge Makai developments.

The Department of Public Safety will be added to the list of consulted parties in the Draft EIS.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

LINDA LINGLE
GOVERNOR

BRENNON T. MORIOKA
DIRECTOR

Deputy Directors
MICHAEL D. FORMBY
FRANCIS PAUL KEENO
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

HWY-PS
2.8839

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

AUG 07 2008

RECEIVED
AUG 11 2008
HELBER, HASTERT & FEE
PLANNERS

State of Hawaii Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Attention: Orlando Davidson

Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813
Attention: Gail Renard

Gentlemen:

Subject: Environmental Impact Statement (EIS) Preparation Notice
Koa Ridge Makai & Waiawa Development
Oahu, Ewa District, Waipio & Waiawa
Koa Ridge: TMK: (1) 9-4-6: 38, pors. 1, 2, 5, & 29; 9-5-3: pors. 1 & 4
Waiawa: TMK: (1) 9-4-6: pors. 29 & 31; 9-6-4: 21

Thank you for consulting the Department of Transportation (DOT). We have the following comments:

1. We request that the Draft EIS include a draft Traffic Impact Analysis Report (TIAR) which evaluates impacts from project-generated traffic and proposes appropriate traffic mitigation. At a minimum, the study locations should include the H-2 Waipio Interchange, the proposed H-2 Pineapple Road Interchange, the proposed new intersection on Kamehameha Highway north of Ka Uka Boulevard, and existing Kamehameha Highway intersections from Ka Uka Boulevard to Waipahu Street. We also request that the draft TIAR address options which might allow Ewa-bound drivers from Koa Ridge Makai and Waiawa to bypass peak morning Honolulu-bound traffic queues from the Waiawa Interchange. Simulation will be required for evaluation of freeway operations and intersections with restrained conditions.

2. We would appreciate receiving 3 paper copies of the draft EIS, 3 paper copies of the full TIAR including all worksheets, and 2 CDs of the full TIAR.

3. After completion of a satisfactory final TIAR, we would like Castle and Cooke to negotiate an agreement with DOT concerning developer responsibilities to provide transportation improvements.

4. We plan to request the following condition for approval of Castle and Cook's petition for a land use district boundary amendment:

   Petitioner shall participate in the pro rata funding and construction of local and regional transportation improvements and programs including dedication of rights-of-way as determined by the State DOT and the City and County of Honolulu. Agreement between Petitioner and the DOT as to the level of funding and participation shall be obtained prior to the Petitioner applying for county zoning or receiving any final approval of any subdivision, whichever comes first, for any portion of the Petition Area.

5. The DOT will not subsidize development of Gentry Waiawa, Castle and Castle Koa Ridge, or Castle and Cooke Waiawa by funding or constructing State highway improvements. Proposed modifications of the Interstate H-2 Waipio Interchange to accommodate new developments are a developer responsibility. A proposed new Interstate H-2 Pineapple Road interchange to accommodate new development is a developer responsibility. A proposed new intersection on Kamehameha Highway to accommodate new development is a developer responsibility. Intersection improvements to mitigate development traffic impacts to Kamehameha Highway from Ka Uka Boulevard to Waipahu Street are a developer responsibility.

6. DOT must request FHWA approval for any proposed modification of interstate access. FHWA requires that such requests evaluate traffic impacts 20 years after proposed interstate modifications are put into service. FHWA also must comply with NEPA before approving such requests.

7. Gentry Waiawa has prepared a draft request for modification of interstate access and a draft NEPA documented categorical exclusion for proposed Gentry modifications of the Waipio Interchange. Traffic projections for this request do not assume any Castle and Cooke development at Waiawa or Koa Ridge. When the Gentry request for modification of interstate access has been appropriately revised to address DOT comments, DOT will submit the request to FHWA.

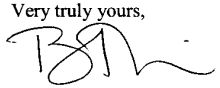
8. Castle and Cooke will need to prepare its own draft request(s) for modification of interstate access and its own draft documentation for NEPA compliance. If FHWA has already approved proposed Gentry modifications of the Waipio Interchange, this will need to be reflected in Castle and Cooke's request(s). Rather than preparing separate requests for separate interchanges, we recommend Castle and Cooke consider a single draft request which addresses incremental Castle and Cooke improvements of both the Waipio Interchange and the proposed Pineapple Road Interchange. To facilitate FHWA compliance with NEPA, we also recommend that the EIS for Koa Ridge Makai and Waiawa address the environmental impacts of constructing Castle and Cooke proposals for interchange improvements.

9. DOT must request FHWA approval for proposals to install utilities within any interstate right-of-way. FHWA must comply with NEPA before approving such requests. To facilitate FHWA compliance with NEPA, we recommend that the EIS for Koa Ridge Makai and Waiawa address the environmental impacts of Castle and Cooke proposals to install utilities beneath Interstate H-1 and Interstate H-2.

10. DOT airport operations will not impact either Koa Ridge Makai or Waiawa. No aviation easements or noise mitigation will be required.

If you have any questions, please contact Ken Tatsuguchi, Head Planning Engineer, Highways Division, at 587-1830. Please reference Planning Branch file review number 08-253.

Very truly yours,



BRENNON T. MORIOKA, Ph.D., P.E.
Director of Transportation

c: Office of Planning (Land Use Commission Docket No. A07-775)
Castle and Cooke Homes
Wilson Okamoto Corporation

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Brennon Morioka, Ph.D., P.E., Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Dr. Morioka,

We are in receipt of your letter to dated August 7, 2008 (HWY-PS 2.8839) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. The Draft EIS will include a draft Traffic Impact Analysis Report (TIAR) that covers the H-2 Waipio Interchange, proposed H-2 Pineapple Road Interchange, proposed new intersection of Kamehameha Highway north of Ka Uka Boulevard, and existing Kamehameha Highway intersections from Ka Uka Boulevard to Waipahu Street.

2. You will be provided the copies of the Draft EIS and TIAR, as requested.

3. Castle & Cooke Homes Hawaii intends to work with DOT on an agreement identifying developer-funded improvements following approval of the final TIAR.

4. We acknowledge your agency's proposed condition for approval of the subject Land Use District Boundary amendment.

5. We acknowledge your agency's position that necessary improvements to State roadway facilities resulting from the proposed development are the developer's responsibility.

6. We acknowledge that FHWA approval is required for modifications of interstate freeway modifications, and that NEPA compliance is also required prior to approval of such modifications.

7. We acknowledge the information provided about Gentry Waiawa's draft request for modification of interstate access and draft NEPA document.

8. We acknowledge that Castle & Cooke Homes Hawaii will need to prepare its own requests for modification of interstate access and NEPA documentation, and your recommendation on

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the scope of the documents. The Draft EIS for this project will address the impacts of constructing project-related interchange improvements.

9. The Draft EIS will describe the probable environmental impacts of proposed utilities to be installed within the Interstate H-1 and Interstate H-2 rights-of-way. These include a new trunk sewer line extending from the project area, under the Interstate H-1 to the Waipahu Wastewater Pump Station and a potable water line to cross the Interstate H-2 at the existing Pineapple Road Bridge.

10. We acknowledge your comment that DOT airport operations will not impact the proposed development, and that aviation easements and noise mitigation will not be required.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

PHONE (808) 594-1888

FAX (808) 594-1865

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

HRD08/3121D

July 16, 2008

Gail Renard
Helber, Hastert & Fee Planners
733 Bishop Street, Suite 2590
Honolulu, Hawai'i 96813

RE: Request for comments on the proposed Koa Ridge Makai and Waiawa development environmental impact statement preparation notice (EISPN), 'Ewa Beach, O'ahu, TMKs: 9-4-06:38, pors. 001, 002, 005, 039; and 9-5-03: pors. 001 and 004; and 9-4-06: pors. 029 and 031; and 9-6-04: 021.

Aloha e Gail Renard,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated July 2, 2008. OHA has reviewed the project and offers the following comments.

OHA is deeply concerned that this area be used for agricultural uses only. Our concerns are echoed by the myriad of laws and legislation supporting a strong agricultural economic base and retention of those lands primarily in agricultural pursuits in the specific project area. (see Hawaii Revised Statutes, Section 205, O'ahu General Plan and Sustainable Communities Plan, Section 1-115 of the City Subdivision Rules and Regulations; and the State Coastal Zone Management Act, among many other citations) OHA stresses that only accessory agribusiness activities which meet the above intent are to be permitted in this area.

Hawaii Revised Statutes section 205-2 states that, "In the establishment of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation". That is exactly the kind of land that this project proposes to use and as such, OHA cannot reasonably see how this project does not run afoul of state and county land use plans, controls and policies. Even the soil ratings establish the project area as of the highest suitability and productivity for agricultural uses.[1]

[1] EISPN, page 3-3.

In 1961, the Committee on Lands and Natural Resources remarked that its goal in creating the State Land Use Commission was primarily to "protect productive agricultural lands…through state zoning."[2] The high value assigned to agriculture lands was emphasized again by the 1976 legislature when they assigned Class A and B agricultural lands "additional protection…[against county approval of] agricultural subdivisions."[3]

Further, and as mentioned in Hawaii Revised Statutes section 205-41, even our state constitution emphasizes that:

> The State shall conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. The legislature shall provide standards and criteria to accomplish the foregoing.
>
> Lands identified by the State as important agricultural lands needed to fulfill the purposes above shall not be reclassified by the State or rezoned by its political subdivisions without meeting the standards and criteria established by the legislature and approved by a two-thirds vote of the body responsible for the reclassification or rezoning action.

Moreover, OHA feels that agricultural lands will increasingly become important for our beneficiaries and the future of this state. The zoning of this area as Agriculture-1 shows that these are prime lands which are uniquely important to the state of Hawai'i agricultural system. Therefore, we point to Hawaii Revised Statutes section 205-41 which states;

> It is declared that the people of Hawaii have a substantial interest in the health and sustainability of agriculture as an industry in the State. There is a compelling state interest in conserving the State's agricultural land resource base and assuring the long-term availability of agricultural lands for agricultural use to achieve the purposes of:
>
> (1) Conserving and protecting agricultural lands;
>
> (2) Promoting diversified agriculture;
>
> (3) Increasing agricultural self-sufficiency; and
>
> (4) Assuring the availability of agriculturally suitable lands pursuant to article XI, section 3, of the Hawaii state constitution.

[2] S. Stand. Comm. Rep. 850, 1st Leg., Gen. Sess. (1961), reprinted in 1961 Haw. Sen. J. 883, 883. From *Avoiding the Next Hokuli'a*, Adrienne Suarez, 27 UH L. Rev. 441.

[3] S. Conf. Comm. Rep. 2-76, 8th Leg., Reg. Sess. (1976), reprinted in 1976 Haw. Sen. J. 836, 836. From *Avoiding the Next Hokuli'a*, Adrienne Suarez, 27 UH L. Rev. 441.

OHA also realizes that water use permits are granted based on reasonable usage and in consideration of maximum-beneficial use. OHA stresses that waters of the State used in agricultural zoned parcels must be used in order to support agriculture. OHA also stresses that even the applicant must recognize that "almost all of the land" in Koa Ridge Makai is currently being used in diversified agriculture and "most" of the Waiawa site is now being used for cattle grazing.[4] Therefore, the applicant cannot qualify these diversified agricultural uses as "near term".[5] This project area is to be used for agriculture. There is nothing "near term" about that and it is the antithesis of legislative intent, caselaw, legislation, zoning, law and actual use to propose otherwise.

In terms of the environmental review process, this EISPN is confusing. In the preface on Page P-2 states,

> This EIS will also be used in support of a zone change application for the Koa Ridge Makai and Waiawa areas to be filed with the City and County of Honolulu following the State Land Use District boundary amendment process. (emphasis added)

However, page 1-2 of the introduction states,

> The forthcoming EIS is also being used in support of a zone change application for the Koa Ridge Makai and Waiawa areas to be filed with the City and County of Honolulu following the State Land Use District boundary amendment process. (emphasis added)

As such, OHA is wholly unsure as to which EIS the applicant is referencing or proposing to use or for what purpose. (Unless they are both going to be used for the same purpose.) OHA recommends that the *Preface* section and *Introduction and Project Setting* section of the EIS be combined (they are duplicative) and clarified. Further, OHA expresses concern over the proposal to roll the Waiawa and Koa Ridge projects into one EIS. It may provide a better environmental review if these projects were treated separately and OHA is unsure as to the relationships that warrant the combination of these two projects into one document.

Because the applicant has withdrawn their rezoning request and previous (2003?) EIS, and proposes to use "this EIS" as well as mentioning a "forthcoming EIS" all in EIS Preparation Notice, OHA also seeks clarification as to:

> *Does the applicant propose to combine the previous EIS with a 2008 EIS? If so, OHA strongly urges that the applicant provide recent studies and data and not merely recycled information in the new EIS.

[4] EISPN, page 1-7.
[5] EISPN, page 3-8.

> *For what purposes will the 2008 EIS be used? For example, zoning, land use re-designation, and/or in conformance with Chapter 343 Hawaii Revised Statutes.

OHA understands that the previous EIS (which was a draft) was withdrawn because the project stalled due to a dispute with the Wahiawa Hospital Association involving an agreement by the owner of Wahiawa General Hospital to buy acreage on which to develop medical facilities. Not only should this be disclosed in the EIS, but OHA again advocates that the applicant demonstrate the foundation for which one EIS is adequate for the now combined Waiawa/Koa Ridge projects. OHA again suggests that one way to mitigate this problematic issue is to provide fresh data and surveys in the EIS.

OHA would also like to see specific information in the new EIS provided regarding:

*Percentage of affordable housing proposed for the project.

*A water resources assessment to evaluate the impacts to groundwater resources in the project area including surface water and runoff impacts to receiving waters.

*Potable water system as well as wastewater systems analysis, including impacts to aquifer system.

*Updated flora and faunal surveys (as mentioned in the EISPN on page 3-5).

*An updated cultural impact assessment (previous ones done in 1996 and 2001 are mentioned in the EISPN on page 3-80).

*Alternatives analysis as well as cumulative impacts analysis.

*An updated assessment on the need for the project.

Thank you for the opportunity to comment and we look forward to reviewing the EIS. If you have further questions, please contact Grant Arnold (808) 594-0263 or e-mail him at granta@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Clyde W. Nāmu‘o, Administrator
State of Hawai‘i
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, O‘ahu, Hawai‘i
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Nāmu‘o,

We are in receipt of your letter dated July 16, 2008 (HRD08/3121D) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

Agricultural Land Use
According to the City and County of Honolulu’s Central Oahu Sustainable Communities Plan, the project area is located within the Urban Community Boundary. This indicates that, according to City policy, the urbanization of these lands is needed to accommodate the island’s future growth. Relative to the State Land Use District Boundary Amendment being sought by Castle & Cooke Homes Hawaii (the petitioner) to reclassify the petition area from the State Land Use Agricultural District to the Urban District, the proposed development is consistent with the State’s Urban District standards.

The Draft EIS will discuss the project’s consistency with applicable State and City land use plans, policies and controls. The Draft EIS will also describe the project’s potential impacts on agriculture, including existing uses of the petition area. The project’s impacts on potable water sources will also be discussed in the Draft EIS.

Environmental Review Process
The Draft EIS will clarify that the project’s EIS (Draft and Final) is required to support the State Land Use District Boundary Amendment requested by the petitioner in conformance with HRS Chapter 343, and will also support a future zone change application to be filed with the City and County of Honolulu.

Regarding your suggestion that separate statements should be prepared for the Koa Ridge Makai and Waiawa project areas, the petitioner determined that addressing both developments in a single EIS is the appropriate approach in order to adequately disclose their cumulative environmental effects. Separating the projects could be construed as “segmenting” their effects. Prior to the publication of the EIS Preparation Notice (EISPN), the petitioner discussed a

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combined EIS for the two projects with the Land Use Commission staff (the project’s Accepting Authority), the State Office of Planning, the City Department of Planning and Permitting, and the Office of Environmental Quality Control. None of these agencies objected to this approach or suggested preparing a separate EIS for both developments. Please refer to Hawaii Administrative Rules, Chapter 200 - Environmental Impact Statement Rules§11-200-7 (A) regarding Multiple or Phased Applicant or Agency Actions, which states “A group of actions proposed by an agency or an applicant shall be treated as a single action when…the component actions are phases or increments of a larger total undertaking.”

The 2007 Draft EIS for Castle & Cooke Homes Hawaii’s Waiawa development was not withdrawn due to a dispute with the Wahiawa Hospital Association (WHA). Rather, it was withdrawn because a new agreement with WHA was reached, enabling both the Waiawa and Koa Ridge Makai developments to proceed.

The combined EIS will include updated information and analyses on the resource areas listed in the EISPN, where appropriate. Updated information will be provided for water resources, utilities and infrastructure, biological surveys, and cultural impacts. The Draft EIS will also include alternatives analysis, cumulative impacts, a discussion of affordable housing requirements, and project need and objectives.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

BOARD OF WATER SUPPLY

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

July 23, 2008

Ms. Gail Renard, Project Manager
Helber, Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: The Environmental Impact Statement (EIS) Preparation Notice for Koa Ridge Makai and Waiawa Development, Ewa, Oahu, Hawaii

Thank you for the opportunity to comment on the proposed development.

We have the following comments:

1. The developer is required to submit potable and non-potable water master plans for the Koa Ridge Makai development. The potable water master plan should address the location of the proposed potable source and its impact on existing wells located down gradient of the proposed source.

2. The non-potable water master plan should address the non-potable demands for the proposed developments and whether the system will be private or dedicated to the Board of Water Supply (BWS). If dedicated, the system would require compliance with BWS non-potable standards. BWS Rules and Regulations require the use of non-potable water for the irrigation of large landscaped areas if a suitable supply is available. The BWS plans to bring R-1 water from the City's Wahiawa Wastewater Treatment Plant to the Waiawa area. The R1 reuse is disclosed in the City's Draft EIS for the Central Oahu Wastewater Facilities Plan that was published in the State Office of Environmental Quality Control's Environmental Notice of January 23, 2008. Construction may begin as early as 2010. The master plan should address the availability and use of non-potable water for irrigation and developing a dual water system. The projected non-potable irrigation demands should be provided.

3. We recommend the use of drought tolerant/low water use plants and xeriscaping principles for all landscaping. We also recommend the installation of an efficient irrigation system, possibly using drip irrigation. The irrigation system should incorporate moisture sensors to avoid the operation of the system in the rain and if the ground has adequate moisture.

4. Given the location, new groundwater sources developed for the project may potentially contain chemical contaminants from previous agricultural use, and, therefore, the pump stations should have adequate land area for treatment facilities if needed in the future. If pesticides are detected in groundwater before the development is completed, the developer will be required to install the appropriate treatment systems. All backwash and discharge water generated from these facilities should be properly permitted and connected to drainage systems.

5. The developments are below the 50-inch isohyet for annual rainfall. Although it is not considered a high recharge area, the increase in impervious surfaces due to development in Central Oahu could still reduce aquifer recharge and increase storm water runoff. We recommend low-impact and smart-growth policies and guidelines be applied to the proposed urban land uses so that their impacts on water resources are mitigated. The Draft EIS should discuss mitigation measures for loss of recharge and source water protection of wells in the area.

6. In addition to the use of low-flow water fixtures, drought-tolerant and low water use landscaping and water-efficient irrigation systems, water conservation measures such as rain barrel catchments, water-efficient front-load washer appliances and ultra low-flow toilets should also be considered.

7. The developments are located within the Source Water Assessment Plan. Therefore, potential contaminating activities as discussed in the State Department of Health's Source Water Protection Plan should be identified along with subsequent Best Management Practices.

8. BWS will evaluate long-term pump optimization and impacts when the Pearl Harbor numerical groundwater model is conducted and we reserve further comments until that time.

9. Cross-connection control measures should be implemented in areas with dual water systems.

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

Very truly yours,

K. Shida

KEITH S. SHIDA
Program Administrator
Customer Care Division

cc: Office of Environmental Quality Control
Mr. Orlando Davidson, Land Use Commission
Ms. Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Keith S. Shida, Program Administrator
Customer Care Division
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Shida,

We are in receipt of your letter dated July 23, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1 and 2. Potable and non-potable water master plans will be prepared for the proposed development and submitted to your agency. The Draft EIS will describe the proposed potable water source and its potential impacts on existing down-gradient wells. The project will include a dual water system (both potable and non-potable water). The non-potable water source will be used once a source is identified (e.g., the BWS R-1 water from the Wahiawa Wastewater Treatment Plant mentioned in your letter).

3. Detailed landscaping plans will be prepared at a later stage in the development process. Castle & Cooke Homes Hawaii (the Petitioner) will incorporate the recommendations in your letter, where it has control and is appropriate.

4. New potable water sources developed for this project will comply with applicable BWS regulations for testing and treatment.

5. The proposed project is being planned using smart-growth policies for new developments, including the provision of higher density residential uses concentrated around a "village center" mixed use commercial core area, creating a more pedestrian- and bicycle-friendly community, and utilizing other sustainable concepts to minimize impacts on water resources. The Draft EIS will describe the project's potential impacts on groundwater resources and existing potable water wells and any relevant mitigation measures.

6. Castle & Cooke Homes Hawaii will consider incorporating the water conservation measures listed in your letter in the more detailed design phases of the development.

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7. The Draft EIS will include a discussion of the State Department of Health's Source Water Assessment Plan and best management practices (BMPs) proposed or under consideration at the current time. Specific BMPs will be developed during the project's detailed design phase.

8. We acknowledge your comment about evaluation of long-term pump optimization and impacts.

9. The development will comply with all applicable BWS regulations, including those that concern dual water systems.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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

MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

RUSSELL H. TAKARA, P.E.
DEPUTY DIRECTOR

RECEIVED
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HELBER, HASTERT & FEE
PLANNERS

July 15, 2008

Ms. Gail Renard, Project Manager
Helber, Hastert and Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement
Koa Ridge Makai and Waiawa Development

Thank you for giving us the opportunity to review the above Environmental Impact Statement.

The Department of Design and Construction has the following comments:

- DDC recommends that the applicant submit to the City's Department of Parks and Recreation at the earliest stage possible, a proposed master plan for park development related to your project, as per the park dedication provisions of the Subdivision Ordinance.
- A master plan for park development will enable the City to better plan the commitment of its own resources to construct improvements, operate, and manage new facilities, and coordinate its efforts with the private developer's timetable. The distribution of appropriately sized parks in the land region also concerns us.
- We note that on page 3-16 of the Environmental Impact Statement Preparation Notice (EISPN), the official name for the Waipio Soccer Complex is the "Waipio Peninsula Soccer Park." For the sake of clarity, we respectfully request that you use the official name in future publications.

Should you have any questions, please contact Clifford Lau, Chief, Facilities Division, at 768-8483.

Very truly yours,

FOR Eugene C. Lee, P.E.
Director

ECL:lt (267071)

c: DDC Facilities Division

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Eugene C. Lee, P.E., Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th Floor
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Lee,

We are in receipt of your letter dated July 15, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

- The applicant will submit a proposed master plan for park development to the City's Department of Parks and Recreation (DPR) at a later stage in the development process when more detailed land use planning is completed.

- The applicant is coordinating with the DPR to provide appropriately sized parks adequately distributed within the development to serve the community's needs.

- The official name of the Waipio Peninsula Soccer Park will be used in the Draft EIS.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

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

MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

July 16, 2008

Ms. Gail Renard, Project Manager
Helber Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement Preparation Notice
Koa Ridge Makai and Waiawa Development
Ewa, Oahu, Hawaii
Tax Map Keys: Koa Ridge Makai: 9-4-006: 038, Portions 001, 002, 005, and 039
9-5-003: Portions 001 and 004
Waiawa: 9-4-006: Portions 029 and 031
9-6-004: 021

In response to a letter from Thomas Fee dated June 20, 2008, regarding the above-mentioned project, the Honolulu Fire Department (HFD) reviewed the materials provided and has determined that the proposed development will have an impact on the services it provides. As such, we request that the following be complied with:

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

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

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

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

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

Sincerely,

KENNETH G. SILVA
Fire Chief

KGS/SK:bh

cc: State of Hawaii, Office of Environmental Quality Control
Orlando Davidson, State of Hawaii, Land Use Commission
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

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

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Chief Silva,

We are in receipt of your letter dated July 16, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. The project will comply with all applicable County regulations, including the Uniform Fire Code.

2. The project's water system will be designed to provide the required fire protection flow.

3. Construction plans will be routed to HFD for review and approval.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
KAPOLEI HALE • 1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3003 • FAX: (808) 768-7053 • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LESTER K.C. CHANG
DIRECTOR

GAIL Y. HARAGUCHI
DEPUTY DIRECTOR

July 2, 2008

Ms. Gail Renard, Project Manager
Helber Hastert & Fee Planners, Inc.
733 Bishop Street, Suite 2950
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement Preparation Notice
Koa Ridge Makai & Waiawa Development

Thank you for the opportunity to review and comment on the Environmental Impact Preparation Notice for Koa Ridge Makai and Waiawa Development.

The Department of Parks and Recreation has no comment at this time and looks forward to seeing the discussion and analysis of proposed areas to be dedicated, either as private or public parks in the Draft EIS.

Should you have any questions, please contact Mr. John Reid, Planner, at 768-3017.

LESTER K. C. CHANG
Director

LKCC:jr
(267117)

cc: Office of Environmental Quality Control
Land Use Commission, State of Hawaii
Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 21, 2008

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

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Chang,

We are in receipt of your letter dated July 2, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We understand that Castle & Cooke Homes Hawaii has been meeting with your department regarding the location and adequacy of its parks serving the planned community. The Draft EIS will describe the anticipated park facilities and park dedication requirements.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

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

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

PAUL D. PUTZULU
CARL A. GOSSETT
DEPUTY CHIEFS

OUR REFERENCE BS-KP

June 26, 2008

RECEIVED
JUL - 1 2008
HELBER, HASTERT & FEE PLANNERS

Ms. Gail Renard, Project Manager
Helber Hastert & Fee Planners, Inc.
Pacific Guardian Center
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

This is in response to a letter from Helber Hastert & Fee Planners, Inc., requesting comments on an Environmental Impact Statement and Preparation Notice for the Koa Ridge Makai and Waiawa Development project.

Pursuant to section 3.16 on page 3-14, please note that District 2 is Wahiawa and District 3 is Pearl City. Also, the Honolulu Police Department will stand by its original comments as stated in the "Impacts and Mitigation Measures."

If there are any questions, please call Major Dave Kajihiro of District 3 at 723-8803 or Mr. Brandon Stone of the Executive Office at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By A/Assistant Chief's Designation
DEBORA A. TANDAL
Assistant Chief of Police
Support Services Bureau

cc: OEQC
Mr. Orlando Davidson,
Land Use Commission
Ms. Laura Kodama,
Castle & Cooke Homes Hawaii, Inc.

Serving and Protecting With Aloha

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Boisse P. Correa, Chief of Police
City and County of Honolulu
Police Department
601 South Beretania Street
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Chief Correa,

We are in receipt of your letter dated June 26, 2008 (BS-KP) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. The district numbers for Wahiawa and Pearl City (Districts 2 and 3, respectively) will be corrected in the Draft EIS.

2. We note that the police protection impacts and mitigation cited in the EIS Preparation Notice continue to reflect your department's position.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

CRAIG I. NISHIMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 08-607

July 23, 2008

RECEIVED
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HELBER, HASTERT & FEE
PLANNERS

Ms. Gail Renard
Helber, Hastert & Fee, Planners
733 Bishop Street, suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement
Preparation Notice (EISPN)
Koa Ridge Makai and Waiawa Development

Thank you for the opportunity to review and comment on the EISPN dated May 2008, for the subject proposed two mixed use community developments.

The EISPN proposes to develop 766 acres for two mixed use communities of residential, commercial, parks and public facilities. Future development will include a network of streets with the required storm drainage improvements. City and County maintenance resources will need to be expanded for any infrastructure that will be dedicated to the City.

Accordingly, we request the Final Environmental Impact Statement indicate that additional resources will be needed by the Department of Facility Maintenance to maintain the proposed roadways and associated drainage facilities that will be dedicated to the City to a recognized standard.

Also, maintenance jurisdiction of the proposed storm water detention/retention systems should be addressed in the Final Environmental Impact Statement. These facilities should be privately-owned and maintained by the community association.

Should you have any questions, please call Charles Pignataro of the Division of Road Maintenance, at 768-3697.

Sincerely,

Craig I. Nishimura, P.E.
Director and Chief Engineer

c: Land Use Commission, State of Hawaii
Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Craig I. Nishimura, P.E., Director
City and County of Honolulu
Department of Facility Maintenance
1000 Uluohia Street, Suite 215
Kapolei, HI 96707

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
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Dear Mr. Nishimura,

We are in receipt of your letter dated July 15, 2008 (DRM 08-607) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

The Draft EIS will indicate that your department will need additional resources to maintain project-related roadways and associated drainage facilities dedicated to the City and County of Honolulu.

The EIS will describe the ownership of any proposed stormwater detention/retention facilities.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

Pacific Guardian Center • 733 Bishop Street, Suite 2590 • Honolulu, Hawaii 96813
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

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

Mufi Hannemann
MAYOR

Melvin N. Kaku
DIRECTOR

July 10, 2008

RECEIVED
JUL 14 20
HELBER, HASTERT & FEE
PLANNERS

Ms. Gail Renard
Project Manager
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Koa Ridge Makai and Waiawa Development
Ewa, Oahu, Hawaii

Thank you for the opportunity to review and comment on the above mentioned project. The Department of Emergency Management does not have any comments at this time.

Sincerely,

Melvin N. Kaku
Director

Cc: The Office of Environmental Quality Control
Land Use Commission, State of Hawaii
Castle & Cooke Homes Hawaii, Inc.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Melvin N. Kaku, Director
City and County of Honolulu
Department of Emergency Management
650 South King Street
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
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Dear Mr. Kaku,

We are in receipt of your letter dated July 10, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We note that your department had no comments at the time.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 527-6743
INTERNET: www.honolulu.gov • DEPT. WEB SITE: www.honoluludpp.org

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2008/ELOG-1542(MH)

July 24, 2008

RECEIVED
JUL 28 2008
HELBER, HASTERT & FEE
PLANNERS

Ms. Gail Renard, Project Manager
Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, Hawaii 96813

Dear Ms. Renard:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Koa Ridge Makai & Waiawa Development, Oahu, Hawaii
Tax Map Keys: 9-4-006: Portions 029 and 031; 9-6-004: 021;
9-4-006: 038, Portions 001, 002, 005, 039; and 9-5-003: Portions
001 and 004, Waiawa and Waipio, Oahu, Hawaii

We have reviewed the subject EISPN and offer the following comments:

1. The Draft Environmental Impact Statement (DEIS) should include a discussion of how the proposed project is consistent with Table 2.2 of the Central Oahu Sustainable Communities Plan.

2. Section 3: Discuss the suitability of the site in terms of slope stability and/or rock fall hazards. If these hazards exist, then describe mitigation measures that will be implemented to make the site suitable for development.

3. Section 3.18: It is not clear as to whether the proposed project's medical and health care component will include a hospital or not. If a hospital is proposed in the Koa Ridge Makai site, there should be disclosure regarding the impacts to the surrounding area. Wahiawa General Hospital is located on Lehua Street, not Lehua Avenue (Pearl City).

4. Section 3.21.2: Sewer lines that will be dedicated to the City must be designed to carry peak flows that will not exceed 85 percent (85%) of the capacity of the pipes. Furthermore, all sewers to be dedicated to the City should be placed within public roadways.

5. Explain how the project will satisfy Section II (Storm Water Quality) of the Rules Relating to Storm Drainage Standards.

6. Table 6-1: Building permits are issued by the Department of Planning and Permitting, not the Department of Design and Construction.

7. The DEIS should discuss/show how connectivity with the surrounding communities and streets, and within the Koa Ridge Makai and Waiawa sites will be established.

Specifically, the DEIS should further discuss/show how connectivity between the Koa Ridge Makai site and the existing Waipio development, as well as the Waiawa site and the adjacent planned Waiawa Ridge Development site will be established.

8. A roadway master plan should be prepared prior to the submittal of any subdivision application which will either create roadway lots or define roadway alignments. The plan should include provisions for access to the Mililani Memorial Park and potentially another connection over the H-2 Freeway. The plan should also take into account street connectivity to the Waipio and Waiawa Ridge Development sites.

9. A transportation master plan, which incorporates elements of the roadway master plan will be recommended for department review and approval prior to the issuance of any building permits, and should include multi-modal considerations and traffic demand management strategies.

10. A construction management plan will be recommended for department review and approval prior to any issuance for permits which will allow extensive construction related activity on the site.

11. **Central Oahu Sustainable Communities Plan (CO SCP)** – EISPN Section 4.6 Page 4-14, states "A discussion of how the project supports the vision, land use policies, principles, and guidelines of the CO SCP will be included in the Draft EIS."

However, rather than indicating the specific CO SCP policies, principles and guidelines to be addressed as was done for the General Plan in item 12 above, the EISPN simply quotes the CO SCP Chapter 1 summary of how the CO SCP implements the General Plan.

Therefore, the Draft EIS should discuss how the proposed project will implement the relevant CO SCP vision elements, policies, principles, and guidelines which are listed in the attachment.

We look forward to reviewing and commenting on the DEIS. Should you have any questions, please contact Matt Higashida of our staff at 768-8045.

Very truly yours,

pp Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:js
Enclosure:

cc: Ms. Katherine Puana Kealoha, Office of Environmental Quality Control
Ms. Laura Kodama, Castle & Cooke Homes Hawaii, Inc.
Mr. Scott Derrickson, Office of Planning
P:\DivFunction\Ea-eis\2008\Koa Ridge Makai & Waiawa EISPN comments.doc

Attachment:

CO SCP Chapter 2 – The Vision for Central Oahu's Future
(Section numbering below refers to the respective sections of the Central Oahu Sustainable Communities Plan and NOT the sections of the EISPN.)

Vision elements include:
- Creating an Open Space Network,
- Revitalizing Waipahu and Wahiawa,
- Building Master Planned Residential Communities,
- Preserving Natural, Historic, and Cultural Resources, and
- Developing Adequate Infrastructure for Existing and Projected Needs.

CO SCP Chapter 3 – Land Use Policies, Principles and Guidelines

a. Section 3.1 Open Space Preservation and Development
- Provide long-range protection for diversified agriculture and pineapple outside the UCB and for Pine Spur and Honbushin,
- Protect scenic views and provide recreation,
- Define the boundaries of communities,
- Provide a fire safety buffer where developed areas border "wildlands",
- Preserve natural gulches and ravines as drainage ways and storm water retention areas, and
- Create linkages between communities through a network of Greenways along transportation and utility corridors.

Planning principles and guidelines for implementing these policies are provided in Sections 3.1.2 and 3.1.4.

b. Section 3.3 Community-Based Parks
- Develop enough park space to meet the island-wide standard of 2 acres of park per 1,000 residents.
- Protect and expand access to recreational resources in the mountains, at the shoreline, and in the ocean.
- Expand access to mountain and gulch trails.

Guidelines for implementing these policies are provided in Section 3.3.2.

c. Section 3.8 Existing and Planned Residential Communities
i. Zone and design the residential areas in planned residential communities to support gross housing density of 10 to 15 units per acre (including streets).
ii. Physically define neighborhoods by using street patterns, natural features, landscaping, building form and siting.

iii. Create pedestrian friendly streets and walkways.
iv. Provide open space, landscaped buffers to separate urban development from the H-2 freeway.
v. Provide a variety of housing types and densities but without a sharp contrast between exterior appearances.
vi. Design streets and rights-of-way to accommodate bus service and to maximize accessibility to all households.
vii. Encourage pedestrian and bicycle travel to neighborhood commercial, educational, and recreation centers.
viii. Promote neighborhood connectivity by creative design of transportation corridors, utility corridors, and drainage systems.
ix. Provide land for community facilities, including churches, community centers, and elderly and child care centers.

Guidelines for implementing these policies are provided in Section 3.8.2.

d. Section 3.9 Planned Commercial Retail Centers
i. Provide basic retail shopping and services for the surrounding community, and limit uses that need to draw shoppers from other areas of Oahu.
ii. Concentrate uses in central locations rather than in strips along arterial roads
iii. Emphasize pedestrian and transit access to and within commercial centers.
iv. Withhold approval for development that would compete with the objectives of redeveloping the commercial areas of Waipahu and Wahiawa and developing regional shopping attractions in the City of Kapolei.
v. Limit office uses in community commercial centers outside Waipahu and Wahiawa to those providing services to the local community.
vi. Focus office development on Waipahu, Wahiawa, the Mililani Technology Park, and the Koa Ridge Medical Park.

Principles and guidelines for implementing these policies are provided in Sections 3.9.2 and 3.9.3.

e. Section 3.10 Industrial Centers
i. Allow limited industrial development in Central Oahu to accommodate services and storage for surrounding residential communities.

Principles and guidelines for implementing this policy are provided in Sections 3.10.2 and 3.10.3.

CO SCP Chapter 4 – Public Facilities and Infrastructure Policies and Principles.

a. Section 4.1 Transportation Systems
i. **Adequate Access and Services** – Determine, as part of the zone change approval process, if the City's Department of Transportation Services (DTS) and the State's Department of Transportation (DOT) feel that existing facilities and systems can provide adequate transportation access and services, and if not, require the mitigations and improvements that DTS and/or DOT want provided to insure that adequate capacity is provided.
ii. **Reduction in Automobile Use** – To reduce reliance on private autos:
1. Provide separated pedestrian and bike paths.
2. Provide convenient routes for transit service.
3. Design streets in new developments to provide for bus pullouts and to encourage walking.
4. Provide supporting facilities and amenities for pedestrian, bicycle, and public transit use.

Principles for implementing these policies are provided in Sections 4.1.6.

b. Section 4.2 Water Allocation and System Development
i. Determine, as part of the zone change approval process, if the Board of Water Supply (BWS) feels adequate potable and non-potable water is available, and if not, identify and require the mitigations and/or improvements that the BWS wants provided to insure adequate capacity is available.

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Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Henry Eng, FAICP, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Eng,

We are in receipt of your letter dated July 24, 2008 (2008/ELOG-1542 MH) regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. The Draft EIS will discuss the proposed project in light of Table 2.2 (Phasing of Central Oahu Development) of the Central Oahu Sustainable Communities Plan.

2. Castle & Cooke Homes Hawaii (Petitioner) will retain a geotechnical engineer to perform a slope stability analysis of the top of gulch areas adjacent to Kipapa Gulch prior to detailed design. Most of the lands between the Koa Ridge Makai parcel and Kipapa Stream are undeveloped and therefore, pose no risk to downslope improvements. The only exception is the cluster of homes in Kipapa Acres adjacent to Kamehameha Highway. The geotechnical engineer will evaluate the necessity for and appropriateness of various mitigative measures in this area.

3. The Draft EIS will describe the possible components of the health care complex and their potential impacts on the surrounding area. Lehua Street will be correctly identified in the Draft EIS.

4. Sewer lines to be dedicated to the City shall be designed such that peak design flows will not exceed 85% of pipe's available capacity. To the greatest extent practical, sewer lines will be sited within public roadways.

5. Stormwater quality will be addressed either through the use of dry-extended detention ponds or flow through based treatment devices depending on the site specific flow, topography and site constraints.

6. The Draft EIS will correctly identify the City department that issues building permits.

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7. The Draft EIS will describe the transportation network serving the development and connecting the development with surrounding communities, including Waiawa Ridge Development and the Waipio development.

8. A roadway master plan for the project will be submitted prior to any subdivision applications that create roadway lots or define roadway alignments. The contents of this plan will be coordinated with your department.

9. A transportation master plan will be submitted to your department prior to applications for building permits. The contents of this plan will be coordinated with your department.

10. A construction management plan will be prepared and submitted during the building permit application phase.

11. The Draft EIS will discuss how the proposed project will implement relevant Central Oahu Sustainable Communities Plan vision elements, policies, principles, and guidelines from the list provided with your letter.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

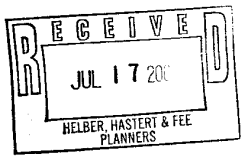
Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

200 Akamainui Street
Mililani, Hawaii 96789-3999
Tel 808-625-2100
Fax 808-625-5888

OCEANIC TIME WARNER CABLE



July 16, 2008

Helber Hastert & Fee, Planners
733 Bishop Street, Suite 2590
Honolulu, HI 96813

Attn: Ms. Gail Renard

Subject: EIS Notice for Koa Ridge Makai and Waiawa Development

Dear Ms. Renard,

Thank you for the submittal of the project above for our preliminary review and comment. Upon review of the enclosure that was sent, I advise and inform you of the following:

- Oceanic Time Warner Cable (OTWC) currently has existing cable facilities serving Waipio Gentry and Gentry Business Park. Much but not all of the existing CATV trunk and distribution cables are in Hawaiian Telcom's underground conduits, including Ka Uka Blvd. A Time Warner Telecom fiber is attached to a joint pole line that traverses along the Ka Uka Blvd frontage of the Koa Ridge Makai development site. Fiber trunking cables will need to be extended from Kamehameha Hwy traversing Ka Uka Blvd and therefore may require off-site infrastructure improvements. The nearest CATV facility that could be used to extend into the Waiawa site is on the mauka corner of Moaniani St and Ka Uka Blvd or directly across Ka Uka Blvd on the opposite corner.
- Based on the approximate amount of homes for this project, an estimated seven or more on-site power supply locations will be required to serve the Waiawa project area and an estimated twenty-eight for the Makai site. These are preliminary amounts. Preferably, the locations should be next to or in close proximity to a Hawaiian Electric Company transformer along an arterial roadway. Typically, a minimum 6'X6' easement for a power supply pedestal is requested. The power supplies should be energized as the subdivisions come up.
- OTWC may be interested in acquiring property for a Hub facility (similar to a telephone Central Office) to serve this development and the proposed Waiawa Ridge Development. The size of this facility will be about 1200 square feet. The location of such property is yet to be determined and off-site requirements such as infrastructure improvements may be necessary.

200 Akamainui Street
Mililani, Hawaii 96789-3999
Tel 808-625-2100
Fax 808-625-5888

OCEANIC TIME WARNER CABLE

Please continue to update us when information becomes available and submit the necessary documents for review and comments. If you have any questions or require more information, please email me at joseph.antonio@twcable.com or call 625-8337.

Best Regards,

Joseph Antonio
OSP Engineer

Cc: Orlando Davidson, Laura Kodama

A Division of Time Warner Entertainment Company, L.P.

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Joseph Antonio
OSP Engineer
Oceanic Time Warner Cable
200 Akamainui Street
Mililani, HI 96789-3999

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Antonio,

We are in receipt of your letter to dated July 16, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses to your comments.

1. The Draft EIS will discuss the cable system improvements that will be needed to serve the proposed development.
2. Plans will be submitted to Oceanic Time Warner Cable during design development of the subdivisions to verify and coordinate specific requirements.
3. Your letter expressing interest in acquiring property for a Hub facility has been forwarded to the Petitioner, Castle & Cooke Homes Hawaii.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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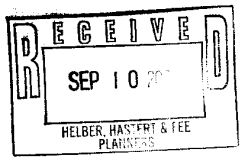
Tel. 808.545.2055 • Fax 808.545.2050 • www.hhf.com • e-mail: info@hhf.com

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

EIS

September 5, 2008



Ms. Gail Renard, Project Manager
Helber Hastert & Fee, Planners
733 Bishop Street - Suite 2590
Honolulu, HI 96813

Dear Ms. Renard:

Re: Koa Ridge Makai & Waiawa Development
Waipio & Waiawa, Ewa, Oahu, Hawaii

Thank you for the opportunity to comment on the above-referenced project. Hawaiian Electric Company, Inc. (HECO) has no objections at this time. The following comments were received from our Engineering and Construction & Maintenance Departments:

(1) Engineering/Transmission & Distribution (Hsun Jou/Michael Lum, 543-7030). HECO has existing overhead facilities in the area of the proposed development project and will require continued access for maintenance purposes. Please keep in mind that state law [OSHA 1910.269(k)(2B)] requires that a worker and the longest object he/she may contact cannot come closer than a minimum radial clearance of ten feet when working close to or under any overhead lines rated 50kV and below. For each additional 10kV above 50kV, an additional four inches shall be added to the ten-foot clearance requirement. In addition, a minimum clearance of ten feet must be maintained during excavation around utility poles and/or their anchor systems to prevent weakening or pole support failure. Clearances shall be maintained between HECO's ductlines and all adjacent structures, according to HECO's Standards.

(2) Engineering/Project Management (Glenn Maglasang/Kerstan Wong, 543-7059). The long range plan to service the Castle & Cooke Waiawa development is to construct distribution substations within the Waiawa Ridge Development (mauka of the H-2 Freeway).

(3) Construction & Maintenance (Michael Ho, 543-7785). HECO will need continued access to our existing overhead and underground facilities for operation and maintenance purposes, as covered by our existing easement(s). We understand that our Engineering Department is currently working with the developer on electrical service and relocation of HECO's existing facilities for the proposed development.

We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review.

Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.

To coordinate HECO's continuing input in this project, I suggest dealing directly with the points of contact noted above. Thank you again for the opportunity to comment.

Sincerely,

Kirk S. Tomita
Senior Environmental Scientist

cc: Ms. Katherine P. Keahola (OEQC)
Mr. Orlando Davidson (LUC)
Ms. Laura Kodama (Castle & Cooke Homes)
H. Jou/M. Lum/R. Tamayo
G. Maglasang/K. Wong
M. Ho/S. Yoshida/P. Nakagawa

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Mr. Kirk Tomita
Senior Environmental Scientist
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, HI 96840-0001

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
Waiawa TMK: (1) 9-4-06: pors. 29 and 31; (1) 9-6-04: 21
Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Mr. Tomita,

We are in receipt of your letter dated September 5, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses to your comments.

1. We concur that the HECO will require continued operation and maintenance access to existing overhead facilities or underground power lines in or near the proposed development area. Project construction activities will comply with all applicable State laws, including those governing clearance from overhead power lines, as well as HECO standards.
2. We acknowledge that HECO's long range plan is to service Castle & Cooke's Waiawa development via distribution substations within the Waiawa Ridge Development.
3. See No. 1 above.

As the project progresses, plans will be submitted to HECO to coordinate and resolve any conflicts between the proposed plans and HECO's existing facilities.

We appreciate your input and participation in the EIS process. Your letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.

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SIERRA CLUB
HAWAI'I CHAPTER
P.O. Box 2577, Honolulu, HI 96803
tel: 808.538.6616 fax: 808.537.9019

July 23, 2008

VIA FAX AND U.S. MAIL

Thomas A. Fee, AICP
Helber Hastert & Fee, Planners
733 Bishop Street
Suite 2590
Honolulu, Hawaii 96813

Re: Koa Ridge Makai and Waiawa Development
Sierra Club Hawai`i Chapter's Comments on Environmental Impact Statement Preparation Notice

Dear Mr. Fee:

Thank you for the Environmental Impact Statement Preparation Notice (EISPN) for the proposed Koa Ridge Makai and Waiawa Development. Upon review of the EISPN, the Sierra Club, Hawai`i Chapter makes the following comments for your consideration in preparing the Draft EIS:

(1) **Environmental Impacts.** The Sierra Club expects the Draft EIS to describe the existing environment and to discuss the project impacts and proposed mitigation measures in each of the areas identified in Section 3 of the EISPN. The areas identified include, but are not limited to, climate, geology and topography, soils, natural hazards, groundwater and surface water resources, flora and fauna, air quality, noise, historic and archaeological resources, cultural resources, agricultural resources, visual resources, traffic, recreational facilities, water systems and wastewater systems, electrical system, and sold waste disposal. The Sierra Club strongly disagrees that the project will have no significant impact on geography and topography, soils within the project site, and groundwater quality and requests that the Draft EIS detail the impacts in these areas and explain how the proposed mitigation measures are sufficient to address these concerns. The Sierra Club also strongly disagrees that "the proposed project will not significantly affect the volume of diversified crop production on Oahu in the long term" and requests that the Draft EIS and the updated Agricultural Impact study address the proposed project's impact on the growth of diversified agriculture and on Hawaii's capacity for local food production.

(2) **Hawaii State Plan.** Section 4 of the EISPN states that the "proposed project is consistent with the following applicable goals, objectives, policies, and priority guidelines

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HAWAI'I CHAPTER
P.O. Box 2577, Honolulu, HI 96803
tel: 808.538.6616 fax: 808.537.9019

of the Hawaii State Plan." The Sierra Club requests that the Draft EIS explain in detail how the proposed project is consistent with the Hawaii State Plan, embodied in Chapter 226, Hawaii Revised Statutes. In particular, the Sierra Club requests that the Draft EIS address how the proposed project is consistent with the Hawaii State Plan's objectives of: assuring the availability of agriculturally suitable lands to accommodate present and future needs, supporting the continuation of land currently in use for diversified agriculture, and encouraging urban growth primarily in existing urban areas.

(3) **Impact on Agricultural Lands and Food Production.** The EISPN recognizes that "[m]ost of the Waiawa and Koa Ridge Makai areas are designated 'Prime Agricultural Land' [and] [p]ortions of the Waiawa area are designated 'Other Important Agricultural Land.'" The EISPN also represents that that the Agricultural Impact Studies prepared in January 2003 and April 2007 will be updated "to assess the impacts of the proposed project on existing agricultural operations and on the growth of diversified agriculture on Oahu." The Sierra Club requests that the Agricultural Impact study assess, among other things, the food production capacity of this prime and important agricultural land. The assessment should include the types of crops that could be grown on the proposed project lands and the quantity of food that could be produced if the lands were used at their maximum agricultural capacity. An assessment of the food production capacity of the proposed project lands is necessary in light of their designation as prime and important agricultural lands. Such an assessment also advances State and City sustainability initiatives by addressing the proposed project's impacts on local food production.

(4) **Renewable Energy.** Section 3.21.4 of the EISPN states that electrical service is provided by Hawaiian Electric Company, Inc. (HECO), in particular, by "the existing power grid that traverses through the project site." The Sierra Club requests that the Draft EIS examine how the proposed project can use renewable energy such as solar and wind power.

(5) **Waste Diversion and Reduction.** Section 3.21.6 of the EISPN states that "[t]o reduce solid waste generation, the proposed project will incorporate waste diversion and reduction facilities into its design and recycling will be encouraged." The Sierra Club requests that the Draft EIS describe and explain in detail how the proposed project will incorporate such facilities. The Sierra Club requests that the Draft EIS consider a wide variety of recycling and waste diversion methods such as the availability of on-site composting facilities.

(6) **Traffic Impacts.** The EISPN states that a "traffic impact study will be conducted for the Draft EIS which will update the October 2007 traffic study for Wahiawa . . . as supplemented in March 2008 in response to the Mililani Neighborhood Board resolution" and which will address "[a]dditional comments provided by the Mililani Neighborhood Board regarding the March 2008 Supplement . . . ". The Sierra Club shares the concerns

SIERRA CLUB
HAWAI'I CHAPTER
P.O. Box 2577, Honolulu, HI 96803
tel: 808.538.6616 fax: 808.537.9019

expressed by the Mililani Neighborhood Board in its November 22, 2007 resolution and in response to Castle & Cooke Hawaii Home, Inc.'s March 2008 supplemental traffic assessment and requests that the traffic impact study for the proposed project address each of those concerns, including each of the criteria noted in the Mililani Neighborhood Board's November 22, 2007 resolution. The Sierra Club requests that the traffic analysis examine, quantify, and disclose the proposed development's primary, secondary, and cumulative impacts, and significant effects, to include the identification of traffic and transportation needs, deficiencies, and appropriate mitigation measures.

(7) **Alternatives to the Proposed Action.** The EISPN states that the Draft EIS will only consider two alternatives: (1) no action or (2) plans for a residential community that does not include an employment center. The Sierra Club requests that, as an alternative to the proposed action, the Draft EIS consider a smaller scale development that uses renewable energy, has more open space, additional bike and walking paths, and that maintains the most productive portions of the proposed project lands for agricultural use.

Sierra Club, Hawai'i Chapter

Randy Char (for Jeff Mikulina)

Jeffrey Mikulina, Director

cc via U.S Mail:

The Office of Environmental Quality Control
235 South Beretania Street
Suite 702
Honolulu, Hawaii 96813

Mr. Orlando Davidson, Executive Officer
Land Use Commission, State of Hawai'i
P.O. Box 2359
Honolulu Hawaii, 96804

Ms. Laura Kodama, Director of Planning and Development
Castle & Cooke Homes Hawaii, Inc.
100 Kahelu Avenue, 2nd Floor
Mililani, Hawaii 96789

Helber Hastert & Fee
Planners, Inc.

November 13, 2008

Ms. Julie Shioshita, Acting Director
Sierra Club, Hawaii Chapter
P.O. Box 2577
Honolulu, HI 96803

Koa Ridge Makai and Waiawa Development
Environmental Impact Statement
Waipio and Waiawa, Oahu, Hawaii
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Koa Ridge Makai TMK: (1) 9-4-06: 38, pors. 1, 2, 5, 39; (1) 9-5-03: pors. 1 and 4

Dear Ms. Shioshita,

We are in receipt of your organization's letter dated July 23, 2008 regarding the subject Environmental Impact Statement (EIS) Preparation Notice. We offer the following responses.

1. Environmental Impacts. The Draft EIS will disclose the potential impacts of the project on the resource areas listed in the EIS Preparation Notice (EISPN) and in your letter. The Draft EIS will include an updated agricultural impact study.

2. Hawaii State Plan. The Draft EIS will include a discussion of the project's consistency with applicable State and County land use plans, policies and controls, including those cited in your letter.

3. Impact on Agricultural Lands and Food Production. The agricultural impact study will describe potential impacts on the availability of agricultural lands for diversified crops, both on an islandwide and statewide basis, along with specific impacts on the current Koa Ridge Makai lessee. The Draft EIS will describe the types of commercially-grown crops for which the project area's agronomic conditions are suitable and estimate its agricultural production potential, in pounds per year.

4. Renewable Energy. Solar water heater systems will be included with all new single-family homes constructed in the project, unless specific environmental conditions preclude their effectiveness, in compliance with Act 204 of the 2008 Hawaii Legislative Session. Homes will also be designed to accommodate the installation of solar photovoltaic panels, which, at a minimum, will be offered as an option to homebuyers. Castle & Cooke Homes Hawaii will continue to look for every feasible opportunity to incorporate renewable energy measures in its residential and commercial developments.

   It should be noted that, as a corporation, Castle & Cooke is actively pursuing large-scale renewable energy generation on lands with geographic conditions better suited to these technologies than the petition area. For example, by the end of 2008, Castle & Cooke's solar farm on a 10-acre site in south Lāna'i will be in the largest solar photovoltaic farm in

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Hawai`i. The 1.5 megawatt solar farm is the first of Castle & Cooke's renewable energy projects to come on line. The solar farm can supply 30% of Lāna'i's peak energy needs and, on an annual basis, will supply 10% of Lāna'i's electricity with energy harvested from the sun; reduce Hawai'i oil imports by 5,000 barrels/year; reduce vulnerability to oil prices, which more than doubled between early 2007 ($65/barrel) and July 2008 ($145/barrel); help stabilize energy costs for Lāna'i families and businesses; and take the first step toward a Lāna'i powered with 100% renewable resources. Castle & Cooke is also proposing the development of the state's largest wind farm, also on the Lana'i, which could generate up to 400 megawatts of electricity. The energy generated by this project could supply 20 percent of Oahu's energy demand.

5. Waste Diversion and Reduction. Castle & Cooke Homes Hawaii's residential construction practices consist of steel framing and the use of prefabricated components, which greatly reduce and minimize construction waste generation. The City's comprehensive curbside recycling program is expanding islandwide, and the new Koa Ridge and Waiawa communities that have municipal trash collection will participate in the program. Solid waste storage facilities will be designed to accommodate the separation of waste materials to facilitate recycling and reuse.

6. Traffic Impacts. An updated traffic impact analysis report is being prepared for the Draft EIS. This report will also addresses relevant items in Mililani Neighborhood Board's November 2007 resolution. The Draft EIS will describe the proposed project's direct, indirect and cumulative impacts on traffic, along with appropriate mitigation measures.

7. Alternatives to the Proposed Action. The alternatives included in the Draft EIS are limited to those meeting the project objectives. These project objectives will be discussed in the Draft EIS.

We appreciate your organization's input and participation in the EIS process. Your organization's letter and this response will be included in the Draft EIS.

Sincerely,

Thomas A. Fee, AICP
President

cc: Orlando Davidson, Land Use Commission
Office of Environmental Quality Control
Laura Kodama, Castle & Cooke Homes Hawaii, Inc.