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GOVERNOR



OCT 8

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IN REPLY REFER TO:

HWY 2.3394

September 28, 2009

Ms. Katherine P. Kealoha, Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

Dear Ms. Kealoha:

Subject: **Finding of No Significant Impact for Ane Keohokalole Mid-Level Highway Project, North Kona, Island of Hawaii, Hawaii**

The State of Hawaii, Department of Transportation, Highways Division, has reviewed the comments received during the 30-day comment period which began on June 23, 2009. The agency has determined that this project will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI). Please publish this notice in the October 8, 2009 issue of QEQC's *The Environmental Notice*.

We have enclosed a completed OEQC Publication Form, one copy of the document in pdf format, and one hard copy of the document. If you have any questions, please contact the consultant, Ms. Lesley Matsumoto of Belt Collins Hawaii at 521-5361.

Very truly yours,

A handwritten signature in black ink, appearing to be "BM", written over a faint circular stamp.

BRENNON T. MORIOKA, Ph.D., P.E.  
Director of Transportation

Enclosures

c: Lesley Matsumoto, Belt Collins Hawaii  
Warren Lee and Galen Kuba, Hawaii County

# FINAL ENVIRONMENTAL ASSESSMENT for the ANE KEOHOKĀLOLE MID-LEVEL HIGHWAY PROJECT

Volume I of II: Main Text



U.S. Department of Transportation  
Federal Highway Administration

State of Hawai'i Department of  
Transportation, Highways Division

County of Hawai'i  
Department of Public Works

September 2009



**ANE KEOHOKALO LE MID-LEVEL HIGHWAY PROJECT  
North Kona, Island of Hawai'i, Hawai'i**

**Final Environmental Assessment**

Submitted Pursuant to  
42 U.S.C. 4332 (2) (c) and 49 U.S.C. 303  
and  
Chapter 343, Hawai'i Revised Statutes

by the  
U.S. Department of Transportation  
Federal Highway Administration  
and  
State of Hawai'i Department of Transportation  
Highways Division  
and  
County of Hawai'i  
Department of Public Works

SEP 28 2009

Date of Approval



Warren H. W. Lee  
Director  
County of Hawai'i Department of Public Works

SEP 28 2009

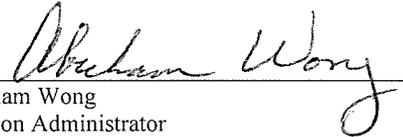
Date of Approval



Brennon T. Morioka  
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State of Hawai'i Department of Transportation

SEP 28 2009

Date of Approval



Abraham Wong  
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This Final Environmental Assessment documents the environmental evaluation of the Ane Keohokalole Mid-Level Highway Project consisting of a new regional roadway link and utility corridor connecting Palani Road to the south and Hina Lani Street to the north, widening of Palani Road to provide additional vehicular lanes and a utility corridor between Henry Street and Queen Ka'ahumanu Highway, and associated improvements within existing rights-of-ways. The purpose of the Proposed Action is to create the initial link, approximately three miles long, of a north-south roadway that serves as the central corridor for multi-modal transportation and utilities for future regional development such as that planned by the Queen Lili'uokalani Trust, the Hawai'i Finance and Development Corporation, and the Department of Hawaiian Home Lands.

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## ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
AASHTO	American Association of State Highway Transportation Officials
ACHP	Advisory Council on Historic Preservation
AIS	Archeological Inventory Survey
APE	Area of Potential Effect
BLNR	State of Hawai'i Board of Land and Natural Resources
BOE	State of Hawai'i Board of Education
BMP	Best Management Practice
BTP	Burial Treatment Plan
CAA	Clean Air Act
CDP	Community Development Plan
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
CSD	Context Sensitive Design
CSH	Cultural Surveys Hawai'i
CSS	Context Sensitive Situation
CWA	Clean Water Act
CZ	Coastal Zone
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
dB	decibel
dBA	Decibel ("A" weight filter)
DBEDT	State of Hawai'i Department of Business, Economic Development and Tourism
DHHL	State of Hawai'i Department of Hawaiian Homelands
DLNR	State of Hawai'i Department of Land and Natural Resources
DOH	State of Hawai'i Department of Health
DOT	State of Hawai'i Department of Transportation
DPW	County of Hawai'i Department of Public Works
DWS	County of Hawai'i Department of Water Supply
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration (U.S.)
FIRM	Flood Insurance Rate Map

FONSI	Finding of No Significant Impact
FWPCA	Federal Water Pollution Control Act
GHG	Greenhouse Gas
H.B.	House Bill
ha	Hectare
HAR	Hawai'i Administrative Rules
HDOT	State of Hawai'i Department of Transportation
HELCO	Hawai'i Electric Light Company
HHFDC	Hawai'i Housing Finance & Development Corporation
HRHP	Hawai'i Register of Historic Places
HRS	Hawai'i Revised Statutes
HUD	U.S. Department of Housing and Urban Development
KCDP	Kona Community Development Plan
km	kilometer
kV	kilovolt
L <sub>eq</sub>	equivalent continuous sound pressure level [dB]
LID	Low-Impact Development
LOS	Level of Service
LUC	Land Use Commission (State of Hawai'i)
LUPAG	Land Use Pattern Allocation Guide
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
makai	towards the ocean
mauka	towards the mountains
mph	Miles Per Hour
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OEQC	Office of Environmental Quality Control (State of Hawai'i)
OHA	State of Hawai'i Office of Hawaiian Affairs
PAH	Polycyclic Aromatic Hydrocarbons
PHRI	Paul H. Rosendahl, Ph.D., Inc.
PLI	Pacific Legacy Inc.

QLT	Queen Lili'uokalani Trust
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
SHPD	State Historic Preservation Division (State of Hawai'i)
SHPO	State Historic Preservation Officer (State of Hawai'i)
SIHP	State Inventory of Historic Places
SMA	Special Management Areas
TMK	Tax Map Key
TKN	the sum of total organic nitrogen
TOD	Transit-oriented Development
UIC	Underground Injection Control
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service (U.S. Department of the Interior)
USGS	U.S. Geological Survey (U.S. Department of the Interior)
Vog	"Volcanic Smog" – poor air quality resulting from volcanic emissions

# EXECUTIVE SUMMARY

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## 1. INTRODUCTION

This environmental assessment (EA) evaluates the potential environmental and social impacts of the Ane Keohokalole Mid-Level Highway project, which consists of the construction of the new Ane Keohokalole Mid-Level Highway, widening of a segment of Palani Road, development of utility corridors, and improvements within existing right-of-ways (ROWs) in North Kona, island of Hawai'i, Hawai'i. The contents of each chapter and the appendices are summarized as follows:

- **Chapter One: Introduction** describes the purpose of this EA document, the project purpose and need, and the scope of the environmental review.
- **Chapter Two: Alternatives Including the Proposed Action** describes the Proposed Action, the No Action Alternative, and the alternative alignments that were considered during the planning process but not evaluated further in the EA.
- **Chapter Three: Affected Environment and Environmental Consequences** describes the existing conditions of the affected environment, evaluates the potential environmental and social impacts of the Proposed Action and the No Action Alternative, and discusses the measures to minimize any impacts.
- **Chapter Four: Cumulative Impacts** evaluates the cumulative impacts of the Proposed Action together with other past, present, reasonably foreseeable future actions.
- **Chapter Five: Consistency with Government Plans, Policies, and Controls** reviews Federal, State of Hawai'i, and County of Hawai'i laws, regulations, executive orders, land use plans and policies, and required permits and approvals relevant to the Proposed Action.
- **Chapter Six: Other Considerations** discusses unavoidable adverse effects, the relationship between short-term uses and maintenance of long-term productivity, and irreversible and irretrievable commitments of resources associated with the Proposed Action.
- **Chapter Seven: Anticipated Determination, Findings and Reasons** reviews the 13 significance criteria contained in Hawai'i Administrative Rules (HAR) 11-200-12 and discusses how the Proposed Action relates to these criteria.

- **Chapter Eight: Public Participation** describes the public involvement in the EA process.
- **Chapter Nine: References** lists the information sources used in the development of this EA.
- **Appendices** contain the archaeological, cultural, biological, geotechnical, traffic, and noise studies that were prepared for this EA, as well as correspondence relevant to the EA process.

## 2. PURPOSE OF THIS DOCUMENT

The Federal Highways Administration (FHWA), in cooperation with the State of Hawai'i Department of Transportation (HDOT), and the County of Hawai'i, is issuing this EA for the Ane Keohokalole Mid-Level Highway project. This EA has been prepared pursuant to the National Environmental Policy Act (NEPA), FHWA and Federal Transit Administration joint regulations, 23 Code of Federal Regulations (CFR) Part 771; and regulations for implementing the procedural provisions of NEPA 40 CFR Parts 1500-1508. Compliance with the NEPA and applicable federal laws and regulations is required as the project, which includes the construction of a functionally classified "major collector" road, will use federal funds allocated under the American Reinvestment and Recovery Act of 2009. FHWA is the lead agency in the NEPA process.

In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and its implementing rules, this EA has also been prepared by the County of Hawai'i Department of Public Works (DPW). Compliance with HRS Chapter 343 is required as the Ane Keohokalole Mid-Level Highway project will use county funds and state and county lands.

Findings from the EA process will be used to issue one of the following determinations: a Finding of No Significant Impact (FONSI), preparation of an Environmental Impact Statement (EIS), or no action. FHWA will make this determination under NEPA. The County of Hawai'i DPW has made its determination under HRS Chapter 343, with HDOT serving as the accepting agency. This EA has been made available for agency and public review and comment. If after receiving comments FHWA finds that the Proposed Action would not result in a significant impact to the environment, a FONSI will be issued to conclude the NEPA process.

## 3. PROJECT PURPOSE AND NEED

The purpose of the Ane Keohokalole Mid-level Highway project is to create the initial link, approximately three miles long, of a north-south roadway that serves as the central corridor for multi-modal transportation and utilities for future regional development. The proposed highway is part of HDOT's *Hawaii Long Range Land Transportation Plan* (Frederic R. Harris, Inc., May 1998).

The need for the action is specifically cited as a critical element in the Kona Community Development Plan (KCDP), which was adopted by the County of Hawai'i as Ordinance 08-131 on September 25, 2008. The project is needed to:

- **Support Planned Regional Development.** A road system is needed to provide access for planned residential and commercial development in West Hawai'i's Kona district as identified in the KCDP (Figure 1-2) and as shown in Figure 2-1.
- **Improve Transportation Network Connectivity To Meet Future Demand.** Existing and future local roads in residential neighborhoods need a major collector roadway linking them to existing arterial roads serving urban centers. With the future development of the area, a major collector roadway is needed to adequately support future traffic volumes and to prevent the congestion that occurs when roadways are not properly timed with development.<sup>1</sup> In addition, Palani Road, which would link the major collector roadway to existing arterials (Mamalahoa Highway and Queen Ka'ahumanu Highway), will need to be modified to accommodate future traffic volumes.
- **Provide Multi-modal Transportation.** As identified in the KCDP, the project should be consistent with the goal of developing "an efficient, safe and attractive multi-modal transportation system integrated with land use planning that allows movement around and through Kona with minimal reliance on the automobile." Hence, the project needs to support an efficient vehicular transportation network and provide safe and attractive alternative transportation options, including those for pedestrians and bicyclists.

#### 4. PROPOSED ACTION

The Proposed Action consists of the development of a new regional roadway link and utility corridor connecting Palani Road to the south and Hina Lani Street to the north ("proposed highway"), widening of Palani Road to provide additional vehicular lanes and a utility corridor between Henry Street and Queen Ka'ahumanu Highway ("proposed Palani Road widening"), and associated improvements within existing ROWs. The proposed highway would serve as a multi-modal transportation corridor, including options for pedestrians and bicyclists. Roundabouts would facilitate traffic flow, with signalization as a back-up option. The posted speed limit would be 35 miles per hour.

The proposed highway would function as a major collector roadway and would roughly parallel (and be approximately 0.7 miles farther inland than) Queen Ka'ahumanu Highway. It would extend from Palani Road at the Henry Street junction, connect to the existing portion of Ane Keohokalole Highway at Puohulihuli Street, follow the existing section of the highway through the Villages of La'i 'Opua, and then continue northward to Hina Lani Street. The proposed highway, a 120-foot ROW approximately 3.0 miles long, would allow for four lanes of two-way vehicular travel and a utility corridor at full build-out. Utilities for water, reclaimed water, and wastewater would be installed underground. Electrical, telephone, and cable may be installed

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<sup>1</sup> Construction of Ane Keohokalole Highway at this time would be consistent with the principle of concurrency, i.e., appropriately timing the development of infrastructure to support planned development.

overhead or underground, based on availability of funding. Landscaping and drainage would be designed with bio-retention cells to prevent runoff from affecting groundwater flow and quality.

The proposed Palani Road widening would be approximately 1,700 feet in length. The total width would be approximately 100.5 feet and include the existing 80-foot (approximate) ROW and an additional 20.5 feet (approximate) to the south. Widening would increase the existing two lanes of two-way vehicular travel to four lanes of two-way travel with an additional auxiliary lane for turns, and an underground utility corridor. Specifically, one additional lane in each direction would be constructed along with an auxiliary lane to provide a left-turn lane from Palani Road onto the proposed highway. Traffic signals are planned at the intersection of Palani Road and Kamak'eha Avenue, and existing traffic signals at the intersection of Palani Road and Henry Street would be upgraded. Utilities for water, reclaimed water, and wastewater would be installed underground. Electrical, telephone, and cable may be installed overhead or underground, based on availability of funding. Additional land would be acquired or easements secured by the County of Hawai'i for the approximately 21.5-foot-wide corridor south of Palani Road.

Improvements within existing ROWs would include those within Hina Lani Street, the existing segment of Ane Keohokalole Highway, and Kealakehe Parkway. A contractor staging area in the former Queen Lili'uokalani Trust (QLT) quarry is proposed. For purposes of discussion in this EA, the Proposed Action represents the preferred alternative.

## **5. NO ACTION ALTERNATIVE**

The No Action Alternative is defined as maintaining the status quo and represents the no-build alternative. The status quo is represented by growing traffic congestion fueled by rapid growth in an area where the existing road network, land use patterns, and dependence on the automobile for transportation have generated substantial suburban sprawl. The two major north/south roadways will continue to be impacted by development that has and will continue to occur.

Under the No Action Alternative, the Ane Keohokalole Mid-Level Highway project would not be implemented. No additional roadway connectivity and utility corridors would be provided for future housing and other developments in the area, and traffic congestion on Palani Road would continue to degrade. Thus, the No Action Alternative would not meet the project purpose and the need as described in Section 1.3.

## **6. ENVIRONMENTAL CONSEQUENCES**

The potential environmental and social impacts of the Proposed Action and the No Action Alternative and measures to minimize any impacts have been evaluated. The cumulative impacts of the Proposed Action together with other past, present, reasonably foreseeable future actions have also been considered. Findings are summarized as follows:

**Land Use.** No substantial impacts to land use would occur as a result of the Proposed Action. The Proposed Action would be located within the County of Hawai'i ROWs and would be consistent with and supportive of land use polices and development plans.

No impacts to land use would occur under the No Action Alternative.

**Climate.** No substantial impacts to climate would occur as a result of the Proposed Action. The Proposed Action would not substantially increase regional greenhouse gas (GHG) emissions that could potentially contribute to climate change.

No impacts to climate would occur under the No Action Alternative.

**Air Quality.** No substantial impacts to air quality would occur as a result of the Proposed Action. Construction-related air quality impacts of the Proposed Action would be temporary and comply with applicable regulations. Operational use of the proposed highway and widened Palani Road would alleviate traffic congestion anticipated in the region, thereby reducing the impact of additional air pollutant emissions.

No substantial impacts to air quality would occur under the No Action Alternative, but air emissions and localized concentrations of air pollutants would increase with continued traffic congestion.

**Cultural Resources.** No substantial impacts to cultural resources, including both historic properties and traditional cultural practices, would occur as a result of the Proposed Action. With mitigation for the historic properties (identified under the National Historic Preservation Act [NHPA] Section 106 process) and appropriate treatment for burial sites (identified as required under HAR 13-300) that are designed into the Proposed Action, no substantial impacts on historic properties and burial sites would occur. In addition, the Proposed Action would not substantially impact Native Hawaiian cultural resources, beliefs, and practices. Based on information obtained from the cultural impacts assessments (CIAs) and input from the NHPA Section 106 consultation process, project plans and designs are being prepared to respect Native Hawaiian concerns and culture, and will reflect sensitivity to cultural histories, practices, materials, and remains. The Memorandum of Agreement (MOA) resulting from the NHPA Section 106 process is one such example.

No impacts to cultural resources will occur under the No Action Alternative.

**Flora and Fauna.** No substantial impacts to flora and fauna would occur as a result of the Proposed Action. No federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial flora have been identified in the project area. The Proposed Action is designed to avoid the majority of the dryland forest by using the Makai Alternative alignment that traverses through the drier, more sparsely vegetated portion of the forest. In addition, no federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial mammals or birds have been identified in the project area, and modification of habitat in the project area is not expected to result in substantial impacts to any listed species. To prevent

nocturnally flying birds, such as the endangered Hawaiian petrel (*Pterodroma sandwichensis*) and the threatened Newell's shearwater (*Puffinus auricularis newelli*), from colliding with lighting infrastructure, the Proposed Action will comply with the County of Hawai'i Outdoor Lighting Ordinance (Hawai'i County Code §14-50 et seq.) which requires the shielding of exterior lights. To avoid disturbances to the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), woody vegetation taller than 15 feet will not be cleared between April 15 and August 15, and clearing of dense vegetation along Palani Road will not occur during the period from June through July when females are carrying young pups.

No impacts to flora and fauna would occur under the No Action Alternative.

**Geology, Topography, and Soils.** No substantial impacts to geology, topography, or soils would occur as a result of the Proposed Action. Ground surfaces disturbed during the construction of the Proposed Action would be restored. Any fill material used will be selected for use in accordance with the specifications provided by a licensed soils engineer to ensure stability of the built environment without an increase in maximum peak flow rates of storm water drainage. Use of soil or mulch will comply with best management practices (BMPs) to reduce risk of erosion and sedimentation to storm water drainage systems.

No impacts to geology, topography, or soils would occur under the No Action Alternative.

**Surface Waters and Drainage.** No substantial impacts to surface waters or drainage would occur as a result of the Proposed Action. The Proposed Action will be designed in accordance with Clean Water Act (CWA) regulations and County of Hawai'i ordinances and rules that address storm water drainage and associated water quality. Patterns of surface water flow and maximum peak flow rates of storm drainage, downstream drainage, and water quality would be similar to pre-construction conditions. The contractor will obtain a National Pollution Discharge Elimination System (NPDES) permit for discharges of storm water associated with construction activities, including appropriate BMPs for the project area.

No impacts to surface waters or drainage would occur under the No Action Alternative.

**Groundwater and Hydrogeology.** No substantial impacts to groundwater or hydrogeology would occur as a result of the Proposed Action. Groundwater would not be exposed during construction activities, and BMPs would prevent the release of petroleum products or other hazardous substances used during construction. To prevent changes in groundwater quantity and quality during the operational use of the proposed highway, bio-retention cells have been incorporated into the Proposed Action. The bio-retention cells will be designed to capture and treat runoff from the proposed highway to prevent pollutants from entering the groundwater. And as required by State of Hawai'i Department of Health (DOH) regulations, including HAR 11-62-27 "Recycled Water Systems," an irrigation use plan that includes information on application rates, intended uses, and schedules for recycled water use will be prepared. The irrigation use plan will also include information on types of vegetation, types and methods of irrigation, proposed irrigation schedules, vegetative consumption rates, water balance calculations, nutrient balance calculations, and the corresponding acreage to be used for

irrigation, among other requirements. To prevent cumulative impacts to groundwater quantity and quality from future development that would occur with the presence of the proposed highway, the County of Hawai'i has initiated a study with the U.S. Geological Survey (USGS) to study the issue and will consider additional controls to prevent regional groundwater impacts. This is of particular importance to the National Park Service (NPS), as changes to groundwater could affect the down gradient achioline ponds in Kaloko-Honokohau National Historic Park. The County of Hawai'i will take NPS' comments and concerns into consideration when reviewing future changes to the County General Plan, Code, and ordinances.

No impacts to groundwater or hydrogeology would occur under the No Action Alternative.

**Roads and Traffic.** No substantial impacts to traffic conditions would occur as a result of the Proposed Action. The Proposed Action is expected to improve or maintain the level of service (LOS) at most of the intersections and street segments that were analyzed. County of Hawai'i coordination with HDOT will allow restriping at the intersection of Queen Ka'ahumanu Highway and Henry Street so that this intersection would operate at LOS D (minimum acceptable traffic conditions) or better.

Under the No Action Alternative, substantial impacts to traffic conditions would occur, as traffic congestion would continue to increase and existing roadways would operate at an unacceptable LOS (LOS E or LOS F).

**Noise.** No substantial impacts to the noise environment would occur as a result of the Proposed Action. Temporary noise impacts associated with site preparation and construction of the Proposed Action would occur. Construction-related noise will be minimized by noise suppression equipment and restricting construction activities to daylight hours. Traffic noise impacts will be minimized where necessary with posted speed limits, noise attenuating walls, and setbacks.

No impacts to the noise environment would occur under the No Action Alternative.

**Natural Hazards.** No substantial impacts to potential threats from natural hazards would occur as a result of the Proposed Action. The Proposed Action is unlikely to increase risks to public health and safety associated with natural hazards such as earthquakes and volcanic eruptions.

No impacts to potential threats from natural hazards would occur under the No Action Alternative.

**Infrastructure.** No substantial impacts to infrastructure would occur as a result of the Proposed Action. Operational use of the proposed highway and Palani Road would require reclaimed water for landscape irrigation and electricity for streetlights and traffic signals. All waste generated from the Proposed Action would be taken to the West Hawai'i Landfill (which has an estimated life of 55 years) or a County transfer station, or recycled to the extent possible. Drainage infrastructure will be constructed as part of the Proposed Action so that

there would be no increase in runoff from the project area. The Proposed Action will have beneficial effects on bicycle, pedestrian, and transit facilities by providing additional roadways and dedicated paths for pedestrians and bicyclists.

No impacts to infrastructure would occur under the No Action Alternative.

**Visual Resources.** No substantial impacts to visual resources would occur as a result of the Proposed Action. Visual impacts of the Proposed Action are projected to be minimal from other vantage points once vegetation grows back after construction. The effects of street lighting on the night sky viewshed will be minimized through the implementation of low pressure sodium lamps and shielding in compliance with the County of Hawai'i Outdoor Lighting Ordinance (Hawai'i County Code §14-50 et seq.).

No impacts to visual resources would occur under the No Action Alternative.

**Public Services.** No substantial impacts to public services would occur as a result of the Proposed Action. The Proposed Action would improve the delivery of public services, as it would provide better access to the surrounding areas for emergency responders. The Proposed Action would also improve accessibility to schools by encouraging multi-modal transportation, including bicycling and walking.

No impacts to public services would occur under the No Action Alternative.

**Socio-Economic Conditions.** No substantial impacts to the socio-economic environment of the region would occur as a result of the Proposed Action. The Proposed Action would enhance the roadway infrastructure of the North Kona district, improving connectivity and reducing traffic congestion, and thereby improving quality of life for residents. The potential creation of new construction jobs associated with the Proposed Action would result in a minor but beneficial effect on socio-economic conditions.

Under the No Action Alternative, substantial impacts to the socio-economic environment of the region could occur. Without development of the Proposed Action, traffic congestion along Queen Ka'ahumanu Highway and Palani Road would be impacted, thereby affecting quality of life for residents (with greater commute times) and possibly leading to declines in road safety. It is possible that the economic development of the Kona area would be negatively impacted, as visitors, particularly those traveling from the airport or trying to get around town in heavy traffic, are likely to perceive that the character of the region is declining, and would avoid the congested Kona area entirely.

## 7. CONSISTENCY WITH GOVERNMENT PLANS, POLICIES, AND CONTROLS

Plans, policies, and controls designed to protect human health and the environment are required by federal and local governments, and are important in regulating the impacts of the Proposed Action. Hence, consistency with Federal, State of Hawai'i, and County of Hawai'i

laws, regulations, executive orders (EO), plans and policies, and required permits and approvals applicable to the Proposed Action are addressed in this EA.

In accordance with NHPA Section 106 and its implementing regulations (36 CFR Part 800), FHWA has consulted with the Advisory Council on Historic Preservation (ACHP), the Hawai'i State Historic Preservation Officer (SHPO), Native Hawaiian organizations, and other consulting parties regarding the Proposed Action and its potential effect on historic properties eligible for listing on the National Register of Historic Places (NRHP). As a result of the NHPA Section 106 process, FHWA has made a determination of "adverse effect" on historic properties. In a letter dated September 10, 2009, the Hawai'i SHPO concurred with this determination. Measures to mitigate adverse effects are stipulated in a MOA between FHWA and the Hawai'i SHPO.

In accordance with Section 4(f) of the U.S. Department of Transportation (USDOT) Act (49 USC §303), FHWA has conducted a programmatic Section 4(f) evaluation for use of the Kuakini Wall, a historic property that is eligible for listing on the NRHP and will be adversely affected by the Proposed Action. FHWA has determined that (1) there are no feasible and prudent avoidance alternatives to use of the Kuakini Wall; (2) all possible planning to minimize harm or mitigate adverse impacts to the Kuakini Wall have been included in the Proposed Action; (3) mitigation measures included the Proposed Action serve to preserve, rehabilitate, and enhance the features and values of the Kuakini Wall; and (4) such measures will result in a net benefit to the Section 4(f) property. In a letter dated September 10, 2009, the Hawai'i SHPO concurred with this statement.

In accordance with the Coastal Zone Management Act (CZMA; 16 USC §§1451-1465), FHWA has evaluated the Proposed Action with respect to the objectives and policies of the State of Hawai'i's Coastal Zone Management (CZM) Program, and certifies that the Proposed Action complies with the enforceable policies of the State CZM Program and will be conducted in a manner consistent with the State CZM Program. FHWA submitted an application for CZM Federal Consistency Review to the State of Hawai'i Department of Business, Economic Development and Tourism (DBEDT), Office of Planning. In a letter dated August 12, 2009, the Office of Planning concurred that the Proposed Action is consistent with the State CZM Program.

In accordance with Section 7 of the Endangered Species Act (ESA; 16 USC §§1531-1534), FHWA has consulted with the U.S. Fish and Wildlife Service (USFWS) regarding potential impacts of the Proposed Action to the Blackburn's sphinx's moth (*Manduca blackburni*), the Hawaiian hawk (*Buteo solitarius*), the endangered Hawaiian petrel (*Pterodroma sandwichensis*), the threatened Newell's shearwater (*Puffinus auricularis newelli*), and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). In a letter dated August 24, 2009, USFWS concurred with FHWA's determination that the Proposed Action is not likely to adversely affect any listed species known from the Island of Hawai'i.

Applicable EOs include EO 11515, Protection and Enhancement of Environmental Quality; EO 11593, Protection and Enhancement of the Cultural Environment; EO 11988, Floodplain

Management; EO 11990, Protection of Wetlands; and EO 12898, Environmental Justice. The Proposed Action has been evaluated with respect to these EOs and has been determined to comply with their requirements.

The Proposed Action is consistent with the objectives of various State and County plans and policies regarding land use, transportation, and development. The following permits, approvals, and consultations may be required to implement the Proposed Action:

Agency	Permit, Approval, or Consultation
Federal	
U.S. Fish and Wildlife Service	Consultation in accordance with Section 7 of the Endangered Species Act
State of Hawai'i	
State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning	Coastal Zone Management Federal Consistency Review
State of Hawai'i Department of Health	National Pollutant Discharge Elimination System permit for discharges of storm water associated with construction activities
State of Hawai'i Department of Health	Underground Injection Control permit for drainage injection
State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife	Consultation on dryland forest and land use
State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division	Archaeological Inventory Survey, Archaeological Mitigation Plan, Archaeological Monitoring Plan, and Burial Treatment Plan approvals
State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division	Consultation in accordance with Section 106 of the National Historic Preservation Act
State of Hawai'i Department of Transportation	Permit to perform work upon State highways for any work within the Kealakehe Parkway right-of-way
County of Hawai'i	
County of Hawai'i Department of Public Works	Grubbing, Grading, Excavation, and Stockpiling Permits

## 8. DETERMINATION

To determine whether the Proposed Action will have a significant impact on the environment under HRS Chapter 343, the environmental consequences of the Proposed Action have been evaluated using the 13 significance criteria established in HAR 11-200-12. Based on these criteria, the Proposed Action will not have a significant impact on the environment.

# CHAPTER 1

# INTRODUCTION

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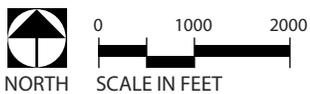
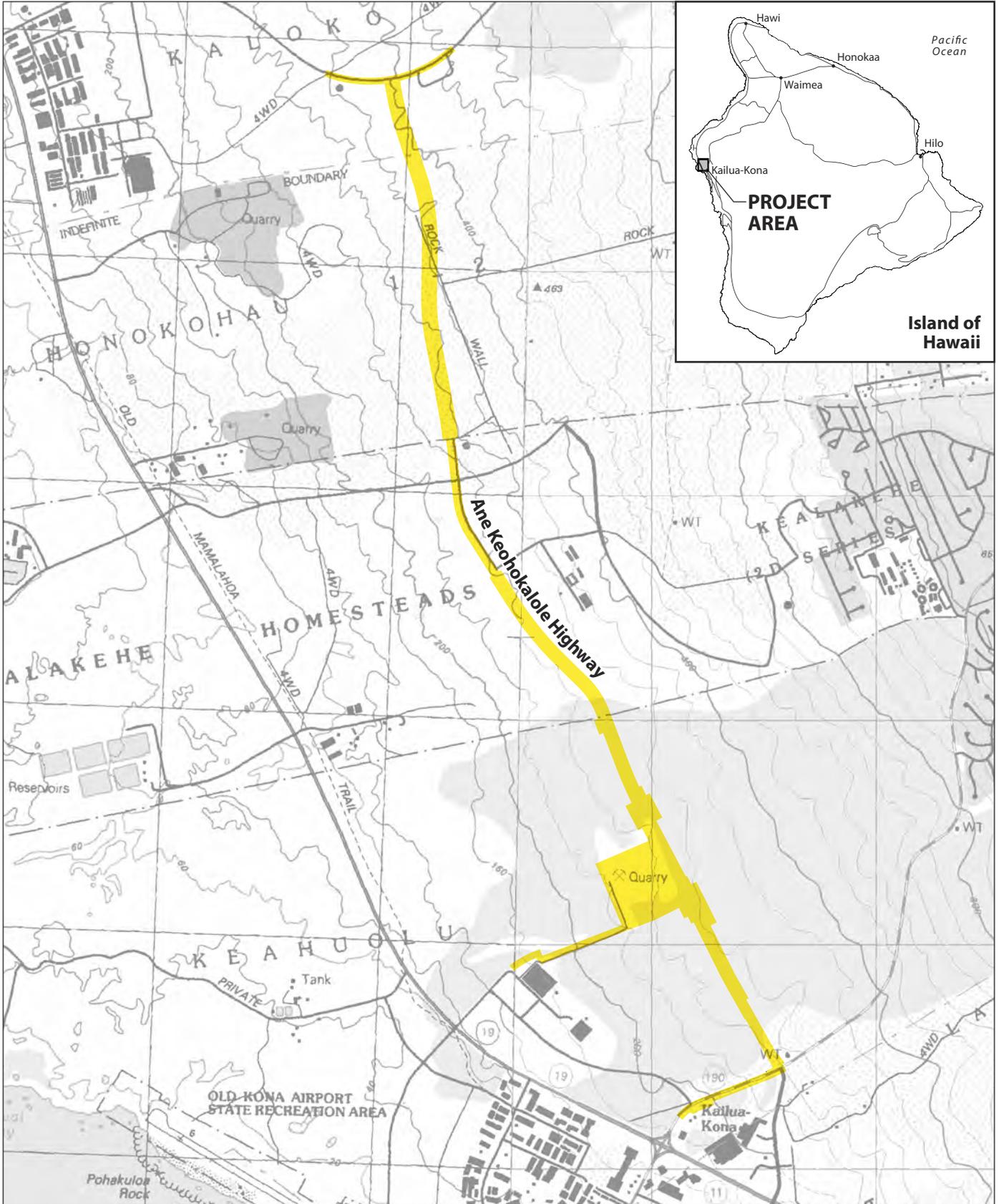
## 1.1 PURPOSE OF THIS DOCUMENT

The purpose of this environmental assessment (EA) is to evaluate the potential environmental and social impacts of the Ane Keohokalole Mid-Level Highway project. The project consists of the construction of the new Ane Keohokalole Mid-Level Highway, widening of a segment of Palani Road, development of utility corridors, and improvements within existing right-of-ways (ROWs) in North Kona, island of Hawai'i, Hawai'i. Figure 1-1 illustrates the location of the project.

The Federal Highway Administration (FHWA), in cooperation with the State of Hawai'i Department of Transportation (HDOT) and the County of Hawai'i, has prepared this EA pursuant to the National Environmental Policy Act (NEPA); FHWA and Federal Transit Administration joint regulations, 23 Code of Federal Regulations (CFR) Part 771; and regulations for implementing the procedural provisions of NEPA, 40 CFR Parts 1500-1508. Compliance with the NEPA and applicable federal laws and regulations is required as the project, which includes the construction of a functionally classified "major collector" road, will use federal funds allocated under the American Reinvestment and Recovery Act of 2009. FHWA is the lead agency in the NEPA process.

In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and its implementing rules, this EA has also been prepared by the County of Hawai'i Department of Public Works (DPW), the proposing agency. Compliance with HRS Chapter 343 is required as the Ane Keohokalole Mid-Level Highway project will use county funds and state and county lands.

Findings from the EA process will be used to issue one of the following determinations: a Finding of No Significant Impact (FONSI), preparation of an Environmental Impact Statement (EIS), or no action. FHWA will make this determination under NEPA. The County of Hawai'i DPW has made its determination under HRS Chapter 343, with HDOT serving as the accepting agency. This EA has been made available for agency and public review and comment. If after receiving comments FHWA finds that the Proposed Action would not result in a significant impact to the environment, a FONSI will be issued to conclude the NEPA process.



**Figure 1-1**  
**VICINITY/PROJECT LOCATION MAP**

Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

## 1.2 BACKGROUND

The Ane Keohokalole Mid-Level Highway project is a product of the Kona Community Development Plan (KCDP) and the resulting County of Hawai'i Ordinance 08-131. The KCDP area includes Kailua-Kona, the second largest city within the County of Hawai'i and a major commercial center in the North Kona district. Two major roadways serving Kailua-Kona are Queen Ka'ahumanu Highway (classified as a state arterial primary roadway; State Route 19) and Mamalahoa Highway (classified as a major county collector roadway; State Route 190).<sup>1</sup> Queen Ka'ahumanu Highway was completed and opened for use in 1975 and is the main transportation route connecting Kailua-Kona, the large resort areas of Ka'upulehu, Hualalai, Kalahuipua'a, Waikoloa, and Hapuna Beach, as well as the deep draft harbor at Kawaihae.

In accordance with the Hawai'i County General Plan, community development plans are required to be adopted by the County Council for all judicial districts. The KCDP was intended to be first of the new plans and serves as a model for the remaining districts. It provides detail to elements presented in the General Plan, emphasizing those elements most relevant to the issues and conditions of Kona. The purpose of the KCDP is to translate the broad General Plan Goals, Policies, and Standards into an implementation plan that applies to the Kona region. It requires state and county government, together with the community of the region, to work in partnership on common goals to improve the quality of life in Kona for those who work, live, and visit.<sup>2</sup> Development of the KCDP included a broad public planning process led by a 15-member steering committee. Forums were conducted for community input, including over 100 public meetings, workshops, working groups, and charrettes. The transportation section of the KCDP contains objectives, policies, and actions to establish a sensible transportation-oriented basis for future property developments to support multi-modal transportation systems, and to provide efficient connectivity between housing, retail, jobs, and services, thus minimizing urban sprawl.

As identified in the KCDP, traffic congestion has been fueled by rapid growth, poor connectivity, dependence on automobiles, and road improvements that have not kept pace with development. New developments mauka (towards the mountains),<sup>3</sup> and makai (towards the ocean)<sup>4</sup> of the arterial roadways have occurred without local road connectivity. In the absence of local roads, all traffic from these

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<sup>1</sup> Wilson Okamoto Corp. *Kona Community Development Plan Volume 1*, adopted as Hawai'i County Ordinance #08-131 on September 25, 2008.

<sup>2</sup> *Ibid.*

<sup>3</sup> Generally eastward of the project.

<sup>4</sup> Generally westward of the project.

developments funnels to the existing arterial (e.g., Queen Ka‘ahumanu Highway and Mamalahoa Highway) and collector roadways (e.g., Palani Road and Henry Street), resulting in congested traffic conditions that negatively impact residents’ quality of life, visitors’ experience, and overall public safety. Widening, improving, and extending major arterials, together with increasing connectivity between and within existing and future developments to divert local traffic off the arterials, are both necessary to enhance mobility in the Kona area. The Ane Keohokalole Mid-Level Highway project will provide this connectivity and is timed with planned growth to avoid overloading the arterial system.

One of the KCDP transportation goals is to develop “an efficient, safe and attractive multi-modal transportation system integrated with land use planning that allows movement around and through Kona with minimal reliance on the automobile.”<sup>5</sup> The Ane Keohokalole Mid-Level Highway project was created as a policy action (Action TRAN-1-2a)<sup>6</sup> through the planning process. According to the KCDP:

*The new Keohokalole Highway (Mid-Level Road) shall function as the trunk transit route connecting Kailua Village with the airport, along which transit-oriented developments (TODs) will be located. As the trunk transit route, there will be future allowance for a dedicated transit-way within the right-of-way and the headways will be of the highest among all transit routes in Kona.*

The Official Transportation Network Map of the KCDP, depicting the proposed Ane Keohokalole Highway as part of the overall road and transit system, is shown in Figure 1-2. Specific transit aspects will be addressed by the County of Hawai‘i when development of the area makes it appropriate.

The Ane Keohokalole Mid-Level Highway project was previously evaluated in the *Keahuolu Lands of Kailua-Kona Final Environmental Impact Statement (EIS)*<sup>7</sup> as part of a regional transportation network to support urban and business expansion, as well as residential community development. The EIS evaluated impacts of a change in land use classification proposed by the Queen Lili‘uokalani Trust (QLT) for its Keahuolu lands. During the change of zone process, the County and QLT identified the future development of a mid-level road on QLT land.

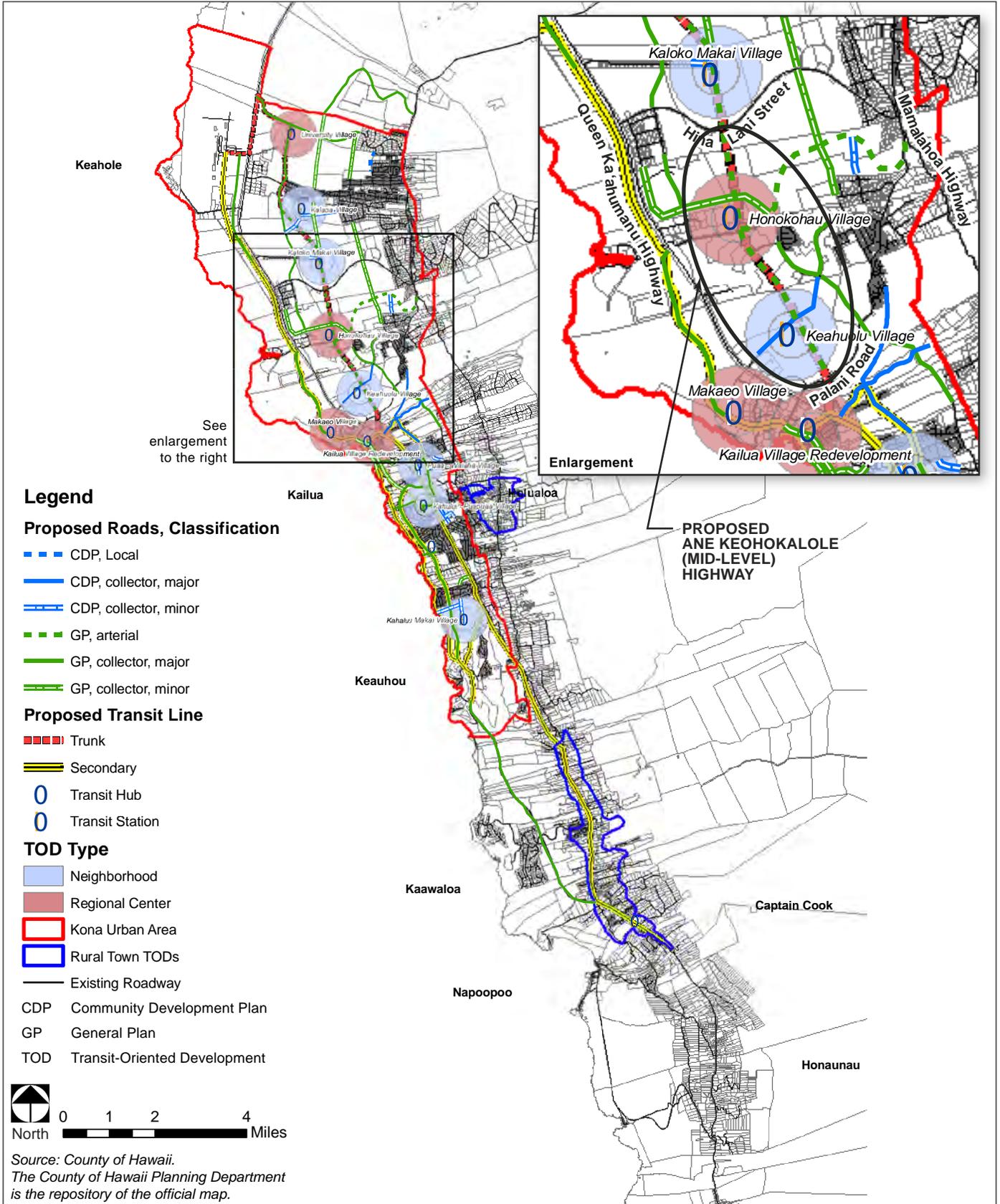
In addition to QLT, the Hawai‘i Housing Finance and Development Corporation (HHFDC) and the State of Hawai‘i Department of Hawaiian Home Lands (DHHL) would contribute to the planned development that would be served by the Ane Keohokalole Mid-Level Highway project. Development areas along the proposed

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<sup>5</sup> *Ibid.*

<sup>6</sup> *Ibid.*

<sup>7</sup> Belt Collins & Associates. October 1990.



**Figure 1-2**  
**KONA COMMUNITY DEVELOPMENT PLAN**  
**OFFICIAL TRANSPORTATION NETWORK MAP: PROPOSED ROADS AND TRANSIT**

highway are shown in Figure 2-1. Key developers and planned development are described as follows:

- QLT is an institution dedicated to providing support and services to orphaned and destitute children in the State of Hawai'i, with preference given to those of Native Hawaiian ancestry. Funds generated from Trust lands support QLT's charitable mission, which aims to support families so that they can raise healthy, happy, resilient children with positive family attachments. Developed Trust lands in the Kona area include Kona Commons, Makalapua Center, Kona Coast Shopping Center, Kona Industrial Subdivision, and the Queen Lili'uokalani Children's Center Kona Unit. Construction of Ane Keohokalole Highway will enhance QLT's ability to proceed with development projects to support its charitable mission.
- HHFDC was created in 2006 to increase the availability of affordable housing within the State of Hawai'i and serves as the primary agency tasked with developing and financing low- and moderate-income housing projects and administering homeownership programs. HHFDC's Keahuolu Affordable Housing project, which is needed to meet the strong demand for affordable homes for working families in and around North Kona, is relying on the construction of Ane Keohokalole Highway to serve as the site's primary access roadway.
- DHHL's mission is to manage the Hawaiian Home Lands trust effectively and to develop and deliver lands to Native Hawaiians, and the agency will partner with others towards developing self-sufficient and healthy communities. DHHL manages 1,400 acres of homestead lands in the Kona area, including the Villages of La'i 'Opua. The Villages of La'i 'Opua, which are located both makai and mauka of the proposed Ane Keohokalole Highway, would benefit from the improved connectivity provided by development of this north-south roadway.

In providing a transportation and utilities corridor to support future regional development, the Ane Keohokalole Mid-Level Highway project would enable QLT, HHFDC, and DHHL to better serve the needs of their respective beneficiaries statewide.

### **1.3 PROJECT PURPOSE AND NEED**

The purpose of the Ane Keohokalole Mid-level Highway project is to create the initial link, approximately three miles long, of a north-south roadway that serves as the central corridor for multi-modal transportation and utilities for future regional

development. The proposed highway is part of the HDOT's *Hawaii Long Range Land Transportation Plan*.<sup>8</sup>

The need for the action is specifically cited as a critical element in the KCDP, which was adopted by the County of Hawai'i as Ordinance 08-131 on September 25, 2008. The project is needed to:

- **Support Planned Regional Development.** A road system is needed to provide access for planned residential and commercial development in West Hawai'i's Kona district as identified in the KCDP (Figure 1-2) and as shown in Figure 2-1.
- **Improve Transportation Network Connectivity To Meet Future Demand.** Existing and future local roads in residential neighborhoods need a major collector roadway linking them to existing arterial roads serving urban centers. With the future development of the area, a major collector roadway is needed to adequately support future traffic volumes and to prevent the congestion that occurs when roadways are not properly timed with development.<sup>9</sup> In addition, Palani Road, which would link the major collector roadway to existing arterials (Mamalahoa Highway and Queen Ka'ahumanu Highway), will need to be modified to accommodate future traffic volumes.
- **Provide Multi-modal Transportation.** As identified in the KCDP, the project should be consistent with the goal of developing "an efficient, safe and attractive multi-modal transportation system integrated with land use planning that allows movement around and through Kona with minimal reliance on the automobile." Hence, the project needs to support an efficient vehicular transportation network and provide safe and attractive alternative transportation options, including those for pedestrians and bicyclists.

## 1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This EA identifies potential impacts associated with implementing the Ane Keohokalole Mid-Level Highway project. The analysis of environmental consequences addresses resources with the potential to be affected by the project. Locations and resources with no potential to be affected by the project need not be analyzed. Because the following resources are not present in the project area, they will not be affected by the project and are not evaluated in this EA: Prime and Unique Farmland; Wetlands; Floodplains; Wild and Scenic Rivers; and Hazardous Waste Sites.

<sup>8</sup> Frederic R. Harris, Inc., May 1998.

<sup>9</sup> Construction of Ane Keohokalole Highway at this time would be consistent with the principle of concurrency, i.e., appropriately timing the development of infrastructure to support planned development.

Several approaches were initiated to identify resources that may be potentially affected by the project, including results from the KCDP planning process (steering committee, public meetings, and working groups), as well as public informational meetings and charrettes conducted for the project in April 2008 in Kona. One outcome of these processes was the identification of the following resources that are evaluated in this EA:

- Land Use
- Climate
- Air Quality
- Cultural Resources
- Flora and Fauna
- Geology, Topography, and Soils
- Surface Waters and Drainage
- Groundwater and Hydrogeology
- Roads and Traffic
- Noise
- Natural Hazards
- Infrastructure
- Visual Resources
- Public Services
- Socio-Economic Conditions

# CHAPTER 2

## ALTERNATIVES INCLUDING THE PROPOSED ACTION

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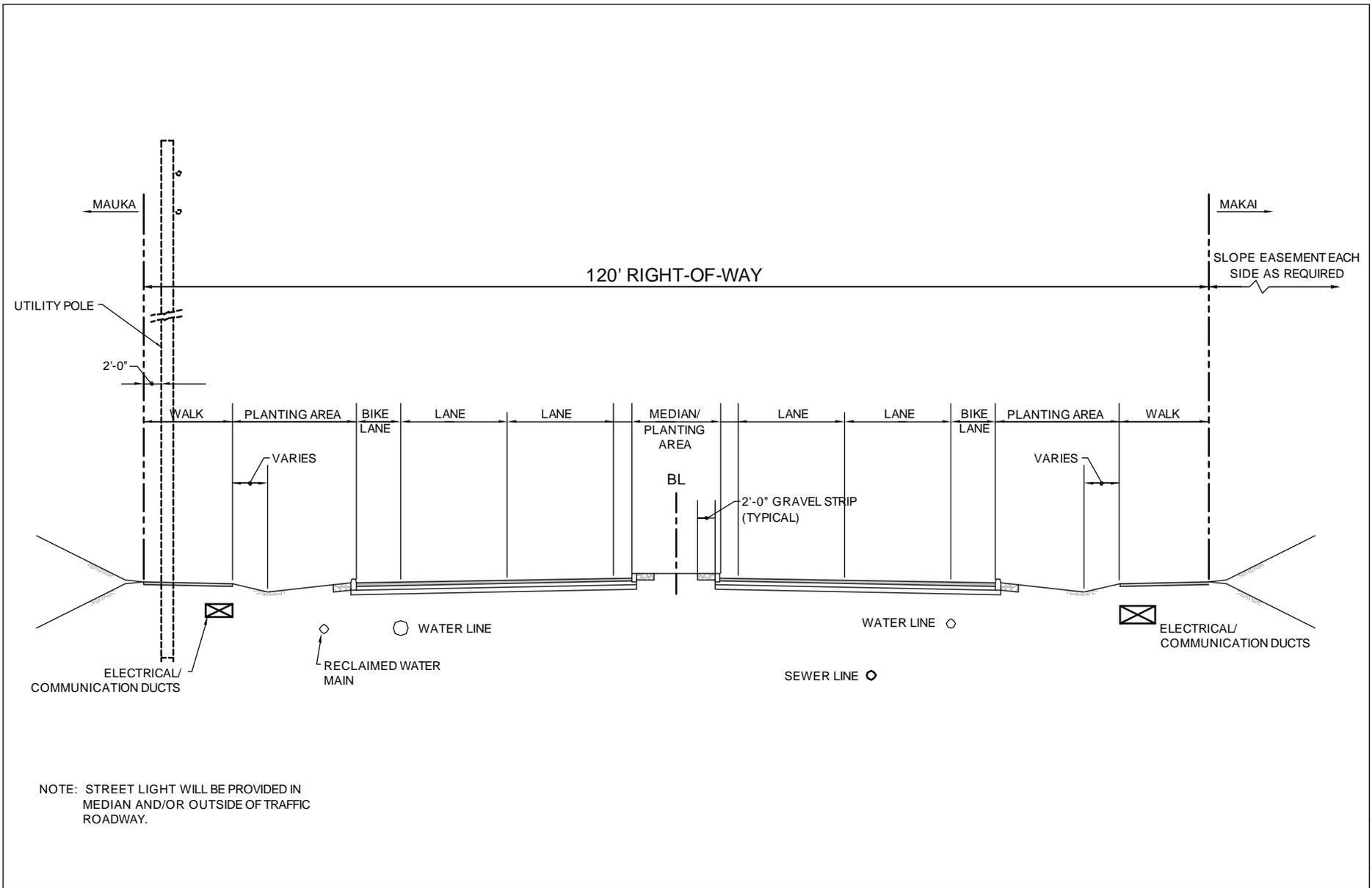
This chapter describes the alternatives meeting the purpose and need identified in Section 1.3 and evaluated in this Environmental Assessment (EA). Alternatives considered but not evaluated further in this EA for specific reasons are presented in Section 2.3.

### 2.1 PROPOSED ACTION

The Proposed Action consists of the development of a new regional roadway link and utility corridor connecting Palani Road to the south and Hina Lani Street to the north (“proposed highway”), widening of Palani Road to provide additional vehicular lanes and a utility corridor between Henry Street and Queen Ka’ahumanu Highway (“proposed Palani Road widening”), and associated improvements within existing right-of-ways (ROWs) (Figure 2-1). The proposed highway would serve as a multi-modal transportation corridor, including options for pedestrians and bicyclists. Roundabouts would facilitate traffic flow, with signalization as a back-up option. The posted speed limit would be 35 miles per hour.

The proposed highway would function as a major collector roadway and would roughly parallel (and be approximately 0.7 miles farther inland than) Queen Ka’ahumanu Highway. It would extend from Palani Road at the Henry Street junction, connect to the existing portion Ane Keohokalole Highway at Puohulihuli Street, follow the existing section of the highway through the Villages of La’i ‘Opuā, and then continue northward to Hina Lani Street. The proposed highway, a 120-foot ROW approximately 3.0 miles long, would allow for four lanes of two-way vehicular travel and a utility corridor at full build-out (Figure 2-2a). Utilities for water, reclaimed water, and wastewater would be installed underground. Electrical, telephone, and cable may be installed overhead or underground, based on availability of funding. Landscaping and drainage would be designed with bio-retention cells to prevent runoff from affecting groundwater flow and quality.





**Figure 2-2a**  
**PROPOSED ANE KEOHOKALOLE HIGHWAY—TYPICAL SECTION**

Ane Keohokalole Mid-Level Highway Project  
 Environmental Assessment

NOT TO SCALE

The proposed Palani Road widening would be approximately 1,700 feet in length. The total width would be approximately 100.5 feet and include the existing 80-foot (approximate) ROW and an additional 20.5 feet (approximate) to the south. Widening would increase the existing two lanes of two-way vehicular travel to four lanes of two-way travel with an additional auxiliary lane for turns, and an underground utility corridor (Figure 2-2b). Specifically, one additional lane in each direction would be constructed along with an auxiliary lane to provide a left-turn lane from Palani Road onto the proposed highway. Traffic signals are planned at the intersection of Palani Road and Kamak'eha Avenue, and existing traffic signals at the intersection of Palani Road and Henry Street would be upgraded. Utilities for water, reclaimed water, and wastewater would be installed underground. Electrical, telephone, and cable may be installed overhead or underground, based on availability of funding. Additional land would be acquired or easements secured by the County of Hawai'i for the approximately 21.5-foot-wide corridor south of Palani Road.

Improvements within existing ROWs would include those within Hina Lani Street, the existing segment of Ane Keohokalole Highway, and Kealakehe Parkway. A contractor staging area in the former Queen Lili'uokalani Trust (QLT) quarry is proposed (see Figure 2-1).

Construction would occur in phases and is anticipated to begin in March 2010 and take approximately two years to complete. Construction phasing is tentatively planned as follows:

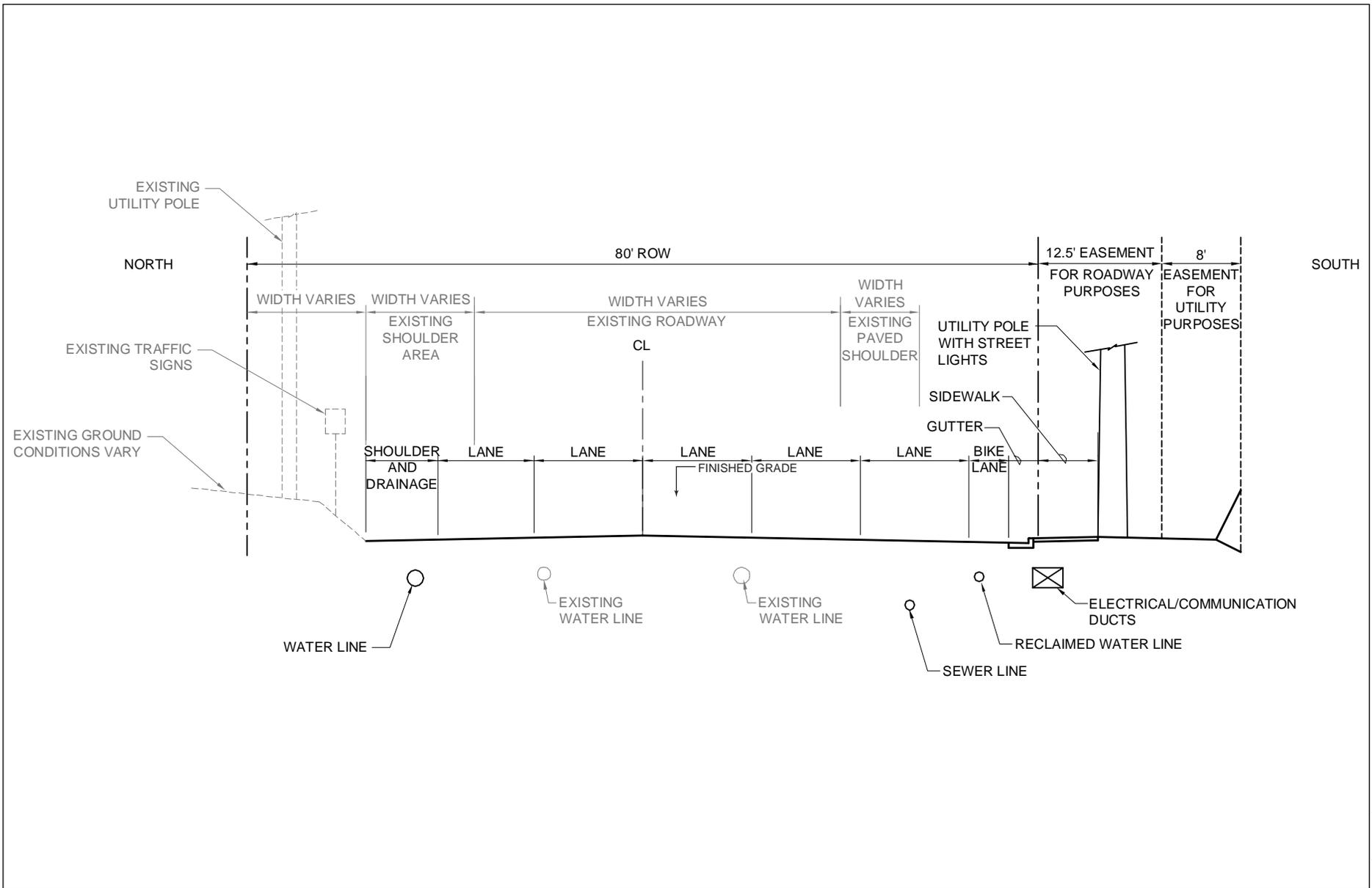
1. Construction of two vehicular lanes and ancillary developments (e.g., sidewalks, utility corridors, etc.) between Kealakehe Parkway and Palani Road.
2. Widening of Palani Road with its underground utility corridor.
3. Construction of two vehicular lanes and ancillary developments between Kealakehe Parkway and Hina Lani Street.

Full build-out would occur at a later time, as needed and within the planning period of this EA, through 2028.

For purposes of discussion in this EA, the Proposed Action represents the preferred alternative.

## 2.2 NO ACTION ALTERNATIVE

The No Action Alternative is defined as maintaining the status quo and represents the no-build alternative. The status quo is represented by of growing traffic



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NOT TO SCALE

**Figure 2-2b**  
**PROPOSED PALANI ROAD WIDENING—TYPICAL SECTION**

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congestion fueled by rapid growth in an area where the existing road network, land use patterns, and dependence on the automobile for transportation have generated substantial suburban sprawl.

Under the No Action Alternative, the Ane Keohokalole Mid-Level Highway project would not be implemented. The two major north-south roadways, Queen Ka'ahumanu Highway and Mamalahoa Highway, will continue to be impacted by development that has and will continue to occur. No additional roadway connectivity and utility corridors would be provided for future housing and other developments in the area, and traffic congestion on Palani Road would continue to degrade. Thus, the No Action Alternative would not meet the project purpose and need as described in Section 1.3.

## **2.3 ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER IN THIS EA**

Multiple project alignments were considered during the preliminary planning stage of the Ane Keohokalole Mid-Level Highway project in an attempt to meet the project purpose and need identified in Section 1.3; however, as presented herein, many of these alternatives were ruled out from further consideration because they did not meet the purpose and need. Other reasons were that they were not feasible or prudent.

Five alternatives were identified and represented various spur and bridge alternatives, considering that the core alignment needed to be preserved in order to serve existing and future planned development in the region. The alternatives considered but not evaluated further in this EA are:

- Northern Mauka Alternative,
- Southern Alternative 1 (bridge),
- Southern Alternative 2,
- Southern Alternative 3, and
- Southern Alternative 4.

Figure 2-3 illustrates these alternative alignments.



## Northern Mauka Alternative

In the northern project area, makai and mauka corridors were studied (Figure 2-3). Both study corridors were 400 feet wide, substantially wider than the 120-foot ROW (and wider than the area of potential effect used to consider slope easements and construction-related disturbances) needed for the proposed highway. The mauka corridor (Mauka Alternative alignment) is 400 feet wide and approximately 5,400 feet long. It is designed to meet at Hina Lani Street in an area previously bulldozed during the construction of Hina Lani Street and within the native dryland forest. The makai corridor (Makai Alternative/Proposed Action alignment) is also 400 feet wide but approximately 4,950 feet long. The centerline of the makai corridor meets up with Hina Lani Street approximately 650 feet makai of the centerline of the mauka corridor.

During the course of the biological field investigations, it was discovered that a highway alignment within the mauka corridor would effectively fragment the native dryland forest into two parts. Placing the alignment within the makai corridor is preferred, as it would minimize potential impacts to the dryland forest because vegetation in the makai corridor is comprised of a mediocre quality dryland forest, which is more of a woodland given the scattered nature of the trees. Further details are provided in the botanical surveys in Appendix C.

During the course of the archaeological inventory surveys (AIS), historic properties from previous surveys were confirmed and new historic properties were identified within both the mauka and makai corridors (Figure 2-4). In order to avoid all or most of the historic properties recommended for preservation or data recovery, placing the highway alignment within the makai corridor is preferred. Further details are provided in the AIS reports in Appendix A.

Based upon the presence of environmental and cultural resources discussed above, the Makai Alternative alignment was made part of the Proposed Action and the Mauka Alternative alignment is not evaluated further in this EA.

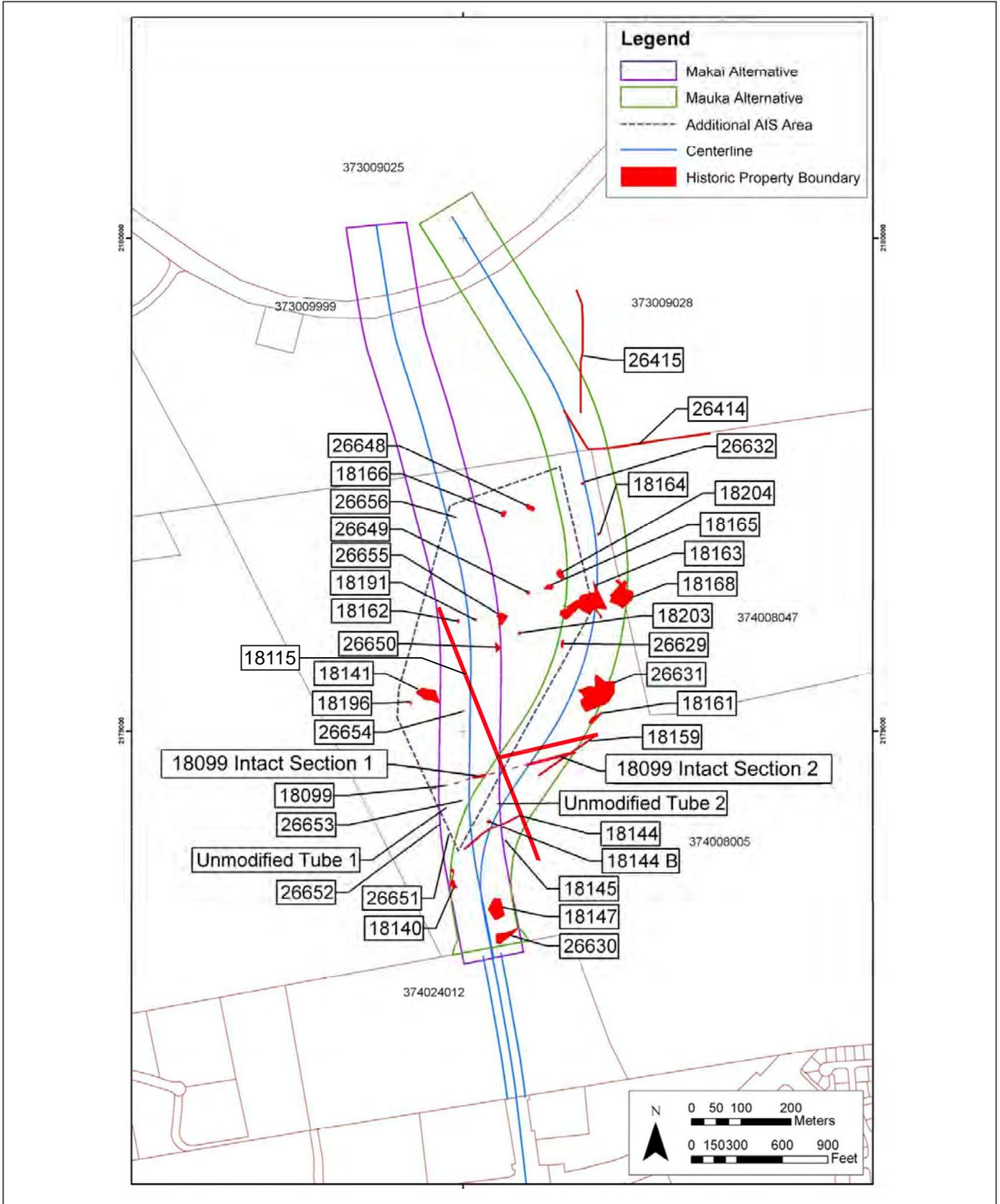
## Southern Alternatives 1, 2, 3, and 4

Four alternative alignments or designs (i.e., bridge) were considered in the southern project area (Figure 2-3). These alternatives were designed to avoid and minimize potential impacts to the historic properties in the southern area of the proposed highway alignment. Reasons for excluding these alternatives from further evaluation follow:

- Alternative 1 bridges over historic properties by elevating the highway. This alternative meets the project purpose and need but is not feasible<sup>10</sup> for two

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<sup>10</sup> An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.



**Figure 2-4**  
**HISTORIC PROPERTIES WITHIN THE**  
**MAUKA AND MAKAI CORRIDORS**

Ane Keohokalole Mid-Level Highway Project  
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reasons: (1) with historic properties located in close proximity to Palani Road, sufficient clearance cannot be achieved to match the existing grade at Palani Road, and (2) bridging over Palani Road is not an option because Henry Street is already at a very steep grade and the grade needed to sufficiently clear the historic properties would exceed desirable grades for a major collector roadway. As there is no feasible engineering design for the bridge, Alternative 1 is not further evaluated in this EA.

- Alternative 2 is a less direct route between the highway and Henry Street. Under this alternative, the project purpose and need and the intent of the mid-level highway as identified in the KCDP (Figure 1-2) would not be met.
- Alternative 3 shifts new highway traffic to Queen Ka'ahumanu Highway (instead of Palani Road). Under this alternative, the project purpose and need and the intent of the mid-level highway as identified in the KCDP (Figure 1-2) would not be met.
- Alternative 4 represents a less direct route between the highway and Palani Road. Under this alternative, the project purpose and need and the intent of the mid-level highway as identified in the KCDP (Figure 1-2) would not be met.

## **2.4 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS**

Table 2-1 presents a summary of the potential environmental impacts of the Proposed Action and the No Action Alternative.

**Table 2-1: Summary of the Potential Environmental Impacts of the Proposed Action and the No Action Alternative**

Resources/Issues		Proposed Action	No Action Alternative
<b>Land Use</b>		No substantial impacts. The Proposed Action would be located within the County of Hawai'i ROWs and would be consistent with and supportive of land use polices and development plans.	No impact.
<b>Climate</b>		No substantial impacts. The Proposed Action would not substantially increase greenhouse gas (GHG) emissions that could potentially contribute to climate change.	No impact.
<b>Air Quality</b>		No substantial impacts. Construction-related air quality impacts of the Proposed Action would be temporary and comply with applicable regulations. Operational use of the proposed highway and widened Palani Road would alleviate traffic congestion anticipated in the region, thereby reducing the impact of additional air pollutant emissions.	No substantial impact. Air emissions and localized concentrations of air pollutants would increase with continued traffic congestion.
<b>Cultural Resources</b>	Historic Properties	No substantial impacts. With mitigation for the historic properties (identified under the National Historic Preservation Act [NHPA] Section 106 process) and appropriate treatment for burial sites (identified as required under Hawai'i Administrative Rules [HAR] 13-300) that are designed into the Proposed Action, no substantial impacts on historic properties and burial sites would occur.  In accordance with NHPA Section 106 and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, the Federal Highway Administration (FHWA) has consulted with the Advisory Council on Historic Preservation, the Hawai'i State Historic Preservation Officer (SHPO), Native Hawaiian organizations, and other consulting parties regarding the Proposed Action and its potential effect on historic properties eligible for listing on the National Register of Historic Places (NRHP). As a result of the NHPA Section 106 process, FHWA has made a determination of "adverse effect" on historic properties. Measures to mitigate adverse effects are stipulated in a Memorandum of Agreement (MOA) between FHWA and the Hawai'i SHPO. The Draft MOA is provided in Appendix G.	No impact.
	Traditional Cultural Practices	No substantial impacts. The Proposed Action would not substantially impact Native Hawaiian cultural resources, beliefs, and practices. Based on information obtained from the cultural impacts assessments (CIAs) and input from the NHPA Section 106 consultation process, project plans and designs are being prepared to respect Native Hawaiian concerns and culture, and will reflect sensitivity to cultural histories, practices, materials, and remains. The MOA resulting from the NHPA Section 106 process is one such example (see Appendix G).	No impact.

Resources/Issues		Proposed Action	No Action Alternative
<b>Flora and Fauna</b>	Terrestrial Flora	No substantial impacts. No federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial flora have been identified in the project area. The Proposed Action is designed to avoid the majority of the dryland forest by using the Makai Alternative alignment that traverses through the drier, more sparsely vegetated portion of the forest.	No impact.
	Terrestrial Mammals and Birds	<p>No substantial impacts. No federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial mammals or birds have been identified in the project area. To prevent nocturnally flying birds, such as the endangered Hawaiian petrel (<i>Pterodroma sandwichensis</i>) and the threatened Newell's shearwater (<i>Puffinus auricularis newelli</i>), from colliding with lighting infrastructure, the Proposed Action will comply with the County of Hawai'i Outdoor Lighting Ordinance (Hawai'i County Code §14-50 et seq.) which requires the shielding of exterior lights. To avoid disturbances to the endangered Hawaiian hoary bat (<i>Lasiurus cinereus semotus</i>), woody vegetation taller than 15 feet will not be cleared between April 15 and August 15, and clearing of dense vegetation along Palani Road will not occur during the period from June through July when females are carrying young pups.</p> <p>FWHA has consulted with the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7 of the Endangered Species Act (ESA). FHWA requested and received USFWS concurrence on its determination that the Proposed Action is not likely to adversely affect any listed species known from the Island of Hawai'i. ESA Section 7 correspondence is provided in Appendix I.</p>	No impact.
<b>Geology, Topography, and Soils</b>		No substantial impacts. Ground surfaces disturbed during the construction of the Proposed Action would be restored. Any fill material used will be selected for use in accordance with the specifications provided by a licensed soils engineer to ensure stability of the built environment without an increase in maximum peak flow rates of storm water drainage. Use of soil or mulch will comply with best management practices (BMPs) to reduce risk of erosion and sedimentation to storm water drainage systems.	No impact.
<b>Surface Waters and Drainage</b>		No substantial impacts. The Proposed Action will be designed in accordance with Clean Water Act (CWA) regulations and County of Hawai'i ordinances and rules that address storm water drainage and associated water quality. Patterns of surface water flow and maximum peak flow rates of storm drainage, downstream drainage, and water quality would be similar to pre-construction conditions. The contractor will obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of storm water associated with construction activities, including appropriate BMPs for the project area.	No impact.

Resources/Issues	Proposed Action	No Action Alternative
<p><b>Groundwater and Hydrogeology</b></p>	<p>No substantial impacts. Groundwater would not be exposed during construction activities, and BMPs would prevent the release of petroleum products or other hazardous substances used during construction. To prevent changes in groundwater quantity and quality during the operational use of the proposed highway, bio-retention cells have been incorporated into the Proposed Action. The bio-retention cells will be designed to capture and treat runoff from the proposed highway to prevent pollutants from entering the groundwater. And as required by State of Hawai'i Department of Health (DOH) regulations, including HAR 11-62-27 "Recycled Water Systems," an irrigation use plan that includes information on application rates, intended uses, and schedules for recycled water use will be prepared. The irrigation use plan will also include information on types of vegetation, types and methods of irrigation, proposed irrigation schedules, vegetative consumption rates, water balance calculations, nutrient balance calculations, and the corresponding acreage to be used for irrigation, among other requirements.</p> <p>To prevent cumulative impacts to groundwater quantity and quality from future development that would occur with the presence of the proposed highway, the County of Hawai'i has initiated a study with the U.S. Geological Survey (USGS) to study the issue and will consider additional controls to prevent regional groundwater impacts. This is of particular importance to the National Park Service (NPS), as changes to groundwater could affect the down gradient anchialine ponds in Kaloko-Honokohau National Historic Park. The County of Hawai'i will take NPS' comments and concerns into consideration when reviewing future changes to the County General Plan, Code, and ordinances.</p>	<p>No impact.</p>
<p><b>Roads and Traffic</b></p>	<p>No substantial impacts. The Proposed Action is expected to improve or maintain the level of service (LOS) at most of the intersections and street segments that were analyzed. County of Hawai'i coordination with the State of Hawai'i Department of Transportation (HDOT) will allow restriping at the intersection of Queen Ka'ahumanu Highway and Henry Street so that this intersection would operate at LOS D (minimum acceptable traffic conditions) or better.</p>	<p>Without development of the Proposed Action, traffic congestion would continue to increase and existing roadways would operate at an unacceptable LOS (LOS E or LOS F).</p>
<p><b>Noise</b></p>	<p>No substantial impacts. Temporary noise impacts associated with site preparation and construction of the Proposed Action would occur. Construction-related noise would be minimized by noise suppression equipment and restricting construction activities to daylight hours. Traffic noise would be minimized where necessary with posted speed limits, noise attenuating walls, and setbacks.</p>	<p>No impact.</p>

Resources/Issues		Proposed Action	No Action Alternative
<b>Natural Hazards</b>		No substantial impacts. The Proposed Action is unlikely to increase risks to public health and safety associated with natural hazards such as earthquakes and volcanic eruptions.	No impact.
<b>Infrastructure</b>	Utilities and Solid Waste	No substantial impacts. Operational use of the proposed highway and Palani Road would require reclaimed water for landscape irrigation and electricity for streetlights and traffic signals. All waste generated from the Proposed Action would be taken to the West Hawai'i Landfill (which has an estimated life of 55 years) or a County transfer station, or recycled to the extent possible.	No impact.
	Drainage	No substantial impacts. Drainage infrastructure will be constructed as part of the Proposed Action so that there would be no increase in runoff from the project area.	No impact.
	Bicycle, Pedestrian, and Transit Facilities	No substantial impacts. The Proposed Action will have beneficial effects on bicycle, pedestrian, and transit facilities by providing additional roadways and dedicated paths for pedestrians and bicyclists.	No impact.
<b>Visual Resources</b>		No substantial impacts. Visual impacts of the Proposed Action are projected to be minimal from other vantage points once vegetation grows back after construction. The effects of street lighting on the night sky viewshed will be minimized through the implementation of low pressure sodium lamps and shielding in compliance with the County of Hawai'i Outdoor Lighting Ordinance (Hawai'i County Code §14-50 et seq.).	No impact.
<b>Public Services</b>		No substantial impacts. Development of the Proposed Action is not anticipated to substantially increase the demand for police, fire, civil defense, or educational services. The Proposed Action would improve the delivery of public services, as it would provide better access to the surrounding areas for emergency responders. The Proposed Action would also improve accessibility to schools by encouraging multi-modal transportation, including bicycling and walking.	No impact.
<b>Socio-Economic Conditions</b>		<p>No substantial impacts. The Proposed Action would enhance the roadway infrastructure of the North Kona district, improving connectivity and reducing traffic congestion, and thereby improving quality of life for residents. The potential creation of new construction jobs associated with the Proposed Action would result in a minor but beneficial effect on socio-economic conditions.</p> <p>Executive Order (EO) 12898, Environmental Justice, requires federal agencies to address the potential for disproportionately high and adverse environmental effects of their actions on minority and low-income populations. Although the North Kona district as a whole does not constitute a minority or low-income Environmental Justice area, due to the presence of the Department of Hawaiian Homelands (DHHL) communities in the immediate vicinity of</p>	Without development of the Proposed Action, substantial negative impacts on the socio-economic environment of the region could occur. Traffic congestion along Queen Ka'ahumanu Highway and Palani Road would be

Resources/Issues	Proposed Action	No Action Alternative
<p><b>Socio-Economic Conditions</b>  <i>(continued)</i></p>	<p>the project area, there is a concentrated minority population of Native Hawaiians that could potentially be affected by the Proposed Action. The Proposed Action will not adversely affect minority or low-income populations, and will not negatively impact the environment in a way that will disproportionately affect minority or low-income populations. Rather, the Proposed Action is expected to benefit both the Native Hawaiian minority and the low-income populations in North Kona, as it is part of a regional plan to develop a multi-modal transportation network that will serve a number of mixed-use, affordable developments, including DHHL and the Hawai'i Housing Finance and Development Corporation (HHFDC) properties.</p>	<p>impacted, affecting quality of life for residents (with greater commute times) and possibly leading to declines in road safety. It is possible that the economic development of the Kona area would be negatively impacted, as visitors, particularly those traveling from the airport or trying to get around town in heavy traffic, are likely to perceive that the character of the region is declining, and would avoid the congested Kona area entirely.</p> <p>With respect to adverse effects on minority and low-income populations, access to mixed-use, affordable developments and the housing and jobs therein would be severely limited without development of the Proposed Action, continuing to deprive the local workforce of economic and social opportunities.</p>

# **CHAPTER 3**

## **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

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This chapter describes the existing conditions of the affected environment, evaluates the potential environmental and social impacts of the Proposed Action and the No Action Alternative, and discusses the measures to minimize any impacts.

### **3.1 LAND USE**

#### **3.1.1 AFFECTED ENVIRONMENT**

The Proposed Action would be developed approximately between Hina Lani Street to the north and the Henry Street-Palani Road junction to the south. It would also include widening of Palani Road between Henry Street and Kamaka'eha Avenue. The mauka (towards the mountains; generally eastward of the Proposed Action) side of the proposed highway from north to south is bordered by undeveloped land owned by Kaloko Properties Corporation (Stanford Carr), undeveloped land owned by Lanihau Properties, land owned by McClean Honokohau Properties, future Department of Hawaiian Home Lands (DHHL) Villages of La'i 'Opua (Village 7), an aupaka preserve, Kealakehe High School, future DHHL Villages of La'i 'Opua (Village 6), future Hawai'i Housing Finance & Development Corporation (HHFDC) Keahuolu Affordable Housing Project, and the County of Hawai'i Palani Reservoir.

The makai (towards the ocean; generally westward of the Proposed Action) side of the proposed highway from north to south is bordered by undeveloped land owned by Lanihau Properties, land owned by McClean Honokohau Properties, the future site of the County Civic Center, future DHHL Villages of La'i 'Opua (Villages 9, 10, and 11), and undeveloped land owned by the Queen Lili'uokalani Trust (QLT), which includes a Archaeological/Historic Preserve Area.

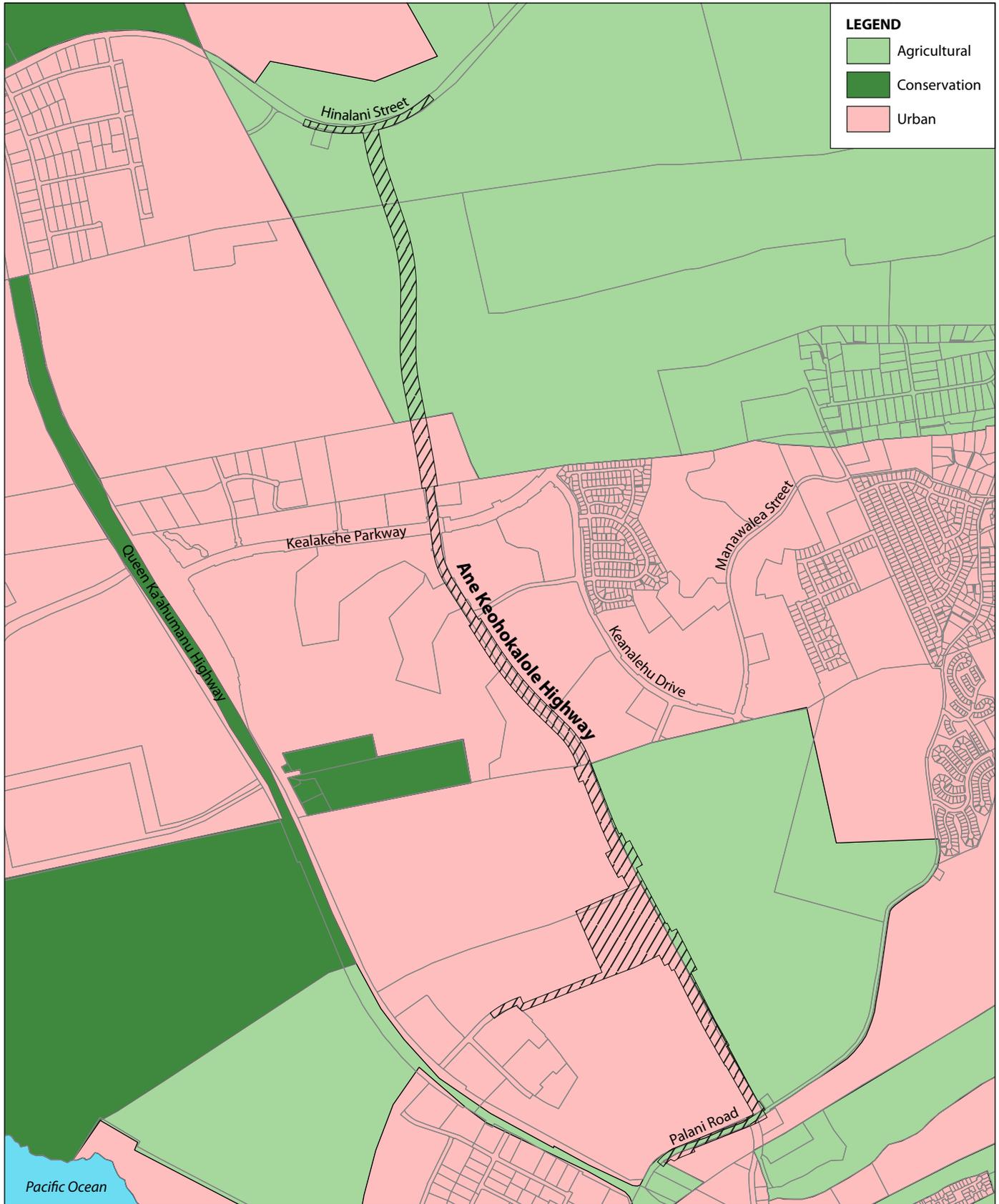
Ahupua'a affected by the Proposed Action are Keahuolu, Kealakehe, Honokohau 1 and 2, and Kaloko. Tax Map Keys (TMKs) affected are listed in Table 3-1.

**Table 3-1: Tax Map Keys of Properties Adjacent to the Proposed Action**

TMK Number	Property Name/Owner
<b>Properties Mauka of the Proposed Highway</b>	
7-4-021:022	County of Hawai'i Palani Reservoir
7-4-021:020	Future HHFDC Keahuolu Affordable Housing Project
7-4-021:003	Future DHHL Villages of La'i 'Opua (Village 6)
7-4-021:004	Kealakehe High School
7-4-021:005	Aupaka Preserve (DHHL)
7-4-021:008	Future DHHL Villages of La'i 'Opua (Village 7)
7-4-024:012	McClellan Honokohau Properties
7-4-008:047 and 005 (por)	Undeveloped Lanikai Properties
7-3-009:028	Undeveloped Kaloko Properties (Stanford Carr)
<b>Properties Makai of the Proposed Highway</b>	
7-4-020:010	QLT historic preserve land
7-4-020:022	QLT undeveloped land
7-4-020:006	Future DHHL Villages of La'i 'Opua (Village 11), includes small Aupaka Preserve
7-4-020:005	Future DHHL Villages of La'i 'Opua (Village 10)
7-4-020:004	Future DHHL Villages of La'i 'Opua (Village 9)
7-4-020:007	Kealakehe (DHHL Property)
7-4-020:025	Future County Civic Center Site (DHHL/County)
7-4-024:012	McClellan Honokohau Properties
7-4-008:005	Undeveloped Lanikai Properties
<b>Properties South of Palani Road</b>	
7-4-008: 020	GTE Hawaiian Telephone Co., Inc.
7-4-008: 021	State of Hawai'i
7-4-008: 027	County of Hawai'i
7-4-008: 063	QLT undeveloped land

State-designated land use districts in the project area are Urban and Agricultural (Figure 3-1). The Hawai'i County General Plan Land Use Allocation Guide Map shows areas in the project area allocated for urban (mixed residential, commercial, and industrial) and agricultural with nature/cultural preserves (Figure 3-2).<sup>1</sup> The only existing developed land adjacent to the proposed highway is Kealakehe High School (Figure 2-1). Anticipated development would be mostly mixed-use residential with some commercial activities.

<sup>1</sup> County of Hawai'i. *County of Hawai'i General Plan*. February 2005.



**LEGEND**

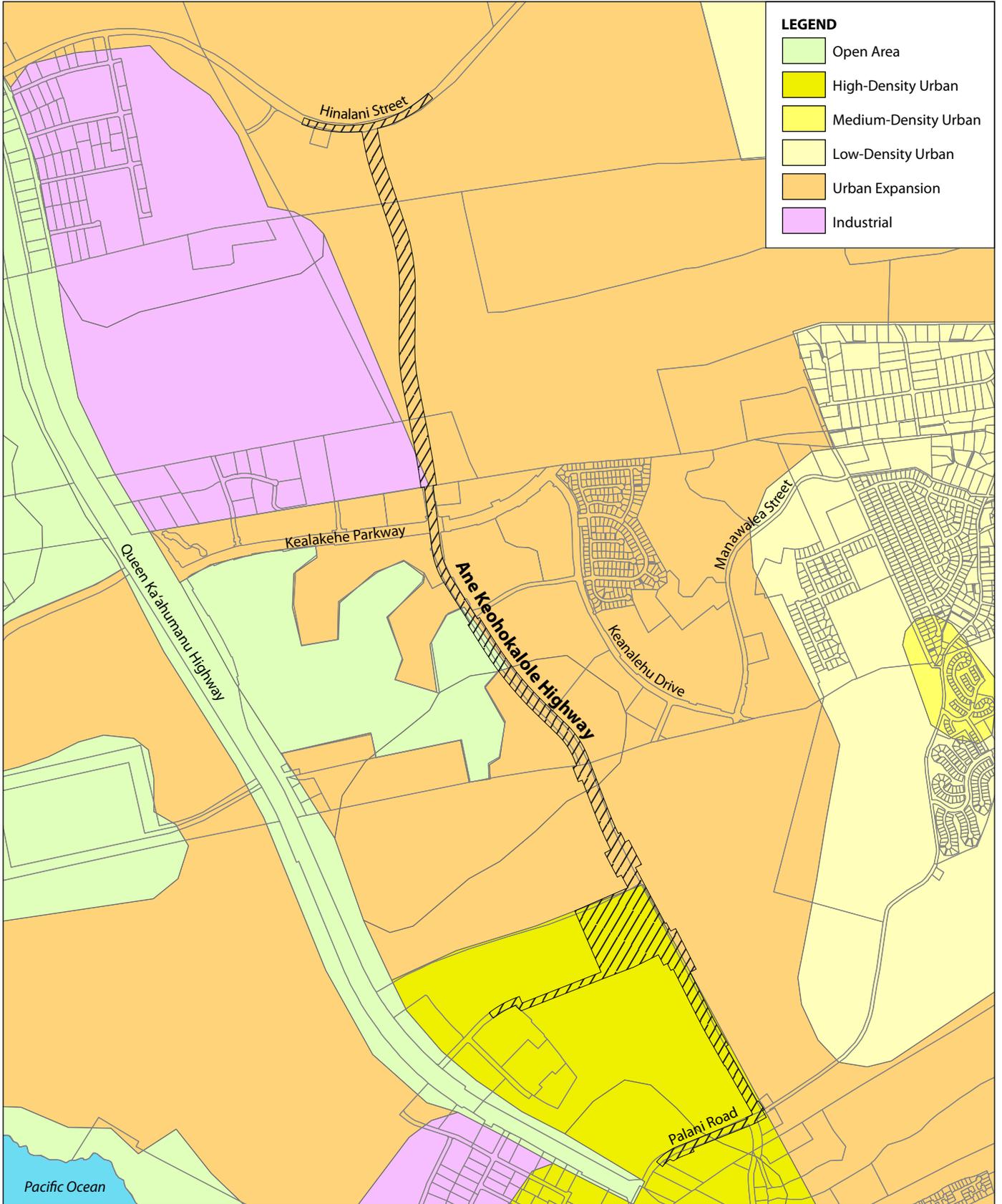
- Agricultural
- Conservation
- Urban

 NORTH

0      1000      2000

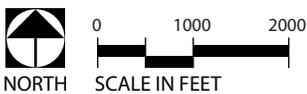
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**Figure 3-1**  
**EXISTING STATE LAND USE DISTRICTS MAP**  
Ane Keohokalole Mid-Level Highway Project  
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**LEGEND**

- Open Area
- High-Density Urban
- Medium-Density Urban
- Low-Density Urban
- Urban Expansion
- Industrial



**Figure 3-2**  
**GENERAL PLAN'S LAND USE**  
**PATTERN ALLOCATION GUIDE MAP**  
Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

The future context of the Proposed Action is urban, which is consistent with the Kona Community Development Plan (KCDP) land use adopted as Ordinance 08-131 by the County of Hawai'i on September 25, 2008. The vacant and undeveloped project site is comprised of lava flows of various ages that are covered mostly by alien-dominated scrub vegetation. The majority of the land adjacent to the project site was formerly used for grazing cattle and goats and is currently undeveloped. Land owners within the vicinity include the entities identified in Table 3-1.

According to the KCDP, future urban and rural growth should be channeled into compact, village-style developments that allow workers to live near their jobs. This concept departs from the current trend of sprawling low-density developments, disconnected subdivisions, and business centers. Urban sprawl has led to long-distance commutes, traffic congestion, and a general decline in the quality of life.

### **3.1.2 POTENTIAL IMPACTS**

No substantial impacts associated with land use would occur as a result of the Proposed Action. Property would be conveyed to the County of Hawai'i for the proposed highway right-of-way (ROW). Additional acreage would be either conveyed or set aside as easements for the ROW and for the proposed Palani Road widening. The Proposed Action would be consistent with and supportive of State and County land use policies and development plans, as discussed in Chapter 5.

No impacts to land use would occur under the No Action Alternative.

## **3.2 CLIMATE**

### **3.2.1 AFFECTED ENVIRONMENT**

The Kona region receives an average annual rainfall of between 11 and 24 inches, with mauka areas typically experiencing larger amounts of rainfall than makai areas. Regional temperatures range from 64 degrees Fahrenheit in the winter months to 85 degrees Fahrenheit in the summer months.<sup>2</sup>

The trade winds and geological features influence Hawai'i Island's climate. In winter, trade winds blow 50 percent of the time and the subsidence trade wind inversion occasionally disappears; in summer, trade winds and the inversion prevail

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<sup>2</sup> Hawai'i State Climate Office, Annual Precipitation and Temperature Summaries [www.soest.hawaii.edu/MET/Hsco](http://www.soest.hawaii.edu/MET/Hsco). Accessed February 25, 2009.

for more than 90 percent of days.<sup>3</sup> The mountains of Hualalai and Mauna Loa further influence the wind direction and speed. In the early morning, the prevailing wind blows from inland areas to the ocean, and in the afternoon, the wind blows from the ocean to inland areas.<sup>4</sup>

Greenhouse gases (GHGs) have moved into the forefront of global concerns and, more recently, U.S. concerns. As a result, U.S. regulations and policies on the subject are evolving rapidly. GHGs essentially trap heat in the atmosphere and their anthropogenic contribution is a concern, as increasing concentrations of GHGs, historically measured as carbon dioxide, have been found to correlate with increases in global temperatures. According to the U.S. Environmental Protection Agency's (USEPA) "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007," dated April 15, 2009, the transportation sector is the second largest source of total GHGs in the U.S.; the largest is the electric power industry. Based on information in USEPA's inventory and "Hawai'i Greenhouse Gas Inventory: 1990 and 2007" (ICF International, December 2008), transportation emissions from Hawai'i Island represent 10 percent<sup>5</sup> of the transportation sector GHGs in the state and 0.00000006 percent<sup>6</sup> of the transportation sector GHGs in the U.S.

GHG effects are global and not just local or regional, hence, the focus is on achieving overall net emissions reductions. Currently, there are no federal standards limiting GHG emissions and no clear guidance from the State of Hawai'i on regulation or reporting. The Federal Highway Administration (FHWA) is working nationally with other modal administrations through the U.S. Department of Transportation Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to GHGs and to assess the risks to transportation systems and services from climate change. In Hawai'i, the Governor signed the Global Warming Solutions Act in 2007, which is intended to reduce statewide GHG emissions to 1990 levels by 2020. The Act mandates procedures to define GHG emissions in Hawai'i and to develop measures that would significantly reduce these emissions.

### 3.2.2 POTENTIAL IMPACTS

No substantial impacts to climate would occur as a result of the Proposed Action. Construction would result in temporary, short-term emissions of GHGs from vehicles and equipment, mostly from the combustion of diesel and gasoline. The

<sup>3</sup> Hawai'i State Climate Office, Monthly Report. <http://www.soest.hawaii.edu/MET/Hsco/monthlyreport/monthlyreport.html>. Accessed February 25, 2009.

<sup>4</sup> Juvik and Juvik, *Atlas of Hawai'i 3rd Edition*. 1998.

<sup>5</sup> Hawai'i Island transportation GHG emissions/statewide transportation GHG emissions is 1.28 million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>Eq)/12.58 MMTCO<sub>2</sub>Eq = 0.10

<sup>6</sup> Hawai'i Island transportation GHG emissions/U.S. transportation GHG emissions is 1.28 MMTCO<sub>2</sub>Eq/2.0x10<sup>+9</sup> MMTCO<sub>2</sub>Eq = 6.42x10<sup>-10</sup>

overall contribution of these emissions is extremely small relative to total emissions from all sources in the state (e.g., electricity generation, transportation, manufacturing). GHG emissions from power generation sources would experience a small, permanent increase as a result of increased electricity use for street lights and traffic signals, but would not constitute a substantial addition to total electricity use on the island of Hawai'i and the resulting GHG emissions. These potential increases could be minimized through the use of lighting design and energy-efficient lighting technologies.

GHG emissions from vehicular emissions could increase as a result of the new highway. Considering that the proposed highway would support an increase of less than one percent in vehicle miles travelled within the Kona region,<sup>7</sup> the increase in GHG emissions would constitute a very small proportion of future emissions from vehicles and would not be substantial.

No impacts to GHG emissions, and therefore the climate, would occur under the No Action Alternative.

## **3.3 AIR QUALITY**

### **3.3.1 AFFECTED ENVIRONMENT**

Regional and local climate, together with the amount and type of human activity, generally dictate the air quality of a given location. State and national Ambient Air Quality Standards (AAQS) are established to regulate ambient concentrations of particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead. In addition, the State has set a standard for hydrogen sulfide. State AAQS for nitrogen dioxide and carbon monoxide are more stringent than the national standards, while the AAQS for the other parameters are comparable.

The present air quality in the project area is mostly affected by air pollutants from natural, industrial, agricultural, and/or vehicular (mobile) sources. Natural sources that may affect the project area but cannot be accurately quantified include the ocean (salt spray), plants (aero-allergens), wind-blown dust, and volcanoes (vog). Of these natural sources, volcanoes are the most significant, especially with the ongoing eruption phase of Kilauea Volcano that began in 1983. Air pollution emissions from Kilauea Volcano consist primarily of sulfur dioxide, which are carried to the project area by prevailing winds. The volcanic emissions are seen in the form of vog which persistently hangs over a majority of West Hawai'i. The major industrial sources of air pollutants in the project area include the Keahole Power

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<sup>7</sup> Personal communication with Dick Kaku, Fehr & Peers Transportation Consultants, May 7, 2009.

Plant, operated by Hawai'i Electric Light Company (HELCO). Air pollution from the power plant consists mostly of sulfur dioxide and oxides of nitrogen.

The State of Hawai'i Department of Health (DOH) operates a network of air quality monitoring stations, but very limited data are available for the Island of Hawai'i, and even less for the North Kona area. Despite the volcanic emissions (vog) and possible impacts from localized traffic congestion, regulated air pollutant concentrations in the North Kona area are well within state and national AAQS. Monitoring at Kealakekua between 2000 and 2004 showed consistently low concentrations of sulfur dioxide and particulates.<sup>8</sup>

### 3.3.2 POTENTIAL IMPACTS

No substantial impacts to air quality would occur as a result of the Proposed Action. Temporary, construction-related impacts on air quality could include those from (1) fugitive dust from vehicle movement and soil excavation, and (2) exhaust emissions from on-site construction equipment, but existing laws and rules would prevent substantial impacts to air quality during construction from occurring:

- State of Hawai'i Air Pollution Control rules prohibit visible emissions of fugitive dust from construction activities at the property line. A dust control program will be developed and followed to control dust from construction activities according to the requirements of Hawai'i Administrative Rules (HAR) 11-60.1-33. Fugitive dust emissions can be controlled to a large extent by watering active work areas, using wind screens, keeping adjacent paved roads clean, and covering open-bodied trucks. Other measures include limiting the area to be disturbed at any given time, mulching or chemically stabilizing inactive areas, paving and landscaping areas early in the construction schedule, and monitoring dust at the project boundary to ensure these measures are effective.
- The substantive construction-related emission sources are generally regulated stationary sources which operate with an air permit issued by the State DOH, and only permitted after it is determined that air emissions are not likely to cause an exceedance of AAQS (either by size of source equipment or computer modeling).

Once construction is completed and operational use of the proposed highway and widened Palani Road begins, changes in localized and regional emissions would occur. Vehicular emissions would decrease with decreasing vehicular delays (decrease in traffic congestion). Regional vehicular emissions would increase as a

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<sup>8</sup> Belt Collins Hawaii Ltd. *Final Environmental Impact Statement Keahuolu Affordable Housing Project*. October 2008.

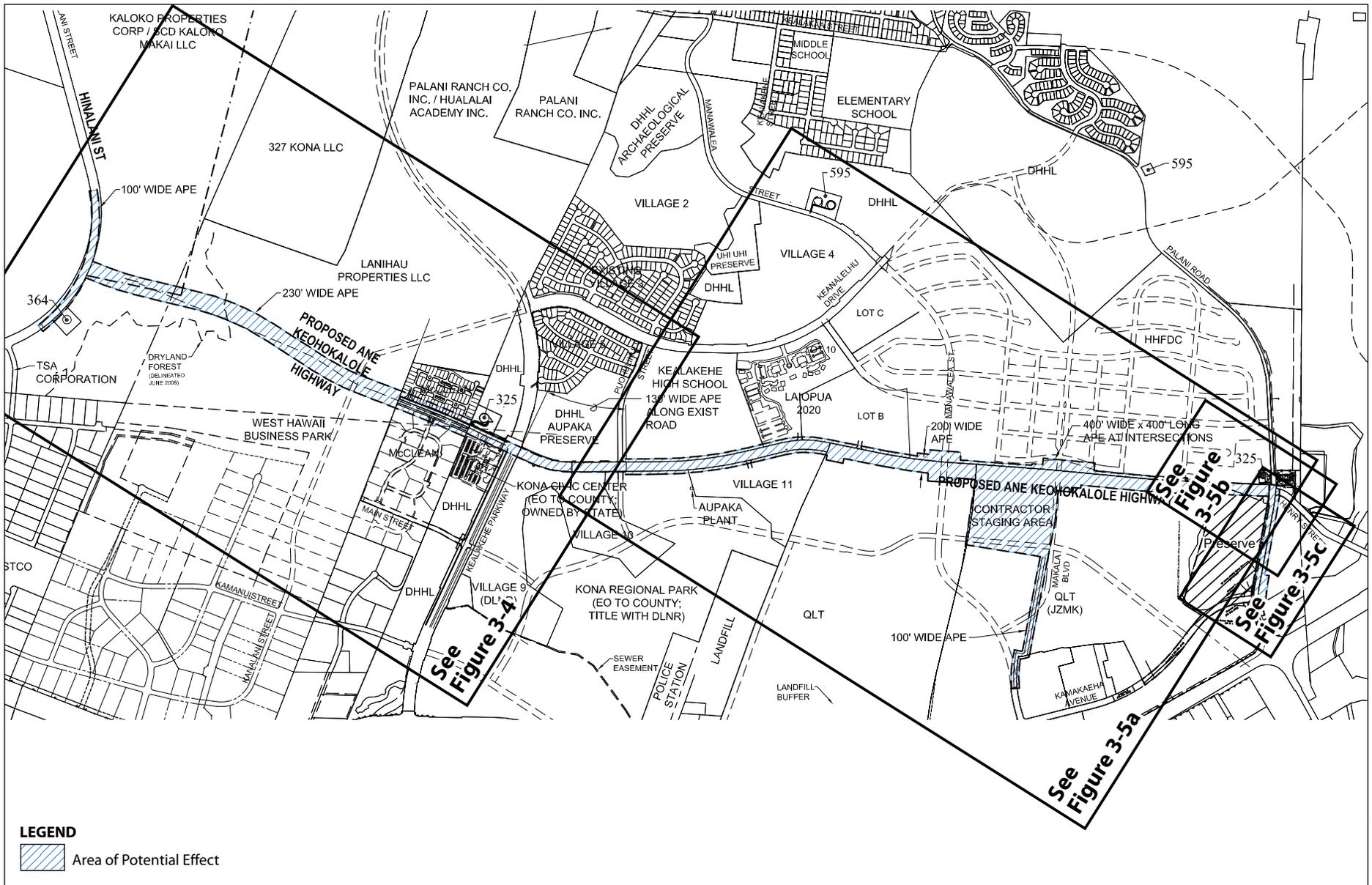
result of the additional development that could only occur with the Proposed Action, however, the impact of these emissions on air quality is not expected to result in a substantial degradation in air quality, particularly as no substantial deterioration in traffic conditions would occur (see Section 3.9, Roads and Traffic). Considering the effects of the Proposed Action along with (1) Hawai'i's weather patterns and trade winds, which serve to efficiently disperse vehicular emissions so that they do not concentrate, and (2) the national standards imposed on lowering vehicular emissions, pollutant concentrations are expected to remain well within state and national AAQS, and no substantial impacts to air quality would occur.

No substantial impacts to air quality would occur under the No Action Alternative. With the greater vehicular delays (increase in traffic congestion) under the No Action Alternative relative to the Proposed Action, air emissions and localized concentrations of air pollutants would increase, but are not anticipated to substantially impact air quality.

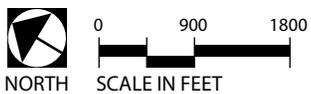
## **3.4 CULTURAL RESOURCES**

### **3.4.1 HISTORIC PROPERTIES**

Five archaeological inventory survey (AIS) investigations were conducted as part of this Environmental Assessment (EA) to provide coverage for the area of potential effect (APE) associated with the Proposed Action (see Figure 3-3), and are described herein from north to south (Hina Lani Street to Palani Street). A sixth AIS was previously conducted for the existing graded area through the McClean parcel (see Figure 2-3) and is also described. The APE has been identified for purposes of the National Historic Preservation Act (NHPA) Section 106 process required for this project, and defines the area in which all activity, including construction-related disturbances, would occur; it varies depending upon slope easements and other site-specific conditions. In accordance with Code of Federal Regulations (CFR) §800.16, burial sites identified near the proposed highway corridor (but outside of the APE boundary) are also included in the APE in consideration of any indirect alterations to the character or use of the burial sites that may result from the Proposed Action. Based on the AIS findings, the proposed highway alignment was rerouted and redesigned (e.g., widths of hard surfaces such as vehicle lanes, medians, and sidewalks were minimized, and design elements were removed) to form an APE that minimizes impacts on historic properties and avoids burial sites. Additionally, boundaries of the Archaeological/Historic Preserve Area on QLT land were further defined based on these findings.



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**Figure 3-3**  
**ARCHAEOLOGICAL INVENTORY SURVEYS**

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The northern portion of the proposed highway corridor (Hina Lani Street to the existing paved portion of Ane Keohokalole Highway just south of the property owned by McClean) is covered by the AIS investigations described below:

- Cultural Surveys Hawai'i, Inc. (CSH) performed a survey of the northern-most third of the proposed highway alignment consisting of a 400-foot-wide corridor extending approximately 4,950 feet from Hina Lani Street to the northern boundary of the McClean Honokohau Properties (hereinafter referred to as "KALOKO 3" AIS).<sup>9</sup>
- Paul H. Rosendahl, Ph.D., Inc. (PHRI) previously conducted a survey for the Honokohau Industrial Park (Parcel VII) which includes the proposed highway alignment from the northern boundary to the southern boundary of the McClean Honokohau Properties.<sup>10</sup>

The existing paved portion of Ane Keohokalole Highway extends from the southern boundary of the McClean Honokohau Properties to Puohulihuli Street. The existing graded area is approximately 130 feet wide and will encompass the APE associated with the Proposed Action.

The southern portion of the proposed highway corridor (Puohulihuli Street to Palani Road) and Palani Road are covered by the AIS investigations described below:

- CSH performed a survey of an approximately 1.4-mile-long segment of the proposed highway alignment consisting of a 400-foot-wide corridor extending from Puohulihuli Street to approximately 1,000 feet north of Palani Road (hereinafter referred to as "KEALAKEHE 1" AIS).<sup>11</sup>
- Pacific Legacy, Inc. (PLI) performed a survey of the segment of the proposed highway alignment from approximately 1,000 feet north of Palani Road to Palani Road.<sup>12</sup> As part of the AIS, PLI conducted a reconnaissance survey of the Archaeological/Historic Preserve Area, located makai of the AIS study area and mauka of Kamaka'eha Avenue, to obtain contextual information for the historic properties found within the AIS study area.
- CSH performed a survey of a 100-foot-wide corridor on the south side of Palani Road extending approximately 1,500 feet between Henry Street and

<sup>9</sup> Yucha and McDermott. *Final An Archaeological Inventory Survey for a Portion of the Proposed Ane Keohokalole Highway (Henry Street Extension)*. August 2008.

<sup>10</sup> Walker and Rosendahl. *Interim Report: Background, Summary of Findings, and General Significance Assessments and Recommended General Treatments. Archaeological Inventory Survey, Honokohau Industrial Park (Parcel VII)*. January 1990.

<sup>11</sup> Tulchin and Hammatt. *Final Archaeological Inventory Survey of an Approximately 2.3-km Long Portion of the Proposed Ane Keohokalole Highway Project*. August 2009.

<sup>12</sup> Reeve et al. *Revised Draft Archaeological Inventory Survey of the Southern End of the Proposed Ane Keohokalole Highway and Archaeological Reconnaissance of the Queen Lili'uokalani Turst Preserve Area*. August 2009.

the Kailua-Kona Fire Station/Kamaka‘eha Avenue (hereinafter referred to as “KEAHUOLU 5” AIS).<sup>13</sup>

- CSH performed a survey of the proposed construction base yard and base yard access road located adjacent to the makai (western) boundary of the proposed highway corridor within the footprint of an abandoned rock quarry and quarry access road (hereinafter referred to as “KEAHUOLU 6” AIS).<sup>14</sup> The proposed base yard access road extends from the northern end of Makala Boulevard northeast around the edge of the existing Kmart parking lot and continues northeast within the well-defined abandoned quarry access road.

These AIS investigations were prepared in accordance with the Secretary of the Interior’s Standards for Identification, Evaluation and Archaeological Documentation; the NHPA, 36 CFR §800, and the State of Hawai‘i requirements of HAR 13-276. The AIS reports, including findings and recommendations, are provided in Appendix A.

### 3.4.1.1 Affected Environment

#### Northern Corridor Survey Area

Figure 3-4 illustrates the location of the historic properties identified within the APE in the northern corridor and Table 3-2 summarizes the site type, functional interpretation, eligibility, and mitigation for these historic properties.

**Table 3-2: Summary of Site Type, Functional Interpretation, Eligibility, and Mitigation for Historic Properties within the APE in the Northern Corridor**

SIHP* Site Number	Formal Site Type	Functional Interpretation	NRHP/HRHP Eligibility Criteria**					Agreed Upon Mitigation			
			A	B	C	D	E	Data Recovery	None	Preserve	
Cultural Surveys Hawai‘i “KALOKO 3” AIS Sites											
50-10-27-18099	Trail, curbstome	Transportation, Commemorative	✓		✓	✓			✓		
50-10-27-18144	Complex	Permanent Habitation, Agriculture				✓			✓		
50-10-27-18147	Complex	Recurrent Habitation, Marker				✓			✓		

<sup>13</sup> Hammatt. *Final Archaeological Inventory Survey of a 100-foot Wide Corridor on the South Side of Palani Road in Support of the Proposed Ane Keohokalole Highway Project*. August 2009.

<sup>14</sup> Yucha and Hammatt. *Final Archaeological Assessment of the Proposed Ane Keohokalole Highway Project Base Yard and Base Yard Access Road*. June 2009.

**Table 3-2: Summary of Site Type, Functional Interpretation, Eligibility, and Mitigation for Historic Properties within the APE in the Northern Corridor**  
 (continued)

SIHP* Site Number	Formal Site Type	Functional Interpretation	NRHP/HRHP Eligibility Criteria**					Agreed Upon Mitigation		
			A	B	C	D	E	Data Recovery	None	Preserve
50-10-27-18162	Terrace	Recurrent Habitation				✓		✓		
50-10-27-18191	Terrace	Recurrent Habitation				✓			✓	
50-10-27-26630	Complex	Temporary Habitation, Agriculture				✓			✓	
50-10-27-26653	Modified Outcrop	Agriculture				✓			✓	
50-10-27-26654	Trough	Animal Husbandry				✓			✓	
50-10-27-26656	Cairn	Marker				✓			✓	
50-10-27/28-18115	Wall	Animal Husbandry				✓			✓	

Notes:

\*SIHP = State Inventory of Historic Properties; NRHP National Register of Historic Places; HRHP Hawai'i Register of Historic Places

\*\* NRHP/HRHP Eligibility Criteria:

A = Important for historical contribution to significant events and/or broad patterns of history.

B = Important for association with the lives of important individuals in history.

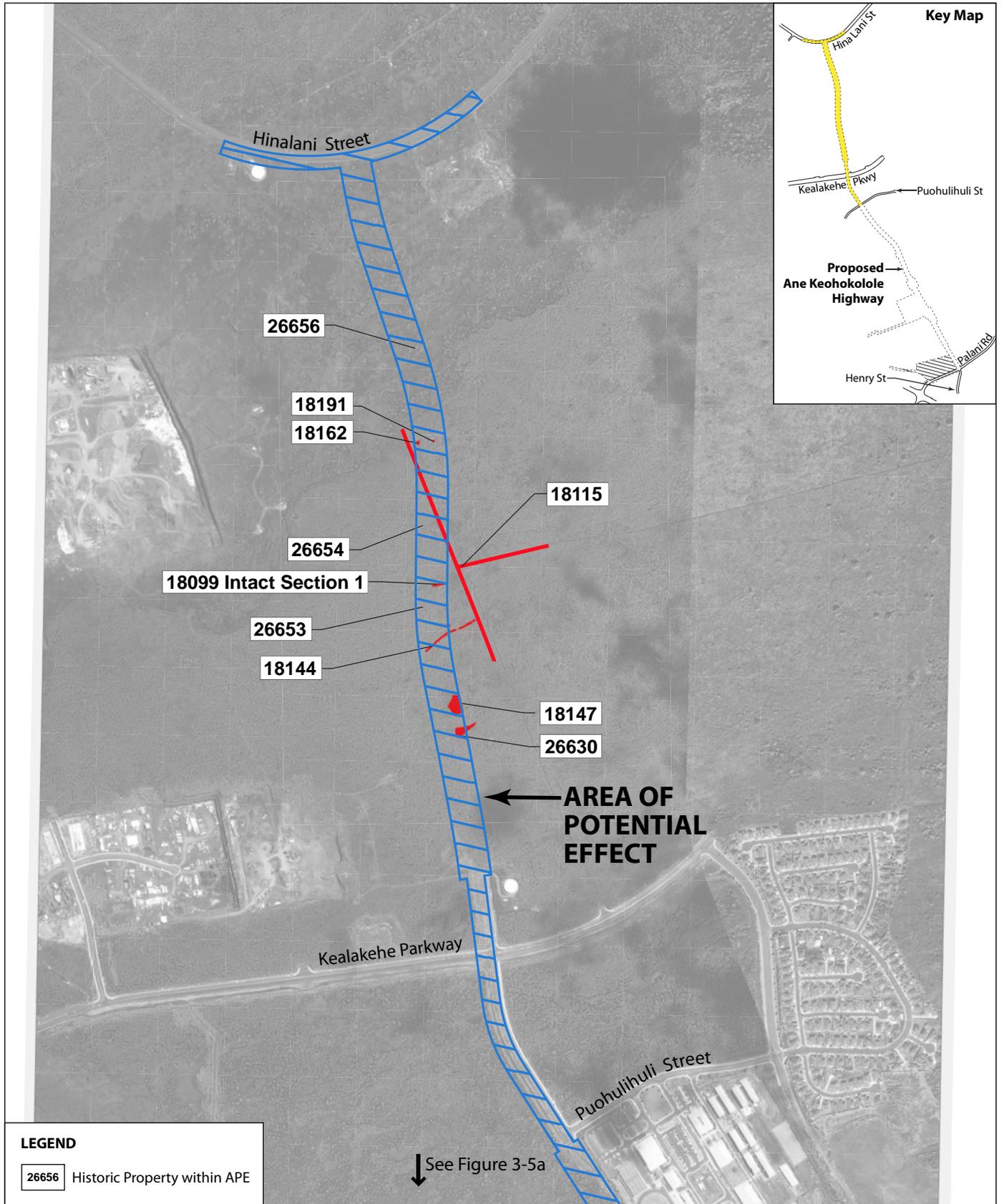
C = Excellent example of site type at local, region, island, state, or national level.

D = Important for information content.

E = Culturally significant. (HRHP only)

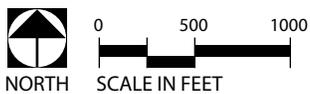
Findings of the “KALOKO 3” AIS and the associated addendum conducted by CSH for the northern-most third of the proposed highway alignment, from Hina Lani Street to the northern boundary of the McClean Honokohau Properties, are summarized as follows:

- Nearly 100 percent of the current survey area has been previously surveyed and documented as part of prior AIS investigations (Robbins et al. 2000; Esh et al. 2008; Bell et al. 2008). The Robbins et al. 2000 AIS report was reviewed and accepted by SHPD on February 12, 2000 (SHPD correspondence LOG NO: 26972 DOC NO: 0102RC15). The Bell et al. 2008 and Esh et al. 2008 AIS reports are currently in draft form and will be submitted to SHPD for review and approval.



**Figure 3-4**  
**NORTHERN CORRIDOR HISTORIC PROPERTIES**

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- A total of 10 historic properties were identified within the APE (see Figure 3-4). All 10 historic properties are recommended eligible for the Hawai'i Register of Historic Places (HRHP) and the National Register of Historic Places (NRHP) (see Table 3-2).

Data recovery for the historic properties identified in the PHRI AIS for the McClean Honokohau Properties has been completed and documented.<sup>15</sup> Previously identified historic properties within the APE included a mauka-makai trail (SIHP 50-10-27-13006). Due to subsequent land development, however, there is no physical evidence of historic properties remaining in this segment of the proposed highway alignment.

### Southern Corridor Survey Area

Figures 3-5a, 3-5b, and 3-5c illustrate the locations of historic properties and three burial sites (containing four burials) identified within the APE in the southern corridor and Table 3-3 summarizes the site type, functional interpretation, eligibility, and mitigation for these historic properties.

**Table 3-3: Summary of Site Type, Functional Interpretation, Eligibility, and Mitigation for Historic Properties within the APE in the Southern Corridor**

SIHP* Site Number	Formal Site Type	Functional Interpretation	NRHP/HRHP Eligibility Criteria**					Agreed Upon Mitigation		
			A	B	C	D	E	Data Recovery	None	Preserve
Cultural Surveys Hawai'i "KEALAKEHE 1" AIS Sites										
50-10-28-13384	Complex	Habitation				✓		✓		
50-10-28-13391	Modified Sinkhole	Habitation				✓		✓		
50-10-28-05011	Wall	Livestock, Land Division Boundary			✓	✓			✓	
50-10-28-13201F	Modified blister	Agriculture				✓			✓	
50-10-28-13387	Lava tube	Burial, Temporary Habitation				✓	✓			✓
50-10-28-26830	Terrace	Temporary Habitation				✓			✓	
50-10-28-26831	Cave	Burial				✓	✓			✓
50-10-28-26832	Terrace	Temporary Habitation				✓			✓	

<sup>15</sup> Jensen and Goodfellow. *Archaeological Mitigation Program, Honokohau Industrial Park (Parcel VII), Phase II: Data Recovery*. January 1993.

**Table 3-3: Summary of Site Type, Functional Interpretation, Eligibility, and Mitigation for Historic Properties within the APE in the Southern Corridor**  
 (continued)

SIHP* Site Number	Formal Site Type	Functional Interpretation	NRHP/HRHP Eligibility Criteria**					Agreed Upon Mitigation		
			A	B	C	D	E	Data Recovery	None	Preserve
50-10-28-26833	Trail	Transportation				✓			✓	
50-10-28-26834	Filled lava blisters	Marker				✓			✓	
50-10-28-26835	Lava tube	Temporary Habitation				✓			✓	
50-10-28-26836	Lava tube	Burial, Temporary Habitation				✓	✓			✓
<b>Pacific Legacy AIS Sites</b>										
50-10-28-26846	Complex	Agriculture				✓		✓		
50-10-28-26847	Complex	Agriculture				✓		✓		
50-10-28-26848	Platforms	Habitation				✓		✓		
50-10-28-26849	Complex	Agriculture				✓		✓		
50-10-28-26850	Complex	Habitation, Agriculture				✓		✓		
50-10-28-26851	Complex	Agriculture, Habitation				✓		✓		
50-10-28-26852	Complex	Agriculture, Habitation				✓		✓		
50-10-28-26853	Complex	Agriculture				✓		✓		
50-10-28-26854	Complex	Agriculture, Habitation				✓		✓		
50-10-28-26855	Complex	Agriculture				✓		✓		
50-10-28-26856	Complex	Agriculture				✓		✓		
50-10-28-26864	Modified Outcrop	Agriculture				✓		✓		
50-10-28-26865	Complex	Agriculture				✓		✓		
50-10-28-26866	Complex	Agriculture, Habitation				✓		✓		
<b>Cultural Surveys Hawai'i "KEAHUOLU 5" AIS Sites</b>										
50-10-27-6302 (14235)	Kuakini Wall	Livestock Boundary	✓	✓	✓	✓		✓		✓

**Table 3-3: Summary of Site Type, Functional Interpretation, Eligibility, and Mitigation for Historic Properties within the APE in the Southern Corridor**  
 (continued)

SIHP* Site Number	Formal Site Type	Functional Interpretation	NRHP/HRHP Eligibility Criteria**					Agreed Upon Mitigation			
			A	B	C	D	E	Data Recovery	None	Preserve	
50-10-28-14234	Terrace	Agriculture (Kona Field System)				✓				✓	
50-10-28-14236	Mound, Modified Outcrop Complex	Agriculture (Kona Field System)				✓				✓	
50-10-28-14237	Mound, Modified Outcrop Complex	Agriculture (Kona Field System)				✓				✓	
50-10-27-14239	Wall	Livestock Boundary				✓				✓	
50-10-28-14240	Mound / Modified Outcrop Complex	Agriculture (Kona Field System)				✓				✓	
50-10-28-14241	Mound Complex	Agriculture (Kona Field System)				✓				✓	
50-10-28-14243	Terrace, C-shape, Enclosure Complex	Temporary Habitation (Kona Field System)				✓				✓	
50-10-28-14245	Mound Complex	Agriculture (Kona Field System)				✓				✓	
50-10-28-14246	Mound Complex	Agriculture (Kona Field System)				✓				✓	
50-10-28-14247	Terrace	Temporary Habitation (Kona Field System)				✓				✓	

Notes:

\* SIHP = State Inventory of Historic Properties

\*\* NRHP/HRHP Significance Criteria:

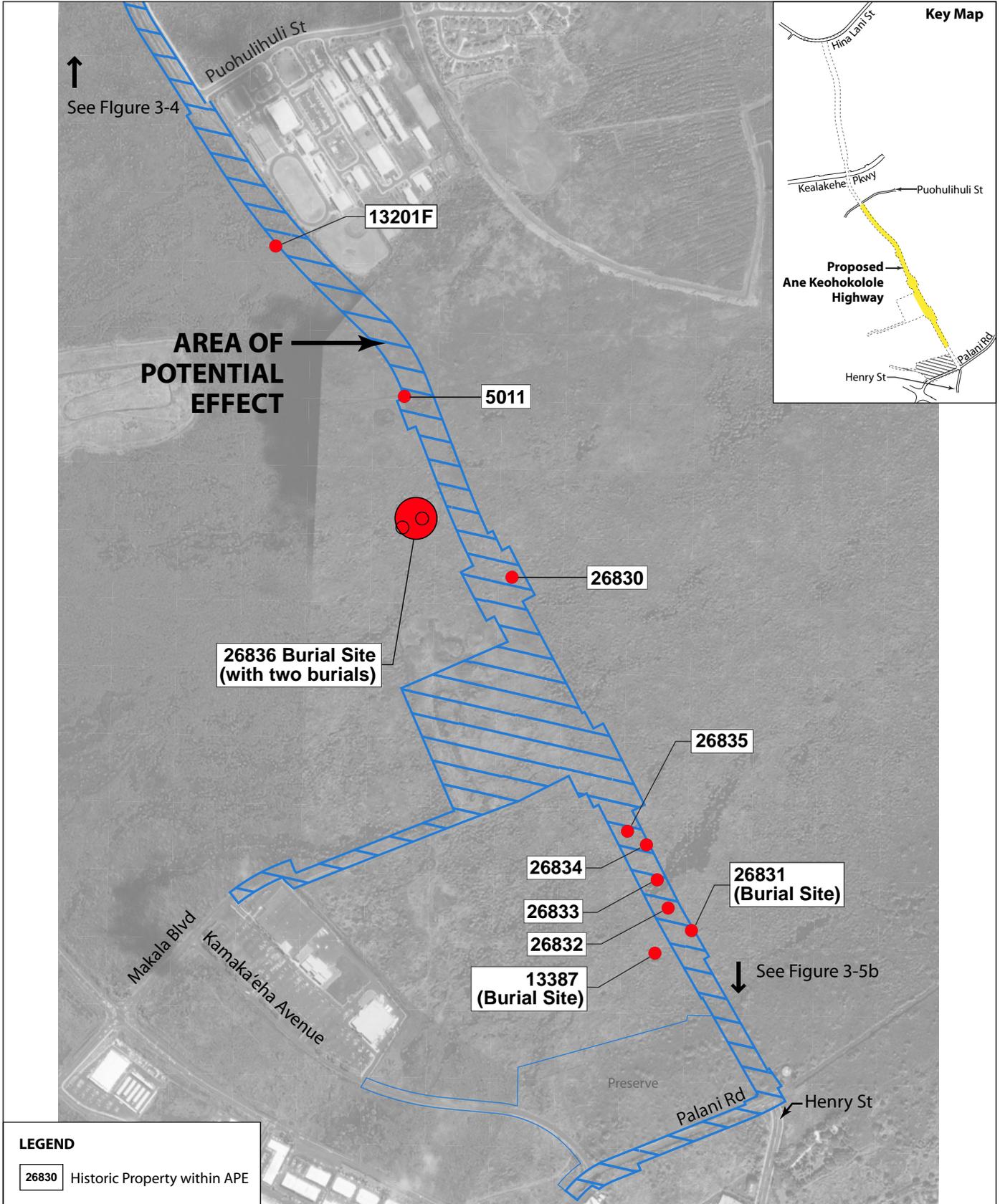
A = Important for historical contribution to significant events and/or broad patterns of history.

B = Important for association with the lives of important individuals in history.

C = Excellent example of site type at local, region, island, state, or national level.

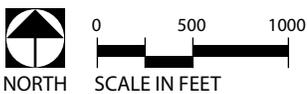
D = Important for information content.

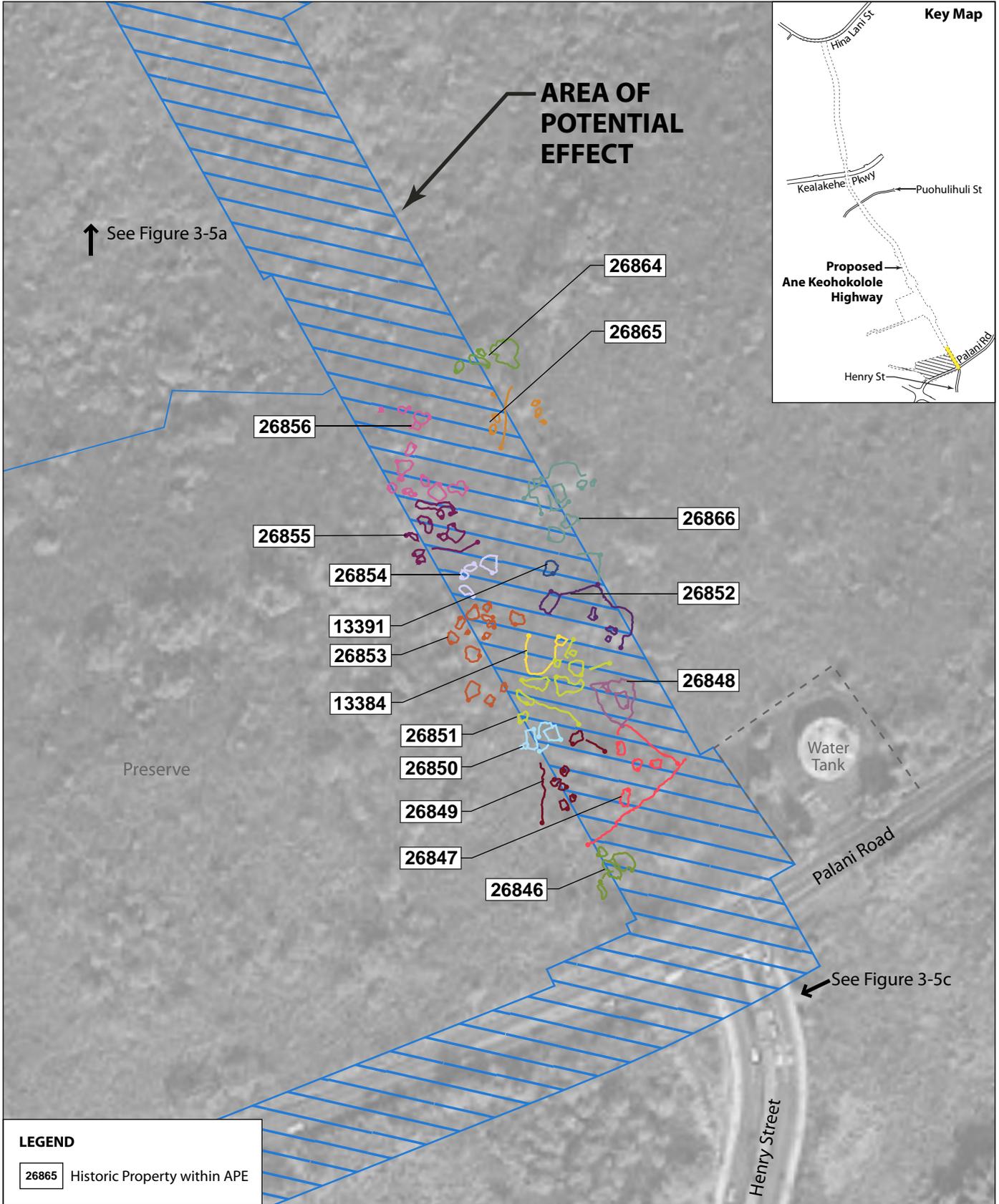
E = Culturally significant. (HRHP only)



**Figure 3-5a**  
**SOUTHERN CORRIDOR HISTORIC PROPERTIES—**  
**PUOHULIHULI STREET TO 1,000 FEET NORTH OF PALANI ROAD**

Ane Keohokalole Mid-Level Highway Project  
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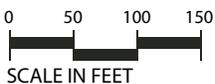


**LEGEND**

26865 Historic Property within APE

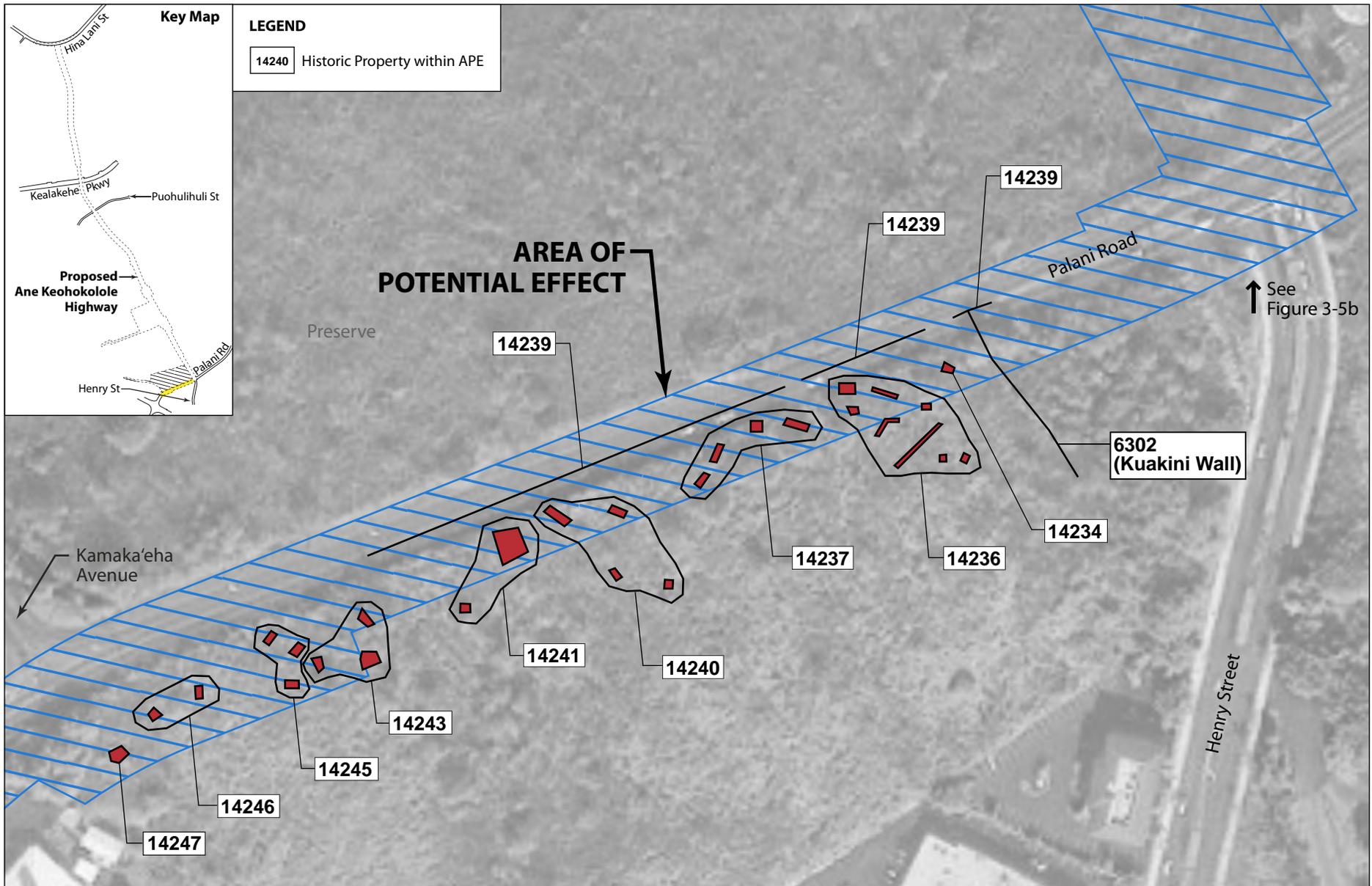


NORTH



**Figure 3-5b**  
**SOUTHERN CORRIDOR HISTORIC PROPERTIES—**  
**1,000 FEET NORTH OF PALANI ROAD TO PALANI ROAD**

Ane Keohokalole Mid-Level Highway Project  
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**Figure 3-5c**  
**SOUTHERN CORRIDOR HISTORIC PROPERTIES—**  
**SOUTH OF PALANI ROAD BETWEEN HENRY STREET AND KAMAKA'EHHA AVENUE**

Ane Keohokole Mid-Level Highway Project  
 Environmental Assessment



Findings of the “KEALAKEHE 1” AIS conducted by CSH for the southern portion of the proposed highway alignment, from Puohulihuli Street to a point approximately 1,000 feet north of Palani Road, are summarized as follows:

- Portions of the current survey area have been covered by prior AIS investigations that have been reviewed and accepted by SHPD (Donham 1990a; Donham 1990b; Burgett and Rosendahl 1992; Corbin and Wong-Smith 2008). Due to discrepancies among the previous studies, it was determined in consultation with SHPD that a supplemental AIS should be conducted for the current project area.
- A total of eight historic properties were identified within the APE (see Figure 3-5a), including two sites that have been previously identified (SIHP 50-10-28-05011 and SIHP 50-10-28-13201F) and one site that contains a burial (SIHP 50-10-28-26831). In addition, two other burial sites (containing three burials) were identified near the proposed highway corridor (but outside of the APE boundary), but were included in the APE in consideration of any indirect alterations to the character or use of the burial sites that may result from the Proposed Action (SIHP 50-10-28-13387 and SIHP 50-10-28-26836). All 10 historic properties are recommended eligible to the HRHP and NRHP (see Table 3-3).

Findings of the AIS conducted by PLI for the southern-most portion of the proposed highway alignment, from approximately 1,000 feet north of Palani Road to Palani Road, are summarized as follows:

- Eight historic properties and portions of eight additional historic properties were identified within the APE (see Figure 3-5b). Two of the sites (SIHP 50-10-28-13384 and SIHP 50-10-28-13391) had been previously recorded (Donham 1990a). All 16 historic properties are recommended eligible to the HRHP and NRHP (see Table 3-3).
- The vast majority of the component features of these historic properties were low stone walls, stone mounds, and modified outcrops, which appear to be related to intensive traditional agricultural practices in the area. Associated with these agricultural features are what appear to be habitation features, including stone faced platforms, terraces, and stone walled enclosures, as well as a large natural sinkhole and associated lava tubes that show evidence of traditional occupation (SIHP 50-10-13391). Most of the structures are in somewhat disturbed condition.
- To better evaluate the archaeological and historic resources within the APE, a reconnaissance survey was conducted in the adjacent approximately 25-acre Archaeological/Historic Preserve Area. Thirty (30) large and very visible historic properties, which included stone walled enclosures, lava tubes,

platforms, and terraces, were recorded. Most are associated with habitation, with at least two sites that appears to be ceremonial and may represent a small heiau or field shrines. In addition to these conspicuous features, literally hundreds of low stone walls, stone mounds, and modified outcrops were found, indicating that the agricultural system documented within the APE is not unique, as similar agricultural features are very common within the Archaeological/Historic Preserve Area.

Findings of the “KEAHUOLU 5” AIS conducted by CSH on the south side of Palani Road, from Henry Street to Kamaka‘eha Avenue, are summarized as follows:

- Portions of the current survey area have been covered by prior AIS investigations that have been reviewed and accepted by SHPD (Jensen 1990; Henry et al. 1998; Corbin and Wong-Smith 2008). Due to the discrepancies between the three previous studies, as well as a desire for additional subsurface testing, SHPD requested that further AIS investigation be conducted on the current project area.
- A total of 11 historic properties were identified within the APE (see Figure 3-5c), nine of which are components of the Kona Field System District (SIHP 50-10-27-6601). All 11 historic properties are recommended eligible for the HRHP and NHRP (see Table 3-3).
- No historic properties were identified east of the Kuakini Wall (SIHP 50-10-27-06302 [14235]). The eastern portion of the survey area, near the Palani Road-Henry Street intersection, is presently covered by extremely dense vegetation that generally prohibited observation of the ground surface. Although Jensen (1990) previously reported two historic properties in this area, the subsequent study by Henry et al. (1998) indicated that they had been destroyed.

The findings of the “KEAHUOLU 6” AIS conducted by CSH for the proposed construction base yard and base yard access road are summarized as follows:

- The entirety of current survey area has been covered by a prior AIS that was reviewed and accepted by SHPD (Donham 1990a). In consultation with SHPD, it was determined that a supplemental AIS should be conducted on the current project area.
- No historic properties were identified within the APE. Excavation and grading related to the previous rock quarry likely destroyed or severely impacted any surface or subsurface historic properties that may have previously existed within the APE.

### 3.4.1.2 Potential Impacts

All of the historic properties and burial sites identified and/or recorded within the APE during the AIS investigations were assessed for their significance based upon the HRHP significance criteria established by SHPD (HAR 13-284-6), and the criteria used to qualify a historic property for listing on the NRHP (see Tables 3-2 and 3-3). Findings are summarized below.

#### Northern Corridor Survey Area

Ten (10) historic properties would be affected by the APE in the northern corridor of the proposed highway (see Figure 3-4 and Table 3-2). The project-specific effect recommendation from CSH's "KALOKO 3" AIS is "effect, with agreed upon mitigation measures." Recommended mitigation measures include data recovery, subject to SHPD approval. In addition, an archaeological monitoring plan will be approved by SHPD prior to any groundbreaking activities.

Appropriate treatment for a portion of the mauka-makai trail that would be affected by the proposed highway (i.e., Intact Section 1 of SIHP 50-10-27-18099) was reviewed by SHPD. The proposed "Makai Alternative" alignment was selected to avoid another intact segment of the mauka-makai trail (i.e., Intact Section 2) in the "Mauka Alternative" alignment that is recommended for preservation (see Figure 2-4). Intact Section 1 of this mauka-makai trail is suggested to be of significantly less import than Intact Section 2, and its potential sacrifice, if need be, appears to be in keeping with recommendations of a previously-approved AIS (Robins et al. 2000). As the State can claim ownership of historic trails in accordance with the Highways Act of 1892 (Hawai'i Revised Statutes [HRS] Chapter 264), the County of Hawai'i is in the process of obtaining a perpetual, non-exclusive easement for road and utility purposes from the State of Hawai'i Board of Land and Natural Resources (BLNR) for the section of this mauka-makai trail that would be crossed by the proposed highway.

Organizations expressing interest in historic trails were consulted, including the National Park Service (NPS) Ala Kahakai National Historic Trail, NPS Kaloko-Honokohau National Historic Park, State of Hawai'i Office of Hawaiian Affairs (OHA), State of Hawai'i Department of Land and Natural Resources (DLNR) Na Ala Hele – Hawai'i Trail & Access System, Dennis Hart (National Trail Association Trail Cleaners), Roy Hao Santana (Ala Kahakai), and Lanihau Properties, LLC (adjacent landowner). Based on input provided during the consultation process, appropriate mitigation measures for adverse effects to historic trails have been developed. These design elements are made part of the Proposed Action and will be stipulated in a Memorandum or Agreement (MOA) resulting from the NHPA Section 106 process. Stipulations in the Draft MOA (see Appendix G) include the following:

- Provisions for a 10-foot-wide pedestrian crossing for SIHP 50-10-27-18099 shall be provided for future use when a management plan for this mauka-makai trail can be implemented with the adjacent landowners. The preferred location for this crosswalk is over the existing trail, but the actual location shall be dependent upon future plans for the nearby roadway intersection and public safety.
- Recognition of historic trails (SIHP 50-10-27-13006, SIHP 50-10-27-18099, and SIHP 50-10-28-26833) with commemorative signage that acknowledges historic and cultural significance at each of the three trail locations (Note: SIHP 50-10-28-26833 is located in the southern corridor study area). The proposed text for the signage will be included in the archaeological mitigation plan.

### **Southern Corridor Survey Area**

Findings from CSH's "KEALAKEHE 1" AIS indicate that 10 historic properties, including three burial sites (containing a total of four burials), would be affected by the APE in the southern portion of the proposed highway alignment from Puohulihuli Street to approximately 1,000 feet north of Palani Road (see Figure 3-5a and Table 3-3). The project-specific effect recommendation is "effect, with proposed mitigation commitments." Recommended mitigation measures, subject to SHPD approval, include the preparation of a Burial Treatment Plan in accordance with HAR 13-300-33 and in consultation with SHPD, Hawai'i Island Burial Council, and any recognized lineal and cultural descendants. In addition, an archaeological monitoring plan will be approved by SHPD prior to any groundbreaking activities. Monitoring provisions should include on-site and on-call monitoring, with on-site monitoring primarily focused on the immediate vicinity of SIHP 50-10-28-26836, a complicated area of braided lava tubes used for temporary habitation and burial. The possibility of as yet unidentified historic properties is suggested to be substantially higher in the immediate vicinity of this site, as lava tube entrances may have been deliberately well-concealed and/or obscured by thick vegetation.

Based on the results of PLI's AIS performed for the southern-most portion of the proposed highway, 16 historic properties would be affected by the APE (see Figure 3-5b and Table 3-3). Potential adverse effects would be mitigated with a combined approach of (1) conducting data recovery excavations within selected sites and features, and (2) developing the Archaeological/Historic Preserve Area into an interpretive preserve. Recommended mitigation measures also include data recovery, subject to SHPD approval, and an archaeological monitoring plan to be approved by SHPD prior to any groundbreaking activities.

Findings from CSH's "KEAHUOLU 5" AIS indicate that 11 historic properties would be affected by the APE for the proposed Palani Road widening (see Figure 3-5c and Table 3-3). The project-specific effect recommendation is "effect, with proposed mitigation commitments." Table 3-3 indicates the recommended mitigation

treatment for each of the historic properties identified, which would reduce or eliminate any potential adverse effects to these historic properties.

In the case of the Kuakini Wall (SIHP 50-10-27-06302 [14235]), data recovery and preservation in the form of avoidance and protection is recommended for this linear feature that extends south beyond the project area. However, removal of a portion (no more than 10 meters) of the Kuakini Wall near Palani Road, at the existing breach, may occur with mitigation without significantly detracting from the integrity of the historic property.

Based on input provided during consultations with SHPD, Native Hawaiian organizations including the State OHA, and individuals expressing interest in the Kuakini Wall, appropriate mitigation measures for adverse effects to the Kuakini Wall have been developed. These design elements are made part of the Proposed Action and will be stipulated in a MOA resulting from the NHPA Section 106 process. Stipulations in the Draft MOA (see Appendix G) include the following:

- Data recovery of the section of the wall to be removed in accordance with an approved data recovery plan;
- Monitoring during wall removal;
- Detailed recording of the cross-section exposed during removal;
- Careful stabilization of the end of the intact wall to ensure that it does not further deteriorate;
- Conservation of the removed stones for use in maintenance and stabilization of damaged portions of the wall;
- Documentation of data recovery and monitoring results in appropriate reports;
- Short- and long-term preservation measures to safeguard the site during project construction and subsequent uses of the area;
- Data recovery, monitoring, and preservation plans could be combined into one mitigation plan which will provide details on the implementation of maintenance and stabilization of damaged portions of the wall; and
- Recognition of this historic wall with commemorative signage that acknowledges historic and cultural significance to be located on the south side of Palani Road. The proposed text for the signage will be included in the archaeological mitigation plan.

In the former quarry and access road, no historic properties were identified. Consequently, the project-specific effect recommendation from CSH's "KEAHUOLU 6" AIS is "no historic properties affected." No historic preservation mitigation measures are recommended and no further archaeological work is warranted. In

the unlikely event that intact cultural resources are encountered during the course of development activities, all work in the immediate area should be stopped and SHPD should be promptly notified.

## Summary

With mitigation for the historic properties (identified under the NHPA Section 106 process) and appropriate treatment for burial sites (identified as required under HAR 13-300) that are designed into the Proposed Action, no substantial impacts on historic properties and burial sites would occur. Reasons for this determination are as follows:

- The Proposed Action is anticipated to primarily result in effects on historic properties that are recommended significant for their information content only. With the implementation of data recovery as specified by a data recovery plan approved by SHPD, these effects can be mitigated.
- For the four sites recommended for preservation, they would be addressed as follows:
  - **Three burial sites (SIHP 50-10-28-13387; SIHP 50-10-28-26831; and SIHP 50-10-28-28836) containing four burials.** A burial treatment plan will be developed in consultation with SHPD, Hawai'i Island Burial Council, and any recognized lineal and cultural descendants.
  - **The Great Wall of Kuakini (SIHP 50-10-27-06302 [14235]).** Data recovery and preservation in the form of avoidance and protection is recommended for this linear feature that extends south beyond the project area. However, removal of a portion (no more than 10 meters) of the wall near Palani Road, at the existing breach, may occur with mitigation without significantly detracting from the integrity of the historic property. As a result of input provided during the consultation process, mitigation identified in the Draft MOA includes the following: (1) data recovery of the section of the wall to be removed in accordance with an approved data recovery plan; (2) monitoring during wall removal; (3) detailed recording of the cross-section exposed during removal; (4) careful stabilization of the end of the intact wall to ensure that it does not further deteriorate; (5) conservation of the removed stones for use in maintenance and stabilization of damaged portions of the wall; (6) documentation of data recovery and monitoring results in appropriate reports; (7) short- and long-term preservation measures to safeguard the site during project construction and subsequent uses of the area; (8) data recovery, monitoring, and preservation plans could be combined into one mitigation plan which will provide details on the implementation

of maintenance and stabilization of damaged portions of the wall; and (9) recognition of this historic wall with commemorative signage that acknowledges historic and cultural significance to be located on the south side of Palani Road (the proposed text for the signage will be included in the archaeological mitigation plan).

- Intact Section 1 of the mauka-makai trail (SIHP 50-10-27-18099) is not recommended for preservation; however, because this is only part of the mauka-makai trail and other intact sections outside of the APE are recommended for preservation, organizations expressing interest in the mauka-makai trail were consulted. As a result of input provided during the consultation process, mitigation identified in the Draft MOA includes the following: (1) provisions for a 10-foot-wide pedestrian crossing shall be provided for future use when a management plan for this mauka-makai trail can be implemented with the adjacent landowners (the preferred location for this crosswalk is over the existing trail, but the actual location shall be dependent upon future plans for the nearby roadway intersection and public safety), and (2) recognition of this historic trail with commemorative signage that acknowledges historic and cultural significance at the trail location (the proposed text for the signage will be included in the archaeological mitigation plan).
- An archaeological monitoring plan will be prepared for SHPD approval prior to any groundbreaking activities.

In accordance with Section 106 of the NHPA and its implementing regulations, 36 CFR Part 800 (refer to Section 5.1.1.1 for details of the NHPA), the Federal Highway Administration (FHWA) consulted with the Advisory Council on Historic Preservation (ACHP), the Hawai'i State Historic Preservation Officer (SHPO), Native Hawaiian organizations, and other consulting parties concerning this Proposed Action and its potential effect on historic properties. Based on the findings and recommendations of the AIS reports and the NHPA Section 106 consultation process, FHWA has made a determination of "adverse effect" on historic properties. Stipulations to mitigate adverse effects will be identified in a MOA between FHWA and the Hawai'i SHPO. Documentation of NHPA Section 106 consultations and correspondence and a copy of the Draft MOA are provided in Appendix G.

No impacts to historic properties or burial sites would occur under the No Action Alternative.

### **3.4.2 TRADITIONAL CULTURAL PRACTICES**

Two cultural impact assessments (CIAs) were conducted as part of this EA to provide coverage for the project area. CSH conducted the CIA for the area

potentially affected by the northern portion of the proposed highway,<sup>16</sup> while PHRI conducted the CIA for the area potentially affected by the southern portion of the proposed highway and the proposed Palani Road widening.<sup>17</sup> The CIA reports are provided in Appendix B.

The purpose of a CIA is to comply with the requirements of HRS Chapter 343, as amended by House Bill (H.B.) No. 2895 H.D. 1 of the Hawai'i State Legislature (2000) and approved by the Governor as *Act 50* on April 26, 2000. Among other things, Act 50 requires that EAs identify and assess the potential effects of any proposed project upon the "cultural practices of the community and State." HRS Chapter 343 was amended by the Hawai'i State Legislature because of the perceived need to assure that the environmental review process explicitly addressed the potential effects of any proposed project upon "Hawai'i's culture, and traditional and customary rights." Guidelines previously prepared and adopted by the State of Hawai'i Office of Environmental Quality Control (OEQC) (1997) provide compliance guidance. Both *Act 50* and the *OEQC Guidelines for Assessing Cultural Impacts* mandate consideration of all the different groups comprising the multi-ethnic community of Hawai'i. This inclusiveness, however, is generally understated, and the emphasis, intent, and evolution of both the legislative action and the guidelines are clearly meant to be primarily upon aspects of Native Hawaiian culture, particularly traditional and customary access and use rights.

### 3.4.2.1 Affected Environment

#### Northern Corridor Survey Area

CSH conducted a CIA of the area affected by the northern-most third of the proposed highway (within the Kaloko and Honokohau ahupua'a). The CIA also addressed the potential cumulative impacts of the entire Proposed Action. The results of the CIA are summarized as follows:

- Native Hawaiian organizations, agencies, and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area.
- Background research and community consultation yielded historic and cultural history aspects of the project area, including oral histories, trails, and plant resources. For example, the project area is associated with specific mo'olelo (oral histories) concerning various chiefs, legends, and spirits in the region.

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<sup>16</sup> Magat et al. *Cultural Impact Assessment for a Portion of the Proposed Ane Keohokalole Highway (Mauka and Makai Alternatives)*. April 2009.

<sup>17</sup> Wong Smith. *Cultural Impact Assessment Study*. August 2009.

- Based on consultation with the participants in the CIA, care should be taken to protect and preserve cultural and historic properties (e.g., puakini, ala, iliina), cultural and natural resources (e.g., medicinal and lei plants), and associated practices in and immediately adjacent to the project area that may be affected by the Proposed Action.
- The project area is likely to contain substantial additional subsurface deposits, as yet undiscovered and undocumented, associated with lava tubes and subterranean chambers, including burials and other sacred materials and features (e.g., water-collection devices).
- Project proponents should proactively develop a plan to avoid and preserve in place any burials discovered prior to or during proposed construction activities in order to respect the wishes of the project participants and families with long-established connections to the project area and to complete the project in a way that will ensure its cultural appropriateness, which will not be satisfied if iwi are relocated. Additionally, cultural monitoring during ground-disturbance activities and construction is advised.
- Offering the community the opportunity to review and comment on the CIA and findings would help to minimize potentially adverse effects of the Proposed Action on the Hawaiian cultural practices and resources in the project area.
- In a follow-up letter, dated April 14, 2009, NPS requested that SIHP 50-10-27-18099, a mauka-makai trail that extends across Queen Ka'ahumanu Highway to the south of Aimakapa Fishpond, be acknowledged as entering Kaloko-Honokohau National Historical Park. Because this trail connects the mauka lands of the ahupua'a to Kaloko-Honokohau National Historical Park, the NPS supports preservation of segments of the trail wherever possible. Communication with representative of NPS Ala Kahakai National Historic Trail and the State DLNR Na Ala Hele Trail & Access System's Hawai'i Island Office is also recommended.
- The community should have an opportunity to review the Proposed Action after the completion of relevant environmental and historic preservation studies and prior to the finalization and implementation of architectural and construction plans.
- Care should be taken to protect and preserve the natural and cultural resources identified in the CIA to minimize potentially adverse effects of the Proposed Action on the Native Hawaiian cultural resources, beliefs, and practices in the project area.

### **Southern Corridor Survey Area**

PHRI contracted a cultural resources specialist, Helen Wong Smith, to conduct a CIA for the area affected by the southern portion of the proposed highway and the

proposed Palani Road widening (within the Kealakehe and Keahuolu ahupua'a). Ms. Wong Smith developed a list of potential contacts with knowledge of and/or historical or family ties to the area. Using a questionnaire, face-to-face interviews and follow-up conversations by telephone were conducted with these individuals to gather information on the project area and its potential import to cultural history and practices. The results of the CIA are summarized as follows:

- Review of the information presented in this CIA – historical documentation, archaeological surveys and research, and oral reminiscences – revealed limited cultural sites in the project area.
- Contemporary or continuing cultural practices include gathering activities of ocean resources and specific plants from the 300-foot elevation seaward, makai of the proposed highway corridor.
- The Proposed Action would have limited impacts on Native Hawaiian cultural resources, beliefs, and practices, as the activities they embody take place outside of the project area.

#### **3.4.2.2 Potential Impacts**

No substantial impacts to Native Hawaiian cultural resources, beliefs, and practices would occur as a result of the Proposed Action. Based on information obtained from the CIAs and input from the NHPA Section 106 consultation process, project plans and designs are being prepared to respect Native Hawaiian concerns and culture, and will reflect sensitivity to cultural histories, practices, materials, and remains. The MOA resulting from the NHPA Section 106 process is one such example (see Appendix G).

No impacts to Native Hawaiian cultural resources, beliefs, and practices would occur under the No Action Alternative.

### **3.5 FLORA AND FAUNA**

Separate biological studies of flora and fauna were conducted for the proposed highway corridor. A single combined biological study of flora and fauna was conducted for the proposed Palani Road widening. The biological study reports are provided in Appendix C.

#### **3.5.1 TERRESTRIAL FLORA**

A botanical field survey was conducted by Isle Botanica for the southern portion of the proposed highway alignment and for the northern Mauka Alternative

alignment.<sup>18</sup> A supplemental botanical field survey was conducted for the northern Makai Alternative (Proposed Action) alignment.<sup>19</sup> The objectives of the field surveys were to provide a general description of the vegetation types present in the project area (particularly any habitat that may harbor rare plant species), to make a checklist of all native and naturalized vascular plants found, and to search for threatened and endangered species on or in the immediate vicinity of the proposed highway corridor. In addition, Isle Botanica conducted a survey to delineate the boundaries of the dryland forest in the vicinity of the northern end of the proposed highway.<sup>20</sup>

A biological survey was conducted by Rana Productions, Ltd. for the proposed Palani Road widening.<sup>21</sup> The purpose of the botanical part of the survey was to assess the flora of the survey area and address concerns raised by the U.S. Fish and Wildlife Service (USFWS) in its Technical Assistance letter dated March 13, 2009. USFWS concerns included the possible occurrence of tree tobacco (*Nicotia glauca*), one of the secondary host plants that is occasionally used by the endangered Blackburn's sphinx moth (*Manduca blackburni*).

The botanical survey reports are provided in Appendix C. Findings of these reports are summarized below.

### 3.5.1.1 Affected Environment

#### Northern Corridor Botanical Survey Results

The northern corridor survey area (Figure 3-6a) extends along the proposed highway corridor from Hina Lani Street to the existing paved portion of Ane Keohokalole Highway just south of the property owned by McClean. The Mauka Alternative alignment was studied by Isle Botanica in their original botanical survey, but because of concerns for historic properties and native dryland forest, a supplemental botanical survey was prepared for the proposed Makai Alternative alignment. The results of Isle Botanica's supplemental botanical survey for the proposed Makai Alternative alignment are as follows:

- The survey area is covered with 'a'a and pahoehoe lava flows of various ages. Most of the survey area has been highly disturbed in the past and is dominated by scrubby vegetation composed mostly of alien species. In the vicinity of the northern end of the proposed highway, however, there is an

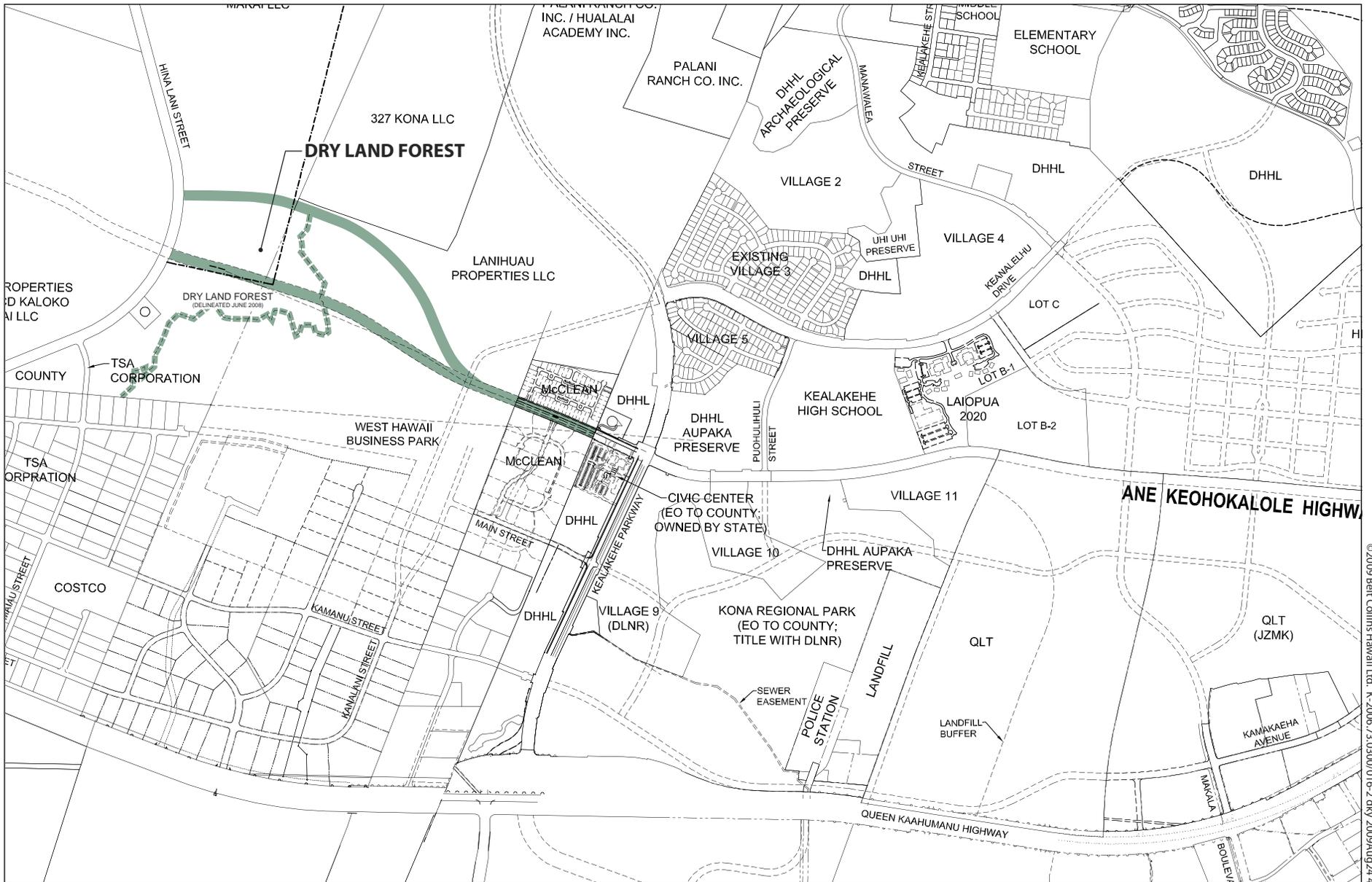
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<sup>18</sup> Whistler. *Botanical Survey of the proposed Ane Keohokalole Highway extension between Palani Road and Hina Lani Street*. April 2008.

<sup>19</sup> Whistler. *Botanical Survey of the revised route of the proposed Ane Keohokalole Highway extension between Kealakehe Parkway and Hina Lani Street*. September 2008.

<sup>20</sup> Whistler. *Kaloko Dryland Forest Boundary Report*. June 13, 2008.

<sup>21</sup> David. *Biological Surveys for the Proposed Palani Road Widening Project*. April 28, 2009.



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**Figure 3-6a**  
**NORTHERN BOTANICAL SURVEY AREA**

Ane Keohokalole Mid-Level Highway Project  
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area of native dryland forest on rough 'a'a lava that is home to a number of native species, including the federally listed endangered plant species hala pepe (*Pleomele hawaiiensis*), uhiuhi (*Caesalpinia kavaiensis*), 'aiea (*Nothoctrum breviflorum*), ma'oloa (*Neraudia ovata*), and *Cyperus fauriei*, but none of these endangered plant species were recorded within the survey area during the present study.

- Three kinds of vegetation were identified in the survey area: (1) Managed Land Vegetation; (2) Koa Haole Scrub, the major type of vegetation present at the survey area, which is dominated by the alien tree or shrub koa haole (*Leucaena leucocephala*) and a few other much less common species in a matrix of fountain grass (*Pennisetum setaceum*); and (3) Dryland Forest found on the 'a'a lava flow. Only the latter is classified as a native plant community. No wetlands or any other type of sensitive vegetation are present within the survey area.
- A total of 53 plant species was recorded in the survey area. Eighteen (18) of these plant species are native (seven endemic species and 11 indigenous species), but none are federally listed as threatened or endangered species. Although several federally listed endangered plant species have been previously recorded in the general vicinity, none were found within the survey area during the present study.
- The Hawai'i Natural Heritage Program database map of federally listed plant species indicates several endangered species that have been previously recorded in the general vicinity of the survey area. The tree uhiuhi (*Caesalpinia kavaiensis*) was recorded outside of the survey area and is believed to have disappeared from the area. A zone of hala pepe (*Pleomele hawaiiensis*) is shown to the east (upslope) of the survey area, but no individuals were recorded during the present study as the whole population is found only at higher elevations. 'Aiea (*Nothoctrum breviflorum*), ma'oloa (*Neraudia ovata*), and *Cyperus fauriei* were also recorded in the general vicinity, but have not been seen in recent years and are believed to have disappeared from the remnant dryland forest.

The Hawai'i Natural Heritage Program database map also indicates a zone of the endemic ko'oko'olau (*Bidens micrantha* ssp. *ctenophylla*) that appears to overlap the survey area. As a candidate species for federal listing as threatened or endangered, ko'oko'olau has no official protected status and is not uncommon in this area northeast of Kailua-Kona.

### **Dryland Forest Delineation**

Isle Botanica conducted a dryland forest delineation in the vicinity of the northern end of the proposed highway. The survey area comprised the western portion of what is referred to as the Kaloko dryland forest, located in the North Kona district, north of Kona Town and mauka of Queen Ka'ahumanu Highway and the Kaloko

Light Industrial Subdivision. Hawaiian dryland forest is classified as a sensitive type of vegetation because nearly all of it has been cleared for development, grazing land, and agriculture over the last thousand years.

The Kaloko dryland forest is important as it includes four federally listed endangered plant species. One of these endangered species, hala pepe (*Pleomele hawaiiensis*), was recorded in the dryland forest during a 2006 survey.<sup>22</sup> Twenty-four individuals were recorded then, but all of these are located east (upslope) from the present survey area. Kaloko represents one of only two known populations of hala pepe that are successfully regenerating. The other three endangered species, 'aiea (*Nothoestrum breviflorum*), ma'oloa (*Neraudia ovata*), and *Cyperus fauriei* were not found during the 2006 survey, and all are thought to have disappeared from this remnant forest. These latter three were last recorded near the midline of the Mauka Alternative alignment. Another species that is a candidate for federal listing as threatened or endangered is ko'oko'olau (*Bidens micrantha* ssp. *ctenophylla*). Ko'oko'olau is fairly common at the present survey area; it has no official status and is not uncommon in this area of the North Kona district.

The Kaloko dryland forest is an open, relatively intact native forest. The most common trees are the native species 'ohi'a lehua (*Metrosideros polymorpha*), lama (*Diospyros sandwicensis*), 'alahe'e (*Psydrax odoratum*), pua pilo (*Capparis sandwichiana*), and mamane (*Sophora chrysophylla*). The native trees or shrubs 'ohe (*Reynoldsia sandwicensis*), naio (*Myoporum sandwicensis*), and 'a'ali'i (*Dodonaea viscosa*) are also present, but are less common than the formerly mentioned species. The only alien tree species noted in the dryland forest are the Polynesian introduction noni (*Morinda citrifolia*), Christmas berry (*Schinus terebinthifolius*), and koa haole.

The southern boundary of the Kaloko dryland forest has recently been bulldozed in quarry activities, and fountain grass is spreading in the newly disturbed habitat. The ground cover in the makai edge of the dryland forest is very sparse due to the increasingly inhospitable growing conditions proceeding downslope. The most common species in this category are lantana (*Lantana camara*), the native vines huehue (*Cocculus trilobus*) and kowali 'awa (*Ipomoea indica*), fountain grass, and hairy swordfern (*Nephrolepis multiflorum*).

Because of the gradual thinning of the dryland forest towards the west (downslope), there is no hard-and-fast line that can be called the western (lower) boundary of the Kaloko dryland forest. Different biologists provide different opinions. From a botanical point of view, Dr. Art Whistler believes a logical solution is to make the western (lower) boundary the unpaved road that leads from Hina Lani Street just west of the water tank across the nearly barren 'a'a flow to a construction/rock

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<sup>22</sup> Whistler. *Botanical survey of Kaloko Properties, North Kona, Island of Hawai'i*. 2006.

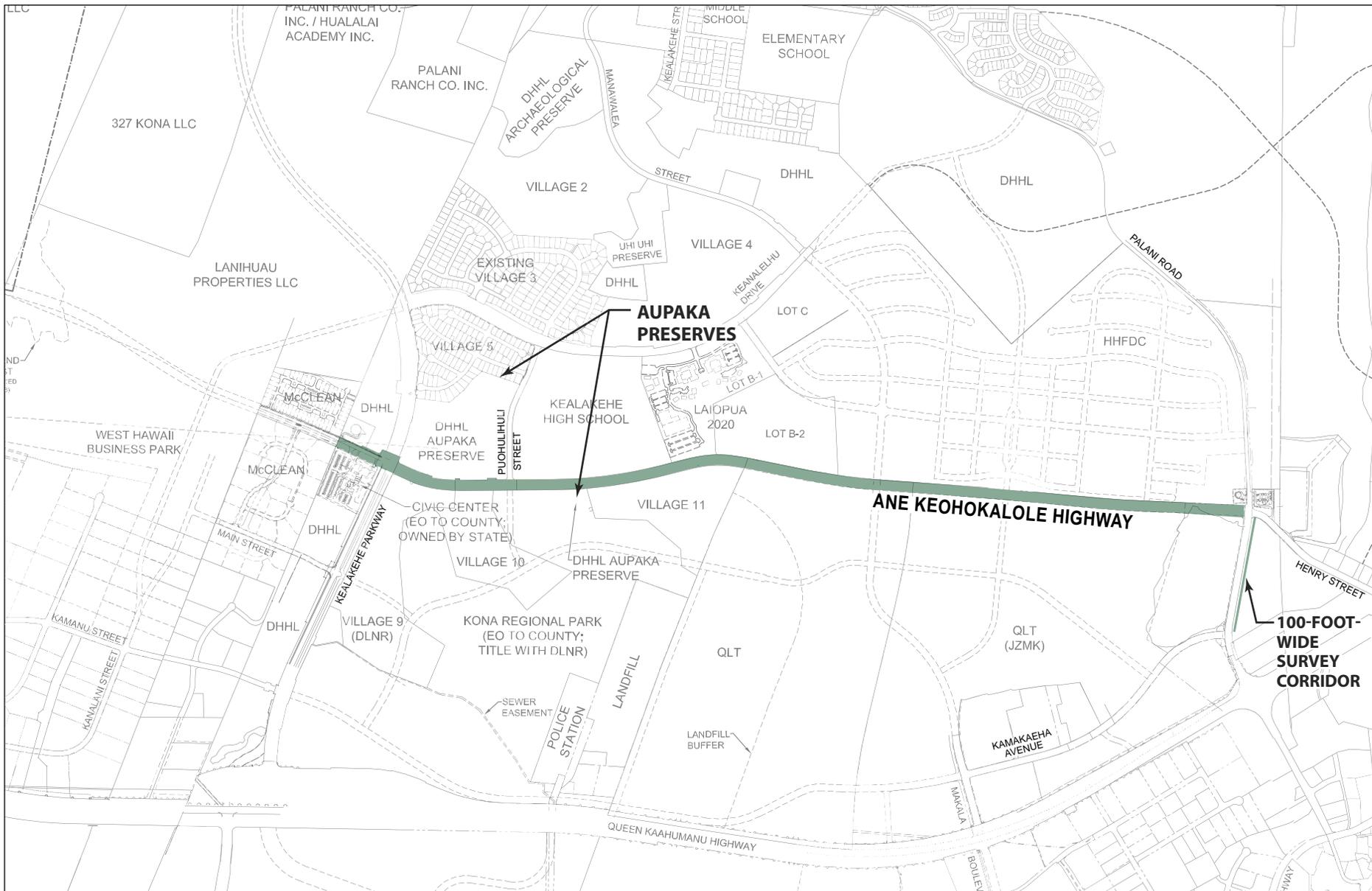
crushing site (see Figure 3-6a), as west of this unpaved road only scattered trees occur (about half of them alien species and half native species).

### **Southern Corridor Botanical Survey Results**

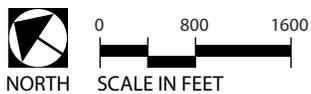
The southern corridor survey area (Figure 3-6b) extends along the proposed highway corridor from the existing paved portion of Ane Keohokalole Highway to Palani Road (covered by Isle Botanica's botanical survey), and also includes a 100-foot-wide corridor along the south side of Palani Road from Henry Street to Kamaka'eha Avenue (covered by Rana Productions, Ltd.'s biological survey).

The results of Isle Botanica's botanical survey for the proposed highway corridor from the existing paved portion of Ane Keohokalole Highway to Palani Road are as follows:

- The survey area is covered with 'a'a and pahoehoe lava flows of various ages. The vegetation has been highly disturbed in the past and is dominated by scrub vegetation composed mostly of alien species. In the vicinity of Kealakehe High School, however, there are areas of rough 'a'a lava where native species dominate, including the federally listed endangered plant species hala pepe (*Pleomele hawaiiensis*), uhiuhi (*Caesalpinia kawaiiensis*), aupaka (*Isodendron pyriform*), 'aiea (*Nothoestrum breviflorum*), ma'oloa (*Neraudia ovata*), and *Cyperus fauriei*, but none of these endangered plant species were recorded within the survey area during the present study. Two areas adjacent to the survey area (north and west of Kealakehe High School) have been designated as aupaka preserves.
- Four main kinds of vegetation predominate the survey area: (1) Managed Land Vegetation; (2) Prosopis Woodland; (3) Koa Haole Scrub, the major type of vegetation present in the survey area; and (4) Remnant Dryland Forest, found on the 'a'a lava flow of the aupaka preserve. Only the latter is classified as a native plant community. No wetlands are present within the survey area.
- A total of 68 plant species were recorded in the survey area. Sixteen (16) of these plant species are native (11 indigenous species and five endemic species), but none are federally listed as threatened or endangered species. Although several federally listed endangered plant species have been previously recorded in the general vicinity, none were found within the survey area during the present study.
- The Hawai'i Natural Heritage Program database map indicates a zone of the federally listed endangered tree uhiuhi (*Caesalpinia kawaiiensis*) that appears to overlap the survey area, but this tree was not recorded in the survey area during the present study, nor has it specifically been reported in previous studies. Currently, fewer than 50 reproductive individuals are



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**Figure 3-6b**  
**SOUTHERN BOTANICAL SURVEY AREA**

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known. An uhiuhi preserve of 11.2 acres located east of Kealakehe High School has been set aside for their protection.

- The Hawai'i Natural Heritage Program database map indicates three other federally listed threatened or endangered species that have been previously recorded in the general vicinity of the survey area: hala pepe (*Pleomele hawaiiensis*), 'aiea (*Nothoestrum breviflorum*), and aupaka (*Isodendron pyrifolium*). Hala pepe has populations in the Kaloko to Kona area (USFWS 1995), but the single record of its presence just northwest of Kealakehe High School is probably in error, or the tree has long since died. 'Aiea was formerly recorded in the aupaka preserve, but has not been located in recent years. Two individuals of aupaka have been reported from the aupaka preserve, but apparently only one of those is alive today. This living aupaka is found outside the proposed highway corridor in a newly-created 3.2-acre aupaka preserve located makai of the proposed highway, across from Kealakehe High School.

The 100-foot-wide corridor along the south side of Palani Road surveyed by Rana Productions, Ltd. is undeveloped, with very dense vegetation, many foot trails, and one large homeless campsite. The vegetation is dominated by alien species, almost to the exclusion of native species, and can be best characterized as being Guinea Grass/Koa Haole grassland. No federal- or state-listed threatened, endangered, or candidate species were recorded in the survey area. In addition, no tree tobacco plants (secondary host plants occasionally used by the endangered Blackburn's sphinx moth) of USFWS concern were found in the survey area.

### 3.5.1.2 Potential Impacts

No substantial impacts to terrestrial flora would occur as a result of the Proposed Action. No federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial flora have been identified in the project area. Although several federally listed endangered plant species have been previously recorded in the general vicinity, none were found within the survey areas during the present studies. The survey areas have been highly disturbed in the past and are dominated by scrubby vegetation composed mostly of alien species.

A dryland forest habitat, which is becoming increasingly uncommon, was identified in the vicinity of the northern end of the proposed highway. The quality of the remaining habitat is considered poor due to the encroachment of the alien species fountain grass, which is an aggressive invader that suppresses the native vegetation and fuels dangerous wildfires that have proved devastating to native species.<sup>23</sup> The realignment of the corridor under the Proposed Action (i.e., Makai Alternative alignment) avoids the majority of the dryland forest and routes the

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<sup>23</sup> Personal Communication with Reginald David, Rana Productions. November 6, 2008.

highway corridor through the drier, more sparsely vegetated portion. This will minimize impacts on the remaining dryland forest area to the maximum extent practicable.

Disturbance to the existing soils and vegetation will be kept to a minimum, preserving as much vegetation as possible. Appropriate protection measures will be implemented should any endangered flora be unexpectedly encountered during construction of the Proposed Action. Native plant species will be considered for landscaping within the proposed highway corridor where feasible.

No impacts to terrestrial flora would occur under the No Action Alternative.

## 3.5.2 TERRESTRIAL MAMMALS AND BIRDS

### 3.5.2.1 Affected Environment

An avian and terrestrial mammalian species survey was conducted by Rana Productions, Ltd. for the proposed highway corridor from Hina Lani Street to Palani Road.<sup>24</sup> The purpose of the survey was to determine if there were any federal- or state-listed threatened, endangered, or candidate species of birds or mammals on or in the immediate vicinity of the proposed highway corridor.

A biological survey was conducted by Rana Productions, Ltd. for a 100-foot-wide corridor along the south side of Palani Road from Henry Street to Kamaka'eha Avenue.<sup>25</sup> The purpose of the avian and terrestrial mammalian species parts of the survey was to assess the fauna of the survey area and address concerns raised by USFWS in their Technical Assistance letter dated March 13, 2009. USFWS concerns included the possible occurrence of endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*) and Hawaiian hawks (*Buteo solitarius*) in the survey area next to Palani Road.

The avian and terrestrial mammalian species survey reports are provided in Appendix C. Findings of these reports are summarized below.

The results of Rana Productions, Ltd.'s avian and terrestrial mammalian species survey for the proposed highway corridor from Hina Lani Street to Palani Road are summarized as follows:

- The terrain is extremely rugged. The bulk of the proposed highway corridor is dominated by alien vegetation. This dominant vegetation can be best

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<sup>24</sup> David. *Surveys of Avian and Terrestrial Mammalian Species for the Proposed Ane Keohokalole Highway*. Revised November 14, 2008.

<sup>25</sup> David. *Biological Surveys for the Proposed Palani Road Widening Project*. April 28, 2009.

characterized as a Fountain Grass/Koa Haole Grassland subtype of a Lowland Dry Grassland. The vegetation present on the oldest 'a'a flows (not covered by newer flows) located close to the northern terminus of the proposed highway along Hina Lani Street still supports numerous native plants, including several that are uncommon or have limited distributions.

- A total of 333 individual birds of 18 different species, representing 12 separate families, were recorded during station counts. One of the species recorded, the Pacific golden plover (*Pluvialis fulva*), is an indigenous migratory shorebird that nests in the high Arctic, returning to Hawai'i and the tropical Pacific to spend the fall and winter months each year. The remaining 17 species detected are considered to be alien to the Hawaiian islands.
- Although not detected during the survey, it is possible that small numbers of Hawaiian petrels (*Pterodroma sandwichensis*) and Newell's shearwaters (*Puffinus auricularis newelli*) over-fly the project area between May and November.
- No federal- or state-listed threatened, endangered, or candidate avian species were detected during the course of the survey.
- No mammalian species were seen during the course of the survey. The skeletal remains of a feral sheep (*Ovis aries*) were encountered, as was scat and sign of small Indian mongoose (*Herpestes a. auropunctatus*), cat (*Felis catus*), goat (*Capra h. hircus*), and dog (*Canis f. familiaris*).
- Hawai'i's sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, was not detected during the course of the survey. All of the alien mammalian species recorded during this survey are deleterious to avian and floral components of the remaining native ecosystems present on the island.

The results of Rana Productions, Ltd.'s biological survey for a 100-foot-wide corridor along the south side of Palani Road from Henry Street to Kamaka'eha Avenue are as follows:

- The vegetation on the site is dominated almost to the exclusion of native species by alien species. The vegetation present can be best characterized as being Guinea Grass (*Panicum maximum*)/Koa Haole grassland, populated by several other plant species that are typical colonizers of disturbed land, such as fountain grass.
- No tree tobacco plants were found during the survey.
- A total of 57 individual birds of 17 different species were recorded. All 15 species are considered alien to the Hawaiian Islands. No avian species currently listed as endangered, threatened, or proposed for listing under either the federal or the State of Hawai'i's endangered species programs were detected during the survey, including the Hawaiian hawk.

- Although not detected during the survey, it is possible that small numbers of Hawaiian petrel and Newell's shearwater over-fly the project area between the months of May and November.
- Two mammalian species, cat and small Indian mongoose, were observed during the survey. Dogs were also heard barking nearby. Although not observed, it is probable that several species of alien rodents (rats) can also be found in the project area.
- The endangered Hawaiian hoary bat was not detected during the course of the survey, although it is probable that bats do occasionally fly through and use resources within the general project area.

### 3.5.2.2 Potential Impacts

No substantial impacts to terrestrial fauna or avifauna would occur as a result of the Proposed Action. No federal- or state-listed threatened or endangered species, or critical habitat, of terrestrial mammals or birds were identified in the project area, and modification of habitat in the project area is not expected to result in substantial impacts to any listed species.

Measures to prevent nocturnally flying birds, such as Hawaiian petrels and Newell's shearwaters, from colliding with lighting infrastructure include complying with the County of Hawai'i Outdoor Lighting Ordinance (Hawai'i County Code §14-50 *et seq.*), which requires the shielding of exterior lights so as to lower ambient glare. As a precaution to avoid impacts to Hawaiian hoary bats during the period when the females are carrying young pups, it is recommended that clearing of dense vegetation along Palani Road not occur during the two months when this species is at the most risk from disturbance, namely between June and July.

FHWA consulted with USFWS under Section 7 of the Endangered Species Act (ESA) regarding potential impacts of the Proposed Action to Blackburn's sphinx's moth (*Manduca blackburni*), Hawaiian Hawk (*Buteo solitarius*), Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus auricularis newelli*), and the Hawaiian hoary bat (*Lasiurus cinereus semotus*). The petrel and bat are listed as endangered species and the shearwater as a threatened species. In a letter dated August 24, 2009, USFWS concurred with FHWA's determination that the Proposed Action is not likely to adversely affect any listed species known from the island of Hawai'i (ESA Section 7 correspondence is provided in Appendix I). To minimize potential effects, the following will be incorporated into the Proposed Action:

- If nighttime work will be required in conjunction with the development of the project, all lights will be shielded to reduce the potential for interactions of

nocturnally flying Hawaiian Petrels and Newell's Shearwaters with external lights and man-made structures.

- During the construction phase of the project, any lighting necessary to conduct nighttime activities will be shielded and or directed at the ground.
- No nighttime construction will occur during the peak seabird fallout period, namely between September 15 and December 15 annually.
- Any streetlights that are installed as part of this action will be shielded. This measure would serve the dual purpose of minimizing the threat of disorientation and downing of Hawaiian Petrels and Newell's Shearwaters, while at the same time complying with the Hawaii County Code §14 – 50 *et seq.* which requires the shielding of exterior lights so as to lower the ambient glare caused by unshielded lighting to the astronomical observatories located on Mauna Kea.
- To minimize potential impacts to Hawaiian hoary bats, woody vegetation taller than 15 feet (4.6 meters) high will not be cleared between April 15 and August 15 each year.

No impacts to terrestrial fauna or avifauna would occur under the No Action Alternative.

## 3.6 GEOLOGY, TOPOGRAPHY, AND SOILS

### 3.6.1 AFFECTED ENVIRONMENT

The project area consists of approximately 55 acres extending northward from Palani Road to Hina Lani Street. Situated on the western slope of Hualalai Volcano, the project area is composed of prehistoric lava flows estimated to be from 3,000 to 5,000 years old. Hualalai Volcano shaped the landscape of North Kona. Its most recent flow (1800-1801) and earlier flows have created a harsh landscape that slopes steadily towards the sea. Multiple flows of differing ages overlap each other creating a layered landscape with lava colors reflecting differences in age, chemical composition, and state of weathering. Hualalai Volcano has been dormant since 1801, but a series of earthquakes in 1929 and other seismic activity indicate its most recent eruptive phase may not have concluded.<sup>26</sup> The geomorphology of the project area consists of multiple interbedded pahoehoe and 'a'a flows. Pahoehoe flows harden and form a smooth, ropey surface, while 'a'a flows harden as a rough, jagged surface. Both lavas contain buried voids: pockets, blisters, and extensive lava tubes and tunnels that form as the molten rock cools and residual lava drains beneath the solidified surface. Many of these lava tubes and voids have been found

<sup>26</sup> Juvik and Juvik. *Atlas of Hawai'i 3<sup>rd</sup> Edition*. 1998.

in the general vicinity. The thin roofs of lava tubes can collapse when placed under additional weight.

### **Soils**

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) classifies the soils in the project area as 'A'a Lava Flows (rLV), Pahoehoe Lava Flows (rLW), Kaimu extremely stony peat (rKED), and Punalu'u extremely rocky peat (rPYD). Both Kaimu series and Punalu'u series consist of well-drained, thin organic soils that have developed over 'a'a lava and pahoehoe lava bedrock, respectively. These soils, found on uplands, have rapid permeability, slow run-off, and a slight erosion hazard. The bare 'a'a lava flows and bare pahoehoe lava flows dominate the project area (Figure 3-7).

### **Agricultural Potential**

The project area has poor agronomic conditions. Soils are extremely rocky, rainfall is low, and water is not available for crop farming. There are no existing irrigation improvements. No agricultural activities are currently taking place in the project area.

### **Topography**

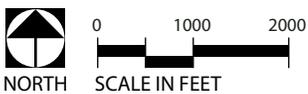
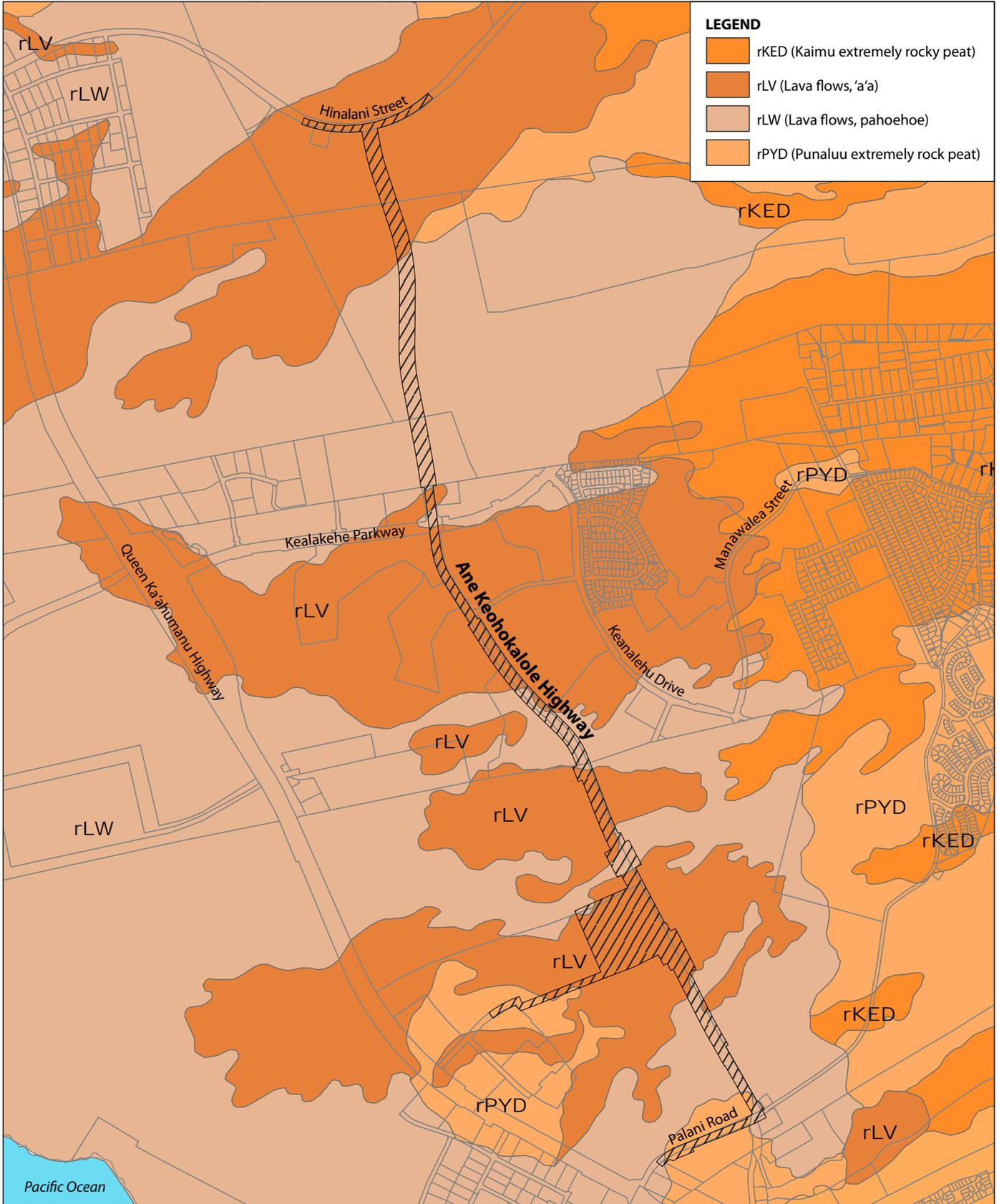
The project area slopes in an east to west (mauka to makai) direction, with a cross-slope of approximately three percent. The elevation of the corridor ranges between 300 and 425 feet above mean sea level (msl). The southern portion of the proposed highway corridor would be located at approximately 300 feet above msl, and the northern extent would be located at approximately 425 feet above msl.

## **3.6.2 POTENTIAL IMPACTS**

No substantial impacts to geology, topography, or soils would occur as a result of the Proposed Action. The Proposed Action would involve site clearing, grubbing, and grading work, resulting in the disturbance of soil and ground cover. A description of this work is contained in the geotechnical engineering exploration evaluation report, which is provided in Appendix D.<sup>27</sup> Soils present in the project area have been classified as predominately poor, low quality, and extremely rocky. Due to the relatively level topography of the project site, changes in topography are expected to be relatively minor, although some localized areas may require cuts and fills of up to about 25 feet in height. Construction activities will be conducted in

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<sup>27</sup> Geolabs, Inc. *Geotechnical Engineering Exploration Ane Keohokalole Highway Kailua-Kona, North Kona, Hawaii*. January 26, 2009.



**Figure 3-7**  
**SOIL TYPES**

Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

compliance with the erosion control requirements of county, state, and federal regulations.

Potential short-term impacts associated with the construction of the Proposed Action may occur during grading activities which would disturb the project area and potentially cause soil erosion. Compliance with the Hawai'i County Code, Chapter 10 – Erosion and Sedimentation Control, the Department of Public Works (DPW) Storm Drainage Standards, and the National Pollutant Discharge Elimination System (NPDES) permit will be required to control erosion and prevent discharge of sediment from the project area. Construction activities will include the implementation of Best Management Practices (BMPs) to control erosion and sedimentation from the project area. As a result of the regulatory requirements and implementation of BMPs, short-term impacts resulting from grading operations are not anticipated to be substantial and will be appropriately minimized.

No impacts to geology, topography, or soils would occur under the No Action Alternative.

## **3.7 SURFACE WATERS AND DRAINAGE**

### **3.7.1 AFFECTED ENVIRONMENT**

No surface water bodies exist in or surrounding the project area. The project site is located approximately 1.5 miles from the nearest receiving State waters, the Pacific Ocean, which is designated as Class AA marine waters offshore from the project area. It is the objective of Class AA marine waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions, and to the extent practicable, the wilderness character of these areas shall be protected (HAR 11-54-3).

There are no perennial streams, existing drainage facilities, or defined natural drainage ways in the project area, and no floodways or flood zones have been identified. The Proposed Action is located in Flood Zone X (moderate to low risk area) according to the Flood Insurance Rate Maps (FIRM).<sup>28</sup> The National Flood Insurance Program does not have any regulations for developments within Zone X. The high permeability of the existing soils is evident by the absence of any natural storm water channels or gullies in the project area.

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<sup>28</sup> Federal Emergency Management Agency (FEMA) Map Service Center. [www.fema.gov/hazard/flood/info.shtm](http://www.fema.gov/hazard/flood/info.shtm). Map ID 1551660684C, 1551660692C, 1551660703C, 1551660711C, and 1551660713D. Accessed February 19, 2009.

### **3.7.2 POTENTIAL IMPACTS**

No substantial impacts to surface waters or drainage would occur as a result of the Proposed Action. Construction will be carried out in accordance with NPDES permit requirements, including BMPs, and the Hawai'i County Code Chapter 10 – Erosion and Sedimentation Control requirements, to prevent the discharge of sediment and other pollutants from the project area into surface waters. The Pacific Ocean has been identified as the receiving State waters for discharges of storm water associated with construction activities. As the Pacific Ocean is classified as Class AA marine waters offshore from the project area, it has been determined that an NPDES individual permit will be required for the Proposed Action. An NPDES individual permit application will be submitted at least 180 calendar days before the start of construction activities.

As segments of the proposed highway are developed, drainage systems will be installed to collect and discharge runoff to the subsurface. The Proposed Action will be designed to comply with the County of Hawai'i's Storm Drainage Standards, such that runoff volumes and rates from the project area would not increase as a result of the Proposed Action. In addition, BMPs such as storm drain filtration devices and other physical and biological barriers to water-borne pollution will be implemented to minimize the impact of pollutants to groundwater (see Section 3.8, Groundwater and Hydrogeology, below).

No impacts to surface waters or drainage would occur under the No Action Alternative.

## **3.8 GROUNDWATER AND HYDROGEOLOGY**

### **3.8.1 AFFECTED ENVIRONMENT**

Kona's regional water resources are classified as three distinct reserve types: basal groundwater, brackish basal groundwater, and dike-impounded perched groundwater. The region's rainfall pattern is responsible for recharging the basal aquifer that extends from the upper slopes of Hualalai Volcano to the shoreline. Seawater intrusion at the shoreline results in the creation of brackish water. The extent of brackish water inland is highly variable within the Kona region and depends on the character of rainfall, specific terrain, and geologic formations. Dike-impounded perched groundwater may exist at higher elevations on Hualalai.

The project area is located in the Keauhou Aquifer System which is part of the Hualalai Aquifer Sector (80901).<sup>29</sup> The minimum average annual rainfall over this aquifer is 20 inches. Within about two miles of the coast the groundwater is basal and generally brackish, with high-level water occurring farther inland.<sup>30</sup>

The Proposed Action is located makai of the State DOH-established Underground Injection Control (UIC) line.<sup>31</sup> The UIC program was established to protect the quality of underground sources of drinking water from pollution by subsurface disposal of fluids.<sup>32</sup> The UIC line is the boundary between non-drinking water aquifers (generally seaward of the UIC line) and underground sources of drinking water (generally inland of the UIC line).

In general, because of the high permeability of the soil types within the project area, percolation of surface waters into the underlying soils is rapid, and the potential exists for rapid transport of pollutants in storm water through these soils to the groundwater. This is of particular concern to the NPS' Kaloko-Honokohau National Historical Park with respect to potential impacts on coastal anchialine ponds (brackish coastal ponds). Because anchialine ponds are hydrologically connected to the ocean and also fed by the groundwater aquifers, these ponds may be sensitive to changes in groundwater quality and quantity.

### 3.8.2 POTENTIAL IMPACTS

No substantial impacts to groundwater or hydrogeological resources would occur as a result of the Proposed Action. Due to NPS' concern over potential effects on down gradient anchialine ponds, bio-retention cells have been incorporated into the Proposed Action. The geological conditions of the project area make the use of traditional bioswales particularly challenging. Runoff would not normally linger in the swales long enough for normal pollutant removal to take place. For this reason, a carefully designed system has been developed for the Proposed Action, whereby runoff from the road surface will be diverted to bio-retention cells at intervals along its length. The bio-retention cells will capture and treat all runoff from the proposed highway to prevent pollutants from entering the groundwater during operational use of the proposed highway.

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<sup>29</sup> Mink and Lau. *Aquifer Identification and Classification for the Island of Hawaii: Groundwater Protection Strategy for Hawaii*. May 1993.

<sup>30</sup> *Ibid.*

<sup>31</sup> State DOH Underground Injection Control Map. *Island of Hawaii, Keahole Point Quadrangle Topographic Map*. 1982.

<sup>32</sup> HAR Title 11, Chapter 23. *Underground Injection Control*. November 12, 1992.

Figure 3-8 shows a typical bio-retention cell. These units will be sized to capture, retain, and treat the “first flush” of storm water runoff from the proposed highway. Each cell will be filled to a prescribed depth (18-24 inches is fairly typical, depending on the size of the cell and the amount of water to be treated) with amended soils specifically designed to retain the runoff for sufficient time to permit removal of the oils, solvents, and other contaminants that may be present in runoff from the proposed highway. These soils will be planted with native grasses (e.g., ‘aki’aki grass, *Sporobolus virginicus*; pili grass, *Heteropogon contortus*) and other plants to enhance the action of biological media in the soil and to protect the soils from erosion by water and wind.

Because of their demonstrated ability to treat urban runoff, the USEPA has identified bio-retention as “one of the most important BMP tools for the application of LID [Low-Impact Development] technology for controlling runoff volume and pollutants.”<sup>33</sup> Peer-reviewed scientific research has demonstrated the effectiveness of this approach to removing pollutants from runoff, including the pollutants typically found in runoff from roads such as oils, grease, and heavy metals. Bio-retention media have demonstrated the ability to capture 80-95% of oil, grease, total suspended solids, polycyclic aromatic hydrocarbons (PAHs), and metals; 70-85% of phosphorus; and 55-65% of total Kjeldahl nitrogen (TKN – the sum of total organic nitrogen).<sup>34, 35, 36</sup>

Because the local climate in Kona is prone to lengthy dry spells, some irrigation with reclaimed water will be necessary to keep these plants alive and maintain the viability of the cells. To minimize the need for irrigation, drought-tolerant plants will be selected, and the timing of irrigation will be scheduled such that it is not done during the heat of the day. The irrigation plan will comply with State DOH regulations including HAR 11-62-27 “Recycled Water Systems,” to minimize impacts to groundwater and associated ecosystems. These regulations require the submission of an irrigation use plan that includes information on application rates, intended uses and schedules for recycled water use. The irrigation use plan shall also include information on types of vegetation, types and methods of irrigation, proposed irrigation schedules, vegetative consumption rates, water balance calculations, nutrient balance calculations, and the corresponding acreage to be used for irrigation, among other requirements.

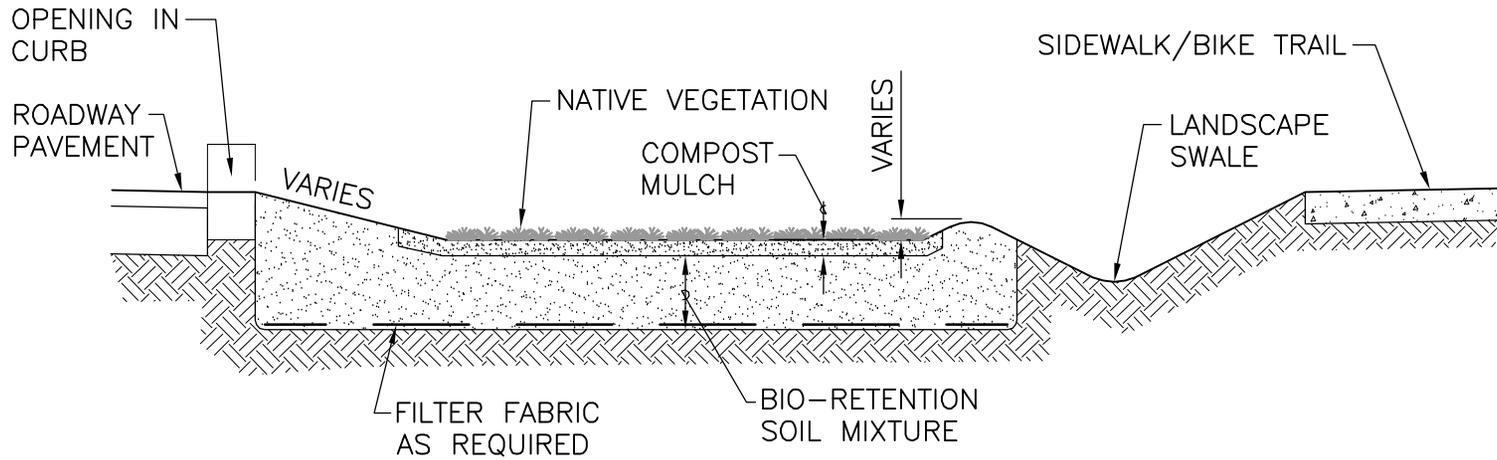
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<sup>33</sup> USEPA. “Stormwater Best Management Practice Design Guide Volume 2, Vegetative Biofilters.” p. 7-1. September 2004.

<sup>34</sup> Hsieh and Davis. “Evaluation and Optimization of Bioretention Media for Treatment of Urban Storm Water Runoff.” *Journal of Environmental Engineering, ASCE*, 131(11), pp. 1521-1531. 2005.

<sup>35</sup> USEPA. “Stormwater Best Management Practice Design Guide Volume 2, Vegetative Biofilters.” p. 7-3. September 2004.

<sup>36</sup> Diblasi et al. “Removal and Fate of Polycyclic Aromatic Hydrocarbon Pollutants in an Urban Stormwater Bioretention Facility.” *Environmental Science and Technology*, Vol. 43. No. 2, p. 494. 2009.



NOT TO SCALE

NOTE:

BIO-RETENTION SOIL MIXTURE SHALL CONSIST OF COMPOST AND MINERAL AGGREGATE. THE MIXTURE SHALL BE WELL BLENDED TO PROVIDE A HOMOGENEOUS MIX. EFFORTS SHALL BE MADE TO ATTAIN ORGANIC MATTER CONTENT CLOSE TO 10 PERCENT, WITH THE FINAL MIX TO BE DETERMINED BY THE ENGINEER.

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**Figure 3-8**  
**BIO-RETENTION AREA—TYPICAL CROSS SECTION**

Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

NOT TO SCALE

Reclaimed water has also been proposed for use in irrigation on the other landscaped areas of the proposed highway, and its use in these areas will also comply with State DOH regulations. Irrigation will be of the non-spray type to avoid the irrigation-associated corrosion issues that have been experienced by projects elsewhere in the area.

In order to further protect groundwater resources from pollution, the County of Hawai'i plans to limit the application of fertilizer and pesticide within landscaped areas to the extent possible. At present, the County Highways Maintenance Division does not use fertilizers or pesticides.

No impacts to groundwater or hydrogeology would occur under the No Action Alternative.

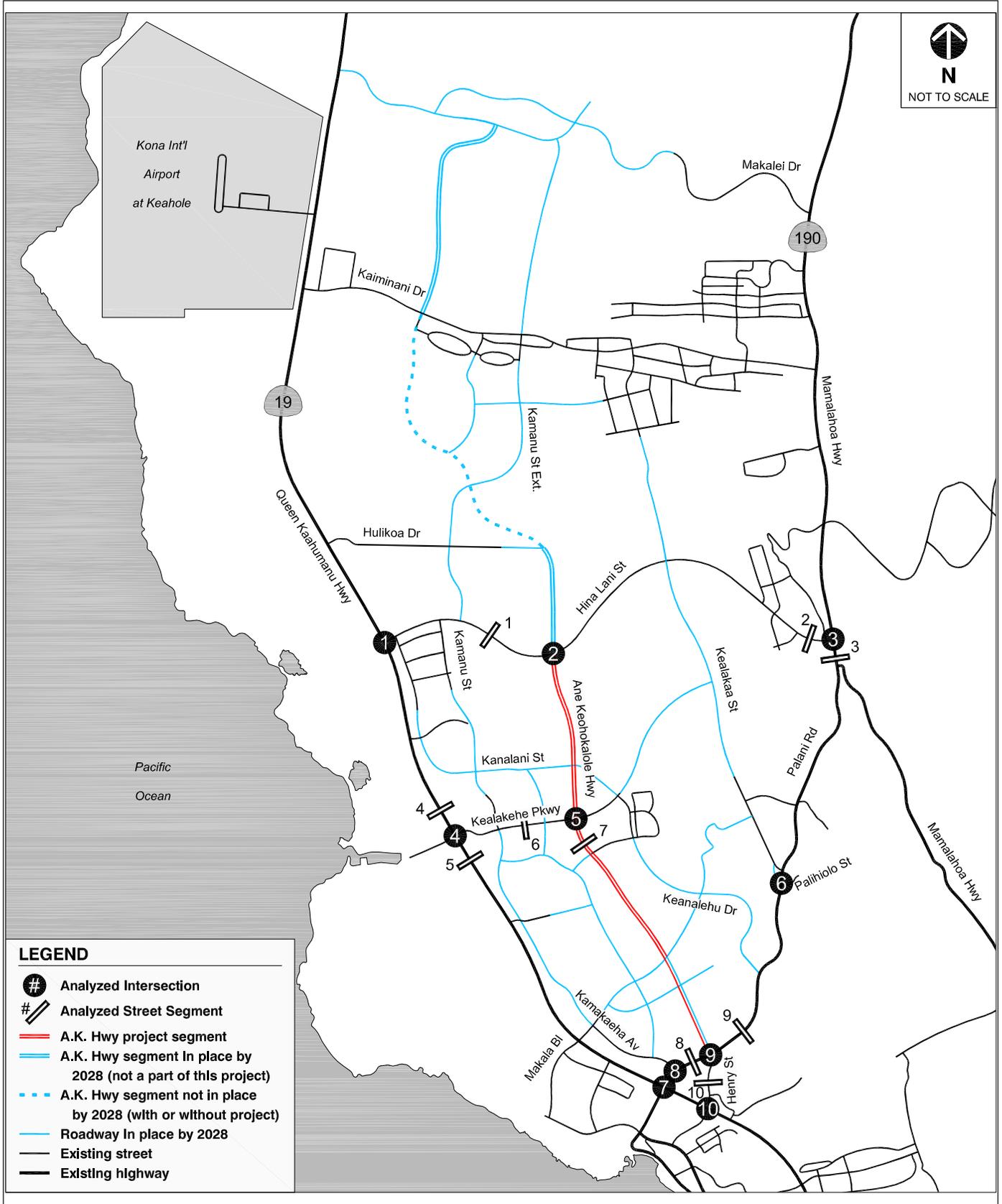
### 3.9 ROADS AND TRAFFIC

The traffic impact analysis report, summarized below, was prepared by Fehr & Peers Transportation Consultants and is provided in Appendix E.<sup>37</sup> Potential impacts on roadways and traffic in the vicinity of the Proposed Action were analyzed by projecting and evaluating future traffic conditions for the study area to the horizon year 2028, when most of the planned streets in the region are expected to be in place. The study area, shown in Figure 3-9, comprises the total street network between and including Queen Ka'ahumanu Highway (makai boundary), Mamalahoa Highway (mauka boundary), Henry Street (southern boundary), and Hina Lani Street (northern boundary). In order to determine potential impacts of the Proposed Action, the following traffic scenarios were analyzed:

- Existing (2007) Conditions – The analysis of existing traffic conditions provides a basis for the remainder of the study and includes an assessment of baseline traffic volumes and operating conditions.
- Future (2028) Base (No Action Alternative) Conditions – The objective of this scenario is to project future traffic growth and operating conditions resulting from regional growth and known development projects in the vicinity of the Proposed Action, without consideration of traffic shifts that would be expected to result from the Proposed Action itself.

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<sup>37</sup> Fehr & Peers Transportation Consultants. *Traffic Impact Analysis Report for the Proposed Ane Keohokalole Highway Extension*. April 2009.



Source: Fehr & Peers, April 2009. Traffic Impact Analysis Report for the Proposed Ane Keohokalole Highway Extension.

- **Future (2028) Project (Proposed Action) Conditions** – The objective of this scenario is to identify potential impacts of the Proposed Action on future traffic operating conditions at key locations. The Proposed Action itself would not generate additional vehicle trips but would provide alternative routes for the projected traffic in the study area. The difference between the future base conditions and the future project conditions represents the impacts of the Proposed Action.

Level of service (LOS) methodology, based on the *2000 Highway Capacity Manual*,<sup>38</sup> is used to characterize traffic conditions at study intersections. LOS is a qualitative measure which describes the condition of traffic flow, ranging from excellent, free-flowing conditions at LOS A to very congested, overloaded conditions at LOS F. Table 3-4 and Table 3-5 define LOS for signalized and unsignalized intersections, respectively. In general, the minimum acceptable LOS in an urbanized area is LOS D.

**Table 3-4: Level of Service Definitions for Signalized Intersections**

Level of Service	Volume/Capacity Ratio	Average Stopped Delay per Vehicle (seconds)
A	0.000 – 0.600	≤10
B	>0.600 – 0.700	>10 and ≤20
C	>0.700 – 0.800	>20 and ≤35
D	>0.800 – 0.900	>35 and ≤55
E	>0.900 – 1.000	>55 and ≤80
F	>1.000	>80

**Table 3-5: Level of Service Definitions for Unsignalized Intersections**

Level of Service	Worst Case Delay per Vehicle (seconds)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

<sup>38</sup> National Academy of Sciences, National Research Council, Transportation Research Board. 2000.

The following 10 intersections were assessed (see Figure 3-9):

1. Queen Ka‘ahumanu Highway & Hina Lani Street
2. Ane Keohokalole Highway & Hina Lani Street (*Note: Does not yet exist.*)
3. Mamalahoa Highway & Hina Lani Street
4. Queen Ka‘ahumanu Highway & Kealakehe Parkway
5. Ane Keohokalole Highway & Kealakehe Parkway
6. Palani Road & Paliholo Street
7. Queen Ka‘ahumanu Highway & Palani Road
8. Kamaka‘eha Avenue & Palani Road
9. Henry Street/Ane Keohokalole Highway & Palani Road
10. Queen Ka‘ahumanu Highway & Henry Street

In addition to these intersections, key street segments in the study area were also analyzed. The roadway facility types are based on their physical characteristics as defined in the *County of Hawai‘i General Plan* (February 2005) and described in Table 3-6. The capacity of each facility, defined as the maximum hourly rate at which vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time under prevailing roadway, traffic, and control conditions, is based on *2000 Highway Capacity Manual* methodology.<sup>39</sup>

**Table 3-6: Capacity of Roadway Facilities**

Facility Type	Definition	Capacity per lane per hour
Primary Arterial	Includes major highways, parkways, and primary arterials that move vehicles in large volumes and at higher speeds from one geographic area to another; highest traffic volumes corridor. Designed as a limited access roadway.	1,700
Secondary Arterial	A street of considerable continuity that is primarily a traffic artery between or through large areas; interconnect with and augment primary system. Designed as a limited access roadway. Secondary arterials shall have a minimum right-of-way of 80 feet.	1,250

<sup>39</sup> National Academy of Sciences, National Research Council, Transportation Research Board. 2000.

**Table 3-6: Capacity of Roadway Facilities** *(continued)*

Facility Type	Definition	Capacity per lane per hour
Local Streets – Commercial/Industrial	Local streets within commercial and industrial areas shall have a minimum right-of-way of 60 feet.	600
Minor Collector & Local Street	Minor collectors are used at times as through street and for access to abutting properties. The principal purpose of a local street is to provide access to property abutting the public right-of-way.	450

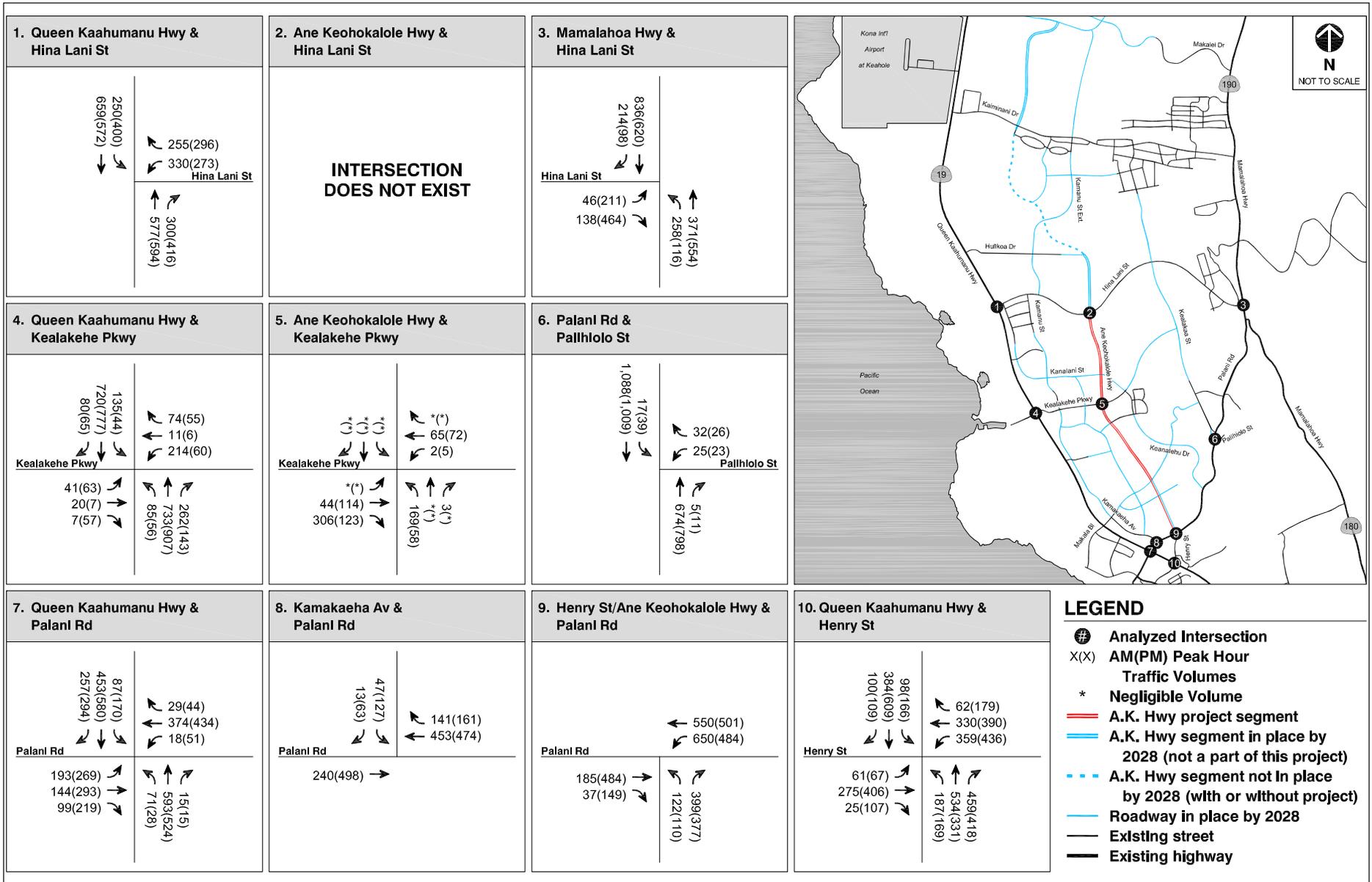
The following 10 street segments were assessed (see Figure 3-9):

1. Hina Lani Street between Kamanu Street and Ane Keohokalole Highway
2. Hina Lani Street makai (west) of Mamalahoa Highway
3. Mamalahoa Highway south of Hina Lani Street
4. Queen Ka’ahumanu Highway north of Kealakehe Parkway
5. Queen Ka’ahumanu Highway south of Kealakehe Parkway
6. Kealakehe Parkway mauka (east) of Queen Ka’ahumanu Highway
7. Ane Keohokalole Highway south of Kealakehe Parkway
8. Palani Road between Kamaka’eha Avenue and Henry Street
9. Palani Road mauka (east) of Henry Street
10. Henry Street south of Palani Road

### 3.9.1 AFFECTED ENVIRONMENT

Primary regional access to the study area is currently provided by Queen Ka’ahumanu Highway and Mamalahoa Highway, which both run north-south, makai and mauka of the proposed highway, respectively. Major existing mauka-makai roadways include, from north to south: Kaiminani Drive, Hina Lani Street, Kelalakehe Parkway, and Makala Boulevard.

Existing weekday peak period intersection turning movement counts were conducted from 6:00 to 9:00 am (AM peak period) and from 3:00 to 6:00 pm (PM peak period) at the nine existing study intersections on Tuesday, August 12; Wednesday, August 13; and Thursday, August 14, 2007. Existing weekday AM and PM peak hour turning movements, depicted in Figure 3-10, were used in



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**Figure 3-10**  
**EXISTING PEAK HOUR TRAFFIC VOLUMES**

Source: Fehr & Peers, April 2009. Traffic Impact Analysis Report for the Proposed Ane Keohokalole Highway Extension.

conjunction with LOS methodology to determine the existing operating conditions at each study intersection. Table 3-7 summarizes the results of this analysis.

**Table 3-7: Intersection Level of Service Analysis – Existing Conditions**

Intersection	Control Method	Peak Period	Existing (2007) LOS
1. Queen Ka’ahumanu Highway & Hina Lani Street	Signalized	AM	C
		PM	C
2. Ane Keohokalole Highway & Hina Lani Street (future intersection)			N/A
3. Palani Road & Hina Lani Street	Signalized	AM	B
		PM	C
4. Queen Ka’ahumanu Highway & Kealakehe Parkway	Signalized	AM	B
		PM	B
5. Ane Keohokalole Highway & Kealakehe Parkway	Two-way Stop	AM	B
		PM	B
6. Palani Road & Palihilo Street	Two-way Stop	AM	E
		PM	F
7. Queen Ka’ahumanu Highway & Palani Road	Signalized	AM	C
		PM	C
8. Kamaka’eha Avenue & Palani Road	Two-way Stop	AM	B
		PM	D
9. Henry Street/Ane Keohokalole Highway & Palani Road	Signalized	AM	B
		PM	B
10. Queen Ka’ahumanu Highway & Henry Street	Signalized	AM	C
		PM	C

The analysis indicates that one existing study intersection, the unsignalized intersection of Palani Road and Palihilo Street (Intersection 6), currently operates at LOS E during AM peak hours and LOS F during PM peak hours. The other eight existing study intersections currently operate at an acceptable LOS (LOS D or better) during both the AM and PM peak periods.

Street segment traffic volumes were derived from the approach and departure volumes of the adjacent study intersections. Existing peak period traffic volumes for the ten analyzed street segments are shown in Table 3-8. The analysis indicates that one directional street segment, westbound Palani Road mauka (east) of Henry Street (Street Segment 9), currently operates at LOS E. The other analyzed street segments currently operate at an acceptable LOS (LOS D or better).

**Table 3-8: Street Segment Level of Service Analysis – Existing Conditions**

Street Segment	Facility Type	Peak Period	Direction	Existing (2007) Operating Conditions			
				Volume	Lanes	V/C	LOS
1. Hina Lani Street between Kamanu Street and Ane Keohokalole Highway	Secondary Arterial	AM	eastbound	151	1	0.12	A
			westbound	448	1	0.36	A
		PM	eastbound	872	1	0.54	A
			westbound	156	1	0.12	A
2. Hina Lani Street makai (west) of Mamalahoa Highway	Secondary Arterial	AM	eastbound	184	1	0.15	A
			westbound	472	1	0.38	A
		PM	eastbound	675	1	0.54	A
			westbound	214	1	0.17	A
3. Mamalahoa Highway south of Hina Lani Street	Primary Arterial	AM	northbound	629	1	0.50	A
			southbound	974	1	0.79	C
		PM	northbound	670	1	0.54	A
			southbound	1,084	1	0.87	D
4. Queen Ka'ahumanu Highway north of Kealakehe Parkway	Primary Arterial (2 lanes)	AM	northbound	848	1	0.50	A
			southbound	935	1	0.55	A
		PM	northbound	1,025	1	0.60	B
			southbound	886	1	0.52	A
5. Queen Ka'ahumanu Highway south of Kealakehe Parkway	Primary Arterial (2 lanes)	AM	northbound	1,080	1	0.64	B
			southbound	941	1	0.55	A
		PM	northbound	1,106	1	0.65	B
			southbound	894	1	0.53	A
6. Kealakehe Parkway mauka (east) of Queen Ka'ahumanu Highway	Secondary Arterial	AM	eastbound	417	2	0.17	A
			westbound	299	1	0.24	A
		PM	eastbound	194	2	0.08	A
			westbound	121	1	0.10	A

**Table 3-8: Street Segment Level of Service Analysis – Existing Conditions (continued)**

Street Segment	Facility Type	Peak Period	Direction	Existing (2007) Operating Conditions			
				Volume	Lanes	V/C	LOS
7. Ane Keohokalole Highway south of Kealakehe Parkway	Secondary Arterial	AM	northbound	172	1	0.14	A
			southbound	308	1	0.25	A
		PM	northbound	58	1	0.05	A
			southbound	128	1	0.10	A
8. Palani Road between Kamaka'eha Avenue and Henry Street	Major Collector	AM	eastbound	222	1	0.18	A
			westbound	672	1	0.54	A
		PM	eastbound	633	1	0.51	A
			westbound	611	1	0.49	A
9. Palani Road mauka (east) of Henry Street	Major Collector	AM	eastbound	584	1	0.47	A
			westbound	1,200	1	0.96	E
		PM	eastbound	861	1	0.69	B
			westbound	985	1	0.79	C
10. Henry Street south of Palani Road	Secondary Arterial	AM	northbound	521	2	0.21	A
			southbound	687	2	0.27	A
		PM	northbound	487	2	0.19	A
			southbound	633	2	0.25	A

### 3.9.2 POTENTIAL IMPACTS

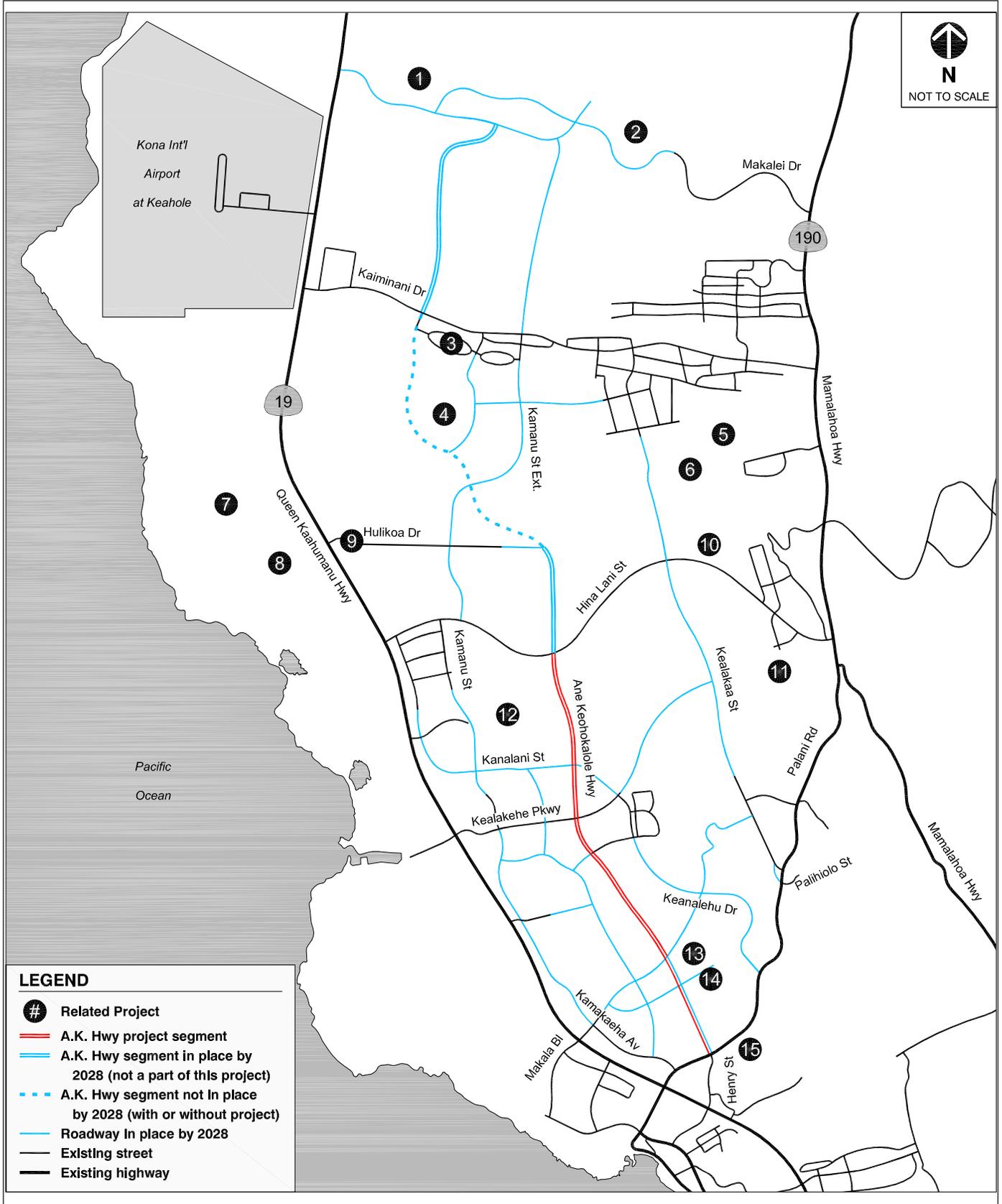
In order to evaluate the potential impacts of the Proposed Action on the surrounding roadway system, it is necessary to develop estimates of future traffic conditions in the area both with the construction of the Proposed Action (i.e., future project conditions) and under the No Action Alternative (i.e., future base conditions). Estimates included construction of the proposed highway and the proposed Palani Road widening (i.e., construction of an additional eastbound lane on Palani Road as a measure to minimize traffic impacts to Palani Road). The incremental change in the LOS between future base conditions and future project conditions represents the potential impacts of the Proposed Action. In this analysis, LOS D is considered the minimum acceptable LOS. Project-specific impacts were identified using the following criteria:

<b>No Action Alternative (Future Base Conditions)</b>	<b>Proposed Action (Future Project Conditions)</b>	<b>Project Impact?</b>
LOS D or better	LOS D or better	No
LOS D or better	LOS E or LOS F	Yes
LOS E or LOS F	LOS E or LOS F	No

#### **Future (2028) Base (No Action Alternative) Traffic Projections**

Future base conditions reflect traffic increases as a result of general growth and development, as well as traffic increases generated by specific development projects in the vicinity of the Proposed Action, that are assumed to occur by the horizon year 2028.

Future street network improvements, as shown in Figure 3-11, and future intersection improvements may alter the capacity, configuration, and operating conditions of traffic in the study area. Additionally, related project traffic growth is expected to occur as a result of future development projects. Figure 3-11 illustrates the locations of known development projects in the study area and Table 3-9 displays the estimated traffic generated by these projects, as well as projects north and south of the study area that would generate traffic traveling into and through the study area. Trip generation estimates of traffic volume were distributed throughout the future street network.



**Figure 3-11**  
**LOCATIONS OF FUTURE DEVELOPMENT IN THE REGION**

**Table 3-9: Trip Generation<sup>a</sup> for Future Development Projects  
 (Related Project Traffic Growth)**

Index <sup>b</sup>	Project Name	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
<b>Projects in the Study Area</b>							
1	Palamanui	152	394	546	422	255	677
2	Makalei Estates	15	45	60	51	30	81
3	Lokahi Makai	36	107	143	121	71	192
4	Seascape (a.k.a. Lokahi Ka'u)	11	44	55	44	23	67
5	O'oma Plantation	4	10	14	12	7	19
6 <sup>c</sup>	Kula Nei Residential Development	51	152	203	172	101	273
7	O'oma Beachside Village	704	859	1,563	998	983	1,981
8	The Shores at Kohana'iki	241	342	583	378	341	719
9	Kohana'iki Business Park	81	65	146	52	69	121
10	Kaloko Heights	56	169	225	191	112	303
11	Kona 327 LLC	66	197	263	223	131	354
12 <sup>d</sup>	West Hawai'i Business Park	822	276	1,098	911	1,383	2,294
13	Villages at La'i 'Opua	75	225	300	255	149	404
14 <sup>e</sup>	Keahuolu Affordable Housing	665	846	1,511	918	711	1,629
15	Rutter Affordable Housing	50	151	201	171	100	271
<b>Subtotal</b>		<b>3,029</b>	<b>3,882</b>	<b>6,911</b>	<b>4,919</b>	<b>4,466</b>	<b>9,385</b>
<b>Projects North of the Study Area</b>							
	Kuki'o Bay Beach Club	28	137	165	131	64	195
	Manini'owali (a.k.a. Kua Bay)	11	51	62	49	24	73
	Nanea Golf Course	50	17	67	33	63	96
<b>Subtotal</b>		<b>89</b>	<b>205</b>	<b>294</b>	<b>213</b>	<b>151</b>	<b>364</b>
<b>Projects South of the Study Area</b>							
	Ali'i Cove	20	82	102	81	43	124
	U of Nations	41	163	204	161	87	248
	Kona Sea Village/Ali'i Park Place	5	27	32	25	13	38
	Pualani Estates	22	65	87	74	43	117
	Sugar Cane Land Subdivision	4	12	16	13	8	21
	Makana Aloha Plantation	2	6	8	7	4	11
	Kona Vistas	9	28	37	31	18	49
	Hokuli'a	56	274	330	261	129	390
	'Iolani Phase I-IV	8	24	32	27	16	43

**Table 3-9: Trip Generation<sup>a</sup> for Future Development Projects  
 (Related Project Traffic Growth) (continued)**

Index <sup>b</sup>	Project Name	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
	Unknown	15	32	47	50	40	90
	Hale Nanea Condos	9	38	47	37	20	57
	White Sands Project Mauka	15	74	89	71	35	106
	White Sands Project Makai	9	44	53	42	20	62
	Kahakai Place Subdivision	3	8	11	9	5	14
	Suffolk	26	102	128	101	54	155
	Ali'i Parkway Heights	22	86	108	85	46	131
	Kona Sea Villas	30	119	149	118	63	181
	<b>Subtotal</b>	<b>296</b>	<b>1,184</b>	<b>1,480</b>	<b>1,193</b>	<b>644</b>	<b>1,837</b>
	<b>Total</b>	<b>3,414</b>	<b>5,271</b>	<b>8,685</b>	<b>6,325</b>	<b>5,261</b>	<b>11,586</b>

Notes:

- <sup>a</sup> Trip generation estimates based on *Trip Generation, 7<sup>th</sup> Edition*, Institute of Transportation Engineers, 2003, unless otherwise noted.
- <sup>b</sup> Index number corresponds to location on Figure 3-11.
- <sup>c</sup> Source: *Final Environmental Impact Statement for the Kula Nei Project*, Belt Collins Hawaii Ltd., September 2007.
- <sup>d</sup> Source: *Traffic Impact Analysis Report Update for the Proposed West Hawaii Business Park*, The Traffic Management Consultant, February 2007.
- <sup>e</sup> Source: *Traffic Study for the Keahuolu Affordable Housing Master Plan Project*, Fehr & Peers/Kaku Associates, January 2008.

In addition to related project traffic growth, other unidentified projects and general population growth contribute to what is known as ambient traffic growth. Ambient traffic growth is calculated as an annual percentage increase in traffic volumes from the existing (2007) traffic counts. Based on several years of traffic count data and projections of future growth, traffic running north and south on the major highways in Kona is estimated to increase at five percent per year for the foreseeable future. This five percent annual growth rate was applied to traffic on Queen Ka'ahumanu Highway and Mamalahoa Highway; however, due to the future street network improvements, this growth is not expected to occur in the same patterns as the existing traffic volumes. Thus, resultant traffic volumes were redistributed across the future street network. To account for local ambient traffic growth, a one percent annual growth rate was applied to all intersection movements not covered by the north-south growth and redistribution.

Projected traffic from related project growth and ambient growth represent the future base traffic projections. To simply add these two sources of traffic growth together, however, would overestimate the total growth. The ambient traffic growth is the total projected area-wide growth, while the related project traffic growth is

specific growth expected to follow particular paths. Therefore, at each turning movement location, the greater of the two sources was assigned as the total growth. The future base peak period traffic volumes based on the projected total growth are depicted in Figure 3-12.

Intersection LOS analysis for future base conditions is summarized in Table 3-10. The analysis indicates that two study intersections, the signalized intersections of Queen Ka'ahumanu Highway and Hina Lani Street (Intersection 1) and Queen Ka'ahumanu Highway and Kealakehe Parkway (Intersection 4), are projected to operate at LOS E during the PM peak hours under future base conditions. The other eight study intersections are expected to operate at an acceptable LOS (LOS D or better) during both the AM and PM peak periods under future base conditions.

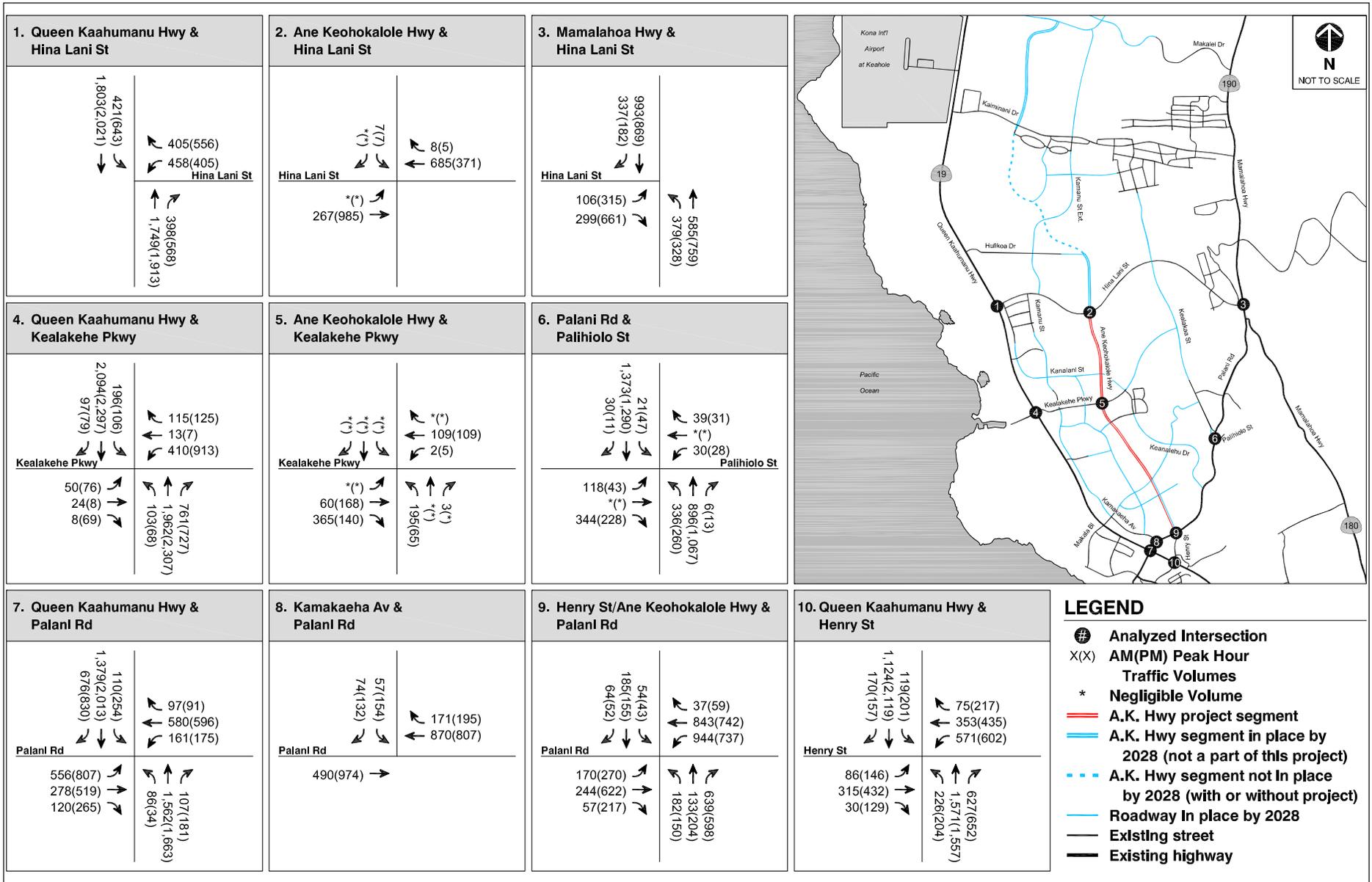
Projected peak period traffic volumes and LOS analysis for the ten analyzed street segments under future base conditions are presented in Table 3-11. The analysis indicates that three directional street segments are projected to operate at LOS E or LOS F during the PM peak hours under future base conditions:

- Queen Ka'ahumanu Highway south of Kealakehe Parkway (Street Segment 5) – northbound
- Queen Ka'ahumanu Highway south of Kealakehe Parkway (Street Segment 5) – southbound
- Palani Road mauka (east) of Henry Street (Street Segment 9) – eastbound

The other eight analyzed street segments are expected to operate at an acceptable LOS (LOS D or better).

### **Future (2028) Project (Proposed Action) Traffic Projections**

While the Proposed Action will allow development to occur along the proposed highway, and therefore allow additional vehicle trips to be generated, the proposed highway will service traffic from existing roadways. Thus, the process for developing future project conditions involves removing trips from routes of the future base condition street network and reassigning them to routes made possible by the proposed highway. Factors considered in the estimates of the traffic redistribution patterns include historic traffic volume data, existing traffic patterns, geographic distribution of employment and commercial activity in the vicinity, and connections to other future street in the study area.



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**Figure 3-12**  
**FUTURE BASE PEAK HOUR TRAFFIC VOLUMES**

Source: Fehr & Peers, April 2009. Traffic Impact Analysis Report for the Proposed Ane Keohokalole Highway Extension.

Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

**Table 3-10: Intersection Level of Service Analysis – Future Conditions**

Intersection	Control Method	Peak Period	Future (2028) Base Operating Conditions			Future (2028) Project Operation Conditions			Change in Delay	Project Impact?
			Delay	V/C	LOS	Delay	V/C	LOS		
1. Queen Ka’ahumanu Highway & Hina Lani Street	Signalized	AM	43	1.067	D	26	0.989	C	-17	No
		PM	70	1.404	E	50	1.105	D	-20	No
2. Ane Keohokalole Highway & Hina Lani Street	Two-way Stop (Base) Signalized (Project)	AM	19	N/A	C	12	0.499	B	-7	No
		PM	30	N/A	D	12	0.658	B	-18	No
3. Palani Road & Hina Lani Street	Signalized	AM	28	0.871	C	19	0.758	B	-9	No
		PM	46	0.997	D	25	0.779	C	-21	No
4. Queen Ka’ahumanu Highway & Kealakehe Parkway	Signalized	AM	22	0.904	C	14	0.756	B	-8	No
		PM	66	1.108	E	24	0.910	C	-42	No
5. Ane Keohokalole Highway & Kealakehe Parkway	Two-way Stop (Base) Signalized (Project)	AM	13	N/A	B	18	0.435	B	5	No
		PM	11	N/A	B	9	0.341	A	-2	No
6. Palani Road & Palihilo Street	Signalized	AM	16	0.675	B	15	0.651	B	-1	No
		PM	13	0.713	B	12	0.693	B	-1	No
7. Queen Ka’ahumanu Highway & Palani Road	Signalized	AM	28	0.912	C	24	0.784	C	-4	No
		PM	55	1.084	D	34	0.977	C	-21	No
8. Kamakeha Avenue & Palani Road	Signalized	AM	6	0.564	A	6	0.588	A	0	No
		PM	11	0.670	B	11	0.733	B	0	No
<i>With additional eastbound through lane</i>	<i>Signalized</i>	<i>AM</i>	<i>6</i>	<i>0.564</i>	<i>A</i>	<i>5</i>	<i>0.588</i>	<i>A</i>	<i>0</i>	<i>No</i>
		<i>PM</i>	<i>11</i>	<i>0.670</i>	<i>A</i>	<i>9</i>	<i>0.660</i>	<i>A</i>	<i>-2</i>	<i>No</i>
9. Henry Street/Ane Keohokalole Highway & Palani Road	Signalized	AM	25	0.530	C	29	0.778	C	4	No
		PM	43	0.899	D	62	1.104	E	19	Yes
<i>With additional eastbound through lane</i>	<i>Signalized</i>	<i>AM</i>	<i>25</i>	<i>0.530</i>	<i>C</i>	<i>27</i>	<i>0.772</i>	<i>C</i>	<i>2</i>	<i>No</i>
		<i>PM</i>	<i>43</i>	<i>0.899</i>	<i>D</i>	<i>39</i>	<i>0.948</i>	<i>D</i>	<i>-4</i>	<i>No</i>

**Table 3-10: Intersection Level of Service Analysis – Future Conditions (continued)**

10. Queen Ka’ahumanu Highway & Henry Street	Signalized	AM	30	0.884	C	32	0.804	C	2	No
		PM	44	0.994	D	59	0.953	E	15	Yes
<i>Restripe westbound approach and modify signal phasing</i>	<i>Signalized</i>	<i>AM</i>	<i>30</i>	<i>0.884</i>	<i>C</i>	<i>25</i>	<i>0.778</i>	<i>C</i>	<i>-5</i>	<i>No</i>
		<i>PM</i>	<i>44</i>	<i>0.994</i>	<i>D</i>	<i>36</i>	<i>0.945</i>	<i>D</i>	<i>-8</i>	<i>No</i>

**Table 3-11: Street Segment Level of Service Analysis – Future Conditions**

Street Segment	Facility Type	Peak Period	Direction	Future (2028) Base Operating Conditions				Future (2028) Project Operating Conditions				Project Impact?
				Volume	Lanes	V/C	LOS	Volume	Lanes	V/C	LOS	
1. Hina Lani Street between Kamanu Street and Ane Keohokalole Highway	Secondary Arterial	AM	eastbound	313	2	0.13	A	303	2	0.12	A	No
			westbound	802	1	0.64	B	815	1	0.85	B	No
		PM	eastbound	1,126	2	0.45	A	1,118	2	0.45	A	No
			westbound	460	1	0.37	A	445	1	0.36	A	No
2. Hina Lani Street makai (west) of Mamalahoa Highway	Secondary Arterial	AM	eastbound	405	1	0.32	A	406	1	0.32	A	No
			westbound	716	1	0.57	A	725	1	0.58	A	No
		PM	eastbound	976	1	0.78	C	879	1	0.78	C	No
			westbound	510	1	0.41	A	509	1	0.41	A	No
3. Mamalahoa Highway south of Hina Lani Street	Primary Arterial	AM	northbound	964	1	0.77	C	938	1	0.75	C	No
			southbound	1,292	2	0.52	A	1,258	2	0.50	A	No
		PM	northbound	1,087	1	0.87	D	1,051	1	0.84	D	No
			southbound	1,530	2	0.61	B	1,498	2	0.60	A	No
4. Queen Ka’ahumanu Highway north of Kealakehe Parkway	Primary Arterial (4 lanes)	AM	northbound	2,127	2	0.63	B	1,890	2	0.56	A	No
			southbound	2,387	2	0.70	C	2,152	2	0.63	B	No
		PM	northbound	2,508	2	0.74	C	2,246	2	0.66	B	No
			southbound	2,482	2	0.73	C	2,216	2	0.65	B	No
5. Queen Ka’ahumanu Highway south of Kealakehe Parkway	Primary Arterial (4 lanes)	AM	northbound	2,828	2	0.83	D	2,376	2	0.70	B	No
			southbound	2,512	2	0.74	C	2,2110	2	0.62	B	No
		PM	northbound	3,102	2	.091	E	2,537	2	0.75	C	No
			southbound	3,279	2	0.96	E	2,699	2	0.79	C	No

**Table 3-11: Street Segment Level of Service Analysis – Future Conditions (*continued*)**

Street Segment	Facility Type	Peak Period	Direction	Future (2028) Base Operating Conditions				Future (2028) Project Operating Conditions				Project Impact?
				Volume	Lanes	V/C	LOS	Volume	Lanes	V/C	LOS	
6. Kealakehe Parkway mauka (east) of Queen Ka'ahumanu Highway	Secondary Arterial	AM	eastbound	981	2	0.39	A	700	2	0.28	A	No
			westbound	538	1	0.43	A	303	1	0.24	A	No
		PM	eastbound	841	2	0.34	A	490	2	0.20	A	No
			westbound	1,045	1	0.84	D	683	1	0.55	A	No
7. Ane Keohokalole Highway south of Kealakehe Parkway	Secondary Arterial	AM	northbound	198	2	0.08	A	777	2	0.31	A	No
			southbound	367	2	0.15	A	809	2	0.32	A	No
		PM	northbound	65	2	0.03	A	860	2	0.34	A	No
			southbound	145	2	0.06	A	1,032	2	0.41	A	No
8. Palani Road between Kamaka'eha Avenue and Henry Street	Secondary Arterial	AM	eastbound	471	1	0.38	A	583	1	0.47	A	No
			<i>with second eastbound lane</i>				583	2	0.23	A	No	
		PM	westbound	1,089	2	0.44	A	1,130	2	0.45	A	No
			eastbound	1,109	1	0.89	D	1,215	1	0.97	E	Yes
9. Palani Road mauka (east) of Henry Street	Secondary Arterial	AM	westbound	937	1	0.75	C	901	1	0.72	C	No
			<i>with second eastbound lane</i>				901	2	0.36	A	No	
		PM	eastbound	1,824	2	0.73	C	1,774	2	0.71	C	No
			westbound	1,263	1	1.01	F	1,198	1	0.96	E	No
10. Henry Street south of Palani Road	Secondary Arterial	AM	<i>with second eastbound lane</i>				1,198	2	0.48	A	No	
			westbound	1,538	2	0.62	B	1,483	2	0.59	A	No
		PM	northbound	954	2	0.38	A	1,263	2	0.51	A	No
			southbound	1,186	2	0.47	A	1,464	2	0.59	A	No
PM	northbound	952	2	0.38	A	1,366	2	0.55	A	No		
	southbound	1,109	2	0.44	A	1,533	2	0.61	B	No		

The proposed highway will provide for two major circulation needs. The first is direct traffic drawn to the proposed highway because it provides the most convenient route to a destination in the study area. The second is traffic passing through the vicinity that is drawn to the proposed highway because it would provide an alternative route to Queen Ka'ahumanu Highway or Mamalahoa Highway. Both circulation patterns were considered when estimating how the proposed highway would affect traffic patterns in the study area. The future project peak period traffic volumes based on the projected traffic redistribution patterns are depicted in Figure 3-13.

Intersection LOS analysis for future project conditions without the proposed Palani Road widening is summarized in Table 3-10. Compared to the future base conditions, the proposed highway is expected to improve operating conditions at the following six study intersections:

- Queen Ka'ahumanu Highway and Hina Lani Street (Intersection 1)
- Ane Keohokalole Highway and Hina Lani Street (Intersection 2)
- Mamalahoa Highway and Hina Lani Street (Intersection 3)
- Queen Ka'ahumanu Highway and Kealakehe Parkway (Intersection 4)
- Ane Keohokalole Highway and Kealakehe Parkway (Intersection 5, p.m. only)
- Queen Ka'ahumanu Highway and Palani Road (Intersection 7)

The proposed highway is expected leave the LOS at the following intersection unchanged:

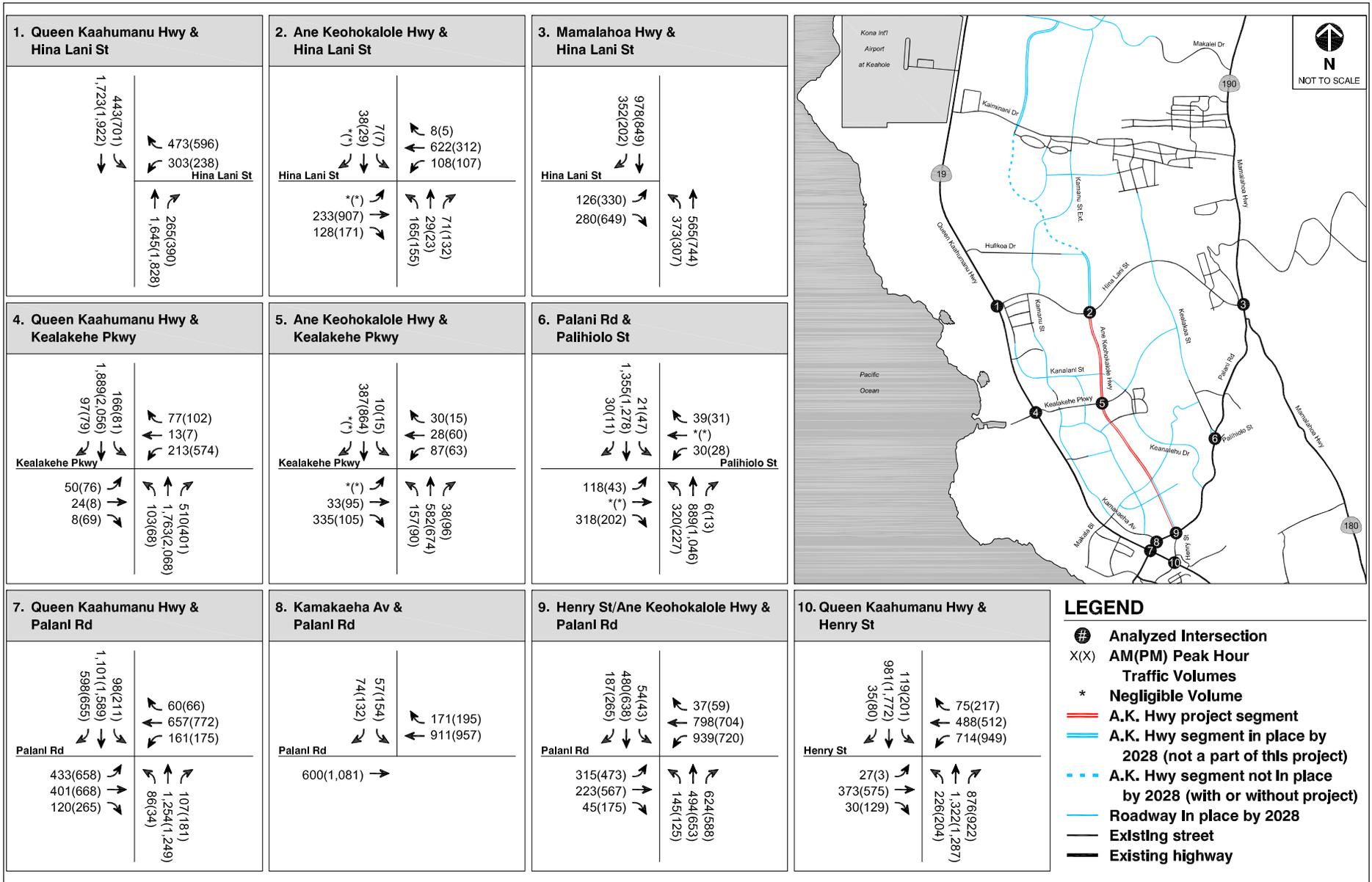
- Palani Road and Palihilo Street (Intersection 6)
- Kamaka'eha Avenue & Palani Road (Intersection 8)

The proposed highway is expected to degrade operating conditions at the following two study intersections:

- Henry Street/Ane Keohokalole Highway and Palani Road (Intersection 9)
- Queen Ka'ahumanu Highway and Henry Street (Intersection 10)

At one study intersection, Ane Keohokalole Highway and Kealakehe Parkway (Intersection 5), the proposed highway is projected to degrade operating conditions during AM peak hours, but improve operating conditions during PM peak hours.

Projected peak period traffic volumes and LOS for the ten analyzed street segments under future project conditions without the proposed Palani Road widening are presented in Table 3-11. Two of the street segments analyzed are projected to operate at LOS E or LOS F during PM peak hours under future base



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**Figure 3-13  
FUTURE PEAK HOUR TRAFFIC VOLUMES UNDER PROPOSED ACTION**

Source: Fehr & Peers, April 2009. Traffic Impact Analysis Report for the Proposed Ane Keohokalole Highway Extension.

conditions (Table 3-11). With the proposed highway, conditions would improve one of the two segments (Segment 5) to LOS D or better. For the second segment (Segment 9), conditions would improve from LOS F to LOS E.

With the proposed Palani Road widening, which is included in the Proposed Action, traffic degradation would be prevented at Intersection 9 and a LOS D or better would result. Specific design aspects include:

- Widening the eastbound approach to provide a second through lane, resulting in one left-turn lane, one through lane, and one shared through/right-turn lane.
- Providing protected left-turn phasing in the eastbound and westbound directions and corresponding northbound and southbound overlapping right-turn phases.

With the planned restriping of Queen Ka'ahumanu Highway at Henry Street, to be coordinated between the County of Hawai'i and the State of Hawai'i Department of Transportation (HDOT), traffic degradation would be prevented at Intersection 10 and a LOS D or better would result. Restriping the westbound approach would provide two left-turn lanes, one through lane, and one right-turn lane. This would allow the existing separate eastbound and westbound signal phases to be removed and instead be operated with protected left-turn phasing for the eastbound and westbound approaches and protected/permitted left-turn phasing for the northbound and southbound approaches.

As the Proposed Action is currently designed, no substantial project-related impacts on traffic would occur.

The No Action Alternative is represented by the future base conditions described above. Under the No Action Alternative, a greater number of intersections and street segments are projected to operate at an unacceptable LOS than under the Proposed Action.

### **3.10 NOISE**

The existing dominant noise source in the vicinity of the Proposed Action is traffic from the regional roadway system, including Palani Road and Queen Ka'ahumanu Highway. Other noise sources include the sound of wind moving through vegetation, birds, and fixed source noises primarily associated with light industrial activities.

The noise study report, summarized below, was prepared by Y. Ebisu & Associates and is provided in Appendix F.<sup>40</sup> Y. Ebisu & Associates was contracted to directly measure or otherwise determine existing noise levels, and then model the noise levels along the proposed highway out to the horizon year 2028 based on the data from the traffic study (Appendix E). The FHWA Traffic Noise Model, Version 2.5 was used as the primary method for calculating base year (2008) and future (2028) traffic noise levels. In addition to assessing traffic related noise, the study also examined noise levels associated with short-term, construction-related activity.

### Noise Standards

**Federal Highway Administration (FHWA)** regulations for noise abatement criteria (NAC) are defined in 23 CFR Part 772. The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels  $L_{eq}(h)$  for traffic noise exposure. Category B (picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals), which has a corresponding exterior  $L_{eq}$  (equivalent continuous sound pressure level dB) of 67 decibel (“A” weight filter) (dBA) and a maximum interior  $L_{eq}$  of 52 dBA, is applicable to the anticipated use of the land surrounding the proposed highway. If a noise impact is identified (i.e. these levels are exceeded), specific abatement measures must be considered.

**Department of Housing and Urban Development (HUD)** environmental noise criteria and standards (24 CFR Part 51) were established to determine housing project site acceptability. These standards are intended to protect housing from noise pollution and govern the development of housing near noise sources. These standards do not govern the development of roads near housing and, therefore, do not have a direct bearing on the Proposed Action, but instead inform the conditions under which local officials should be notified of impacts on future developments. The HUD site acceptability criteria rank sites as Acceptable, Normally Unacceptable, or Unacceptable.

**State of Hawai‘i Department of Transportation (HDOT)** Noise Analysis and Abatement Policy implements the requirements of the FHWA regulations on noise impacts (23 CFR Part 772). This policy requires that a noise analysis be performed whenever potentially affected receivers exist in the study area, either as developed lands or lands that are planned, designed, or programmed for future use. Under HDOT policy, a noise impact occurs when the predicted traffic noise levels approach or exceed FHWA’s NAC, or when the predicted traffic noise levels substantially exceed the existing noise levels. Under the HDOT noise policy, “approach” is defined as at least 1 dBA less than the NAC, and “substantially exceed the existing noise levels” is defined as an increase of at least 15 dBA. In

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<sup>40</sup> Y. Ebisu & Associates. *Acoustic Study for the Ane Keohokalole Highway Project North Kona, Hawaii*. February 2009.

Table 2 of Appendix F (Noise Study), the NAC categorizes different types of exterior and interior land use activities. Depending on the activity category, a different NAC would be applied. To meet the requirement for noise abatement, HDOT requires that attenuation measures be implemented to reduce projected noise levels by 5 dBA.

**State of Hawai'i Department of Health (DOH) Community Noise Control, HAR 11-46**, is intended to protect, control, and abate noise pollution from *stationary* sources, which would apply to construction activities associated with the Proposed Action. The Community Noise Control Rule does not address most *moving* sources and, therefore, does not apply to traffic noise. The rule defines three classes of zoning districts and specifies corresponding maximum permissible sound levels. With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and sound level. With respect to the Proposed Action, the surrounding area would fall into Class B (Multi family dwellings, apartment, business, commercial, hotel, resort or similar type) where the maximum permissible sound level is 60 dBA during daytime hours and 50 dBA at night. Sound levels for Class C (which includes industrial areas) are 70 dBA for the entire 24-hour period.

The maximum permissible noise levels for any given location are enforced by the State DOH at or beyond the property line and shall not be exceeded for more than 10 percent of the time during any 20-minute period without a variance. For impulsive noise (e.g. drilling, pile-driving), the State DOH defines the maximum permissible sound level as 10 dBA above the levels specified in HAR 11-46.

**State of Hawai'i Board of Education (BOE)**. Kealakehe High School is located adjacent to the proposed highway, and noise impacts on educational environments may be a relevant factor. The BOE's policy references State DOH standards and requires schools to implement attenuation when sounds emanating from schools impact surrounding neighborhoods, and also when ambient noise levels negatively impact classrooms.

### 3.10.1 AFFECTED ENVIRONMENT

Currently, most of the area surrounding the Proposed Action includes undeveloped lands, which have been identified for future development (Table 3.1). In undeveloped areas, attenuation for noise will not be required as part of highway construction. Developments that take place after the highway is built, however, may have to provide sound attenuation, depending on the noise levels at each location.

Existing and future noise sensitive land uses and activities adjacent to the proposed highway and nearby major roadways were identified from county plans, site inspections, and existing mapping. These land use activities include residences,

recreation and park areas. All of these activities would be considered Category B, and have a NAC of 67 dBA.

Existing traffic and background ambient noise levels at six locations in the project area were measured in February 2008. The traffic noise measurements were used to calibrate the traffic noise model which was used to calculate the base year (2008) and future (2028) traffic noise levels under the Proposed Action. These sites are representative of existing and future planned noise sensitive land uses in the project study area. The locations of these sites are shown in Figure 3-14 and the  $L_{eq}(h)$  existing noise measurements are provided in Figure 3-15.

**Developed Areas.** Existing noise levels in developed areas (e.g., Kealakehe High School) were dominated by traffic. Measured average background ambient noise levels ranged from 54 to 58 decibels (dB) with instantaneous levels dropping below 35 dB and rising as high as 70 dB.

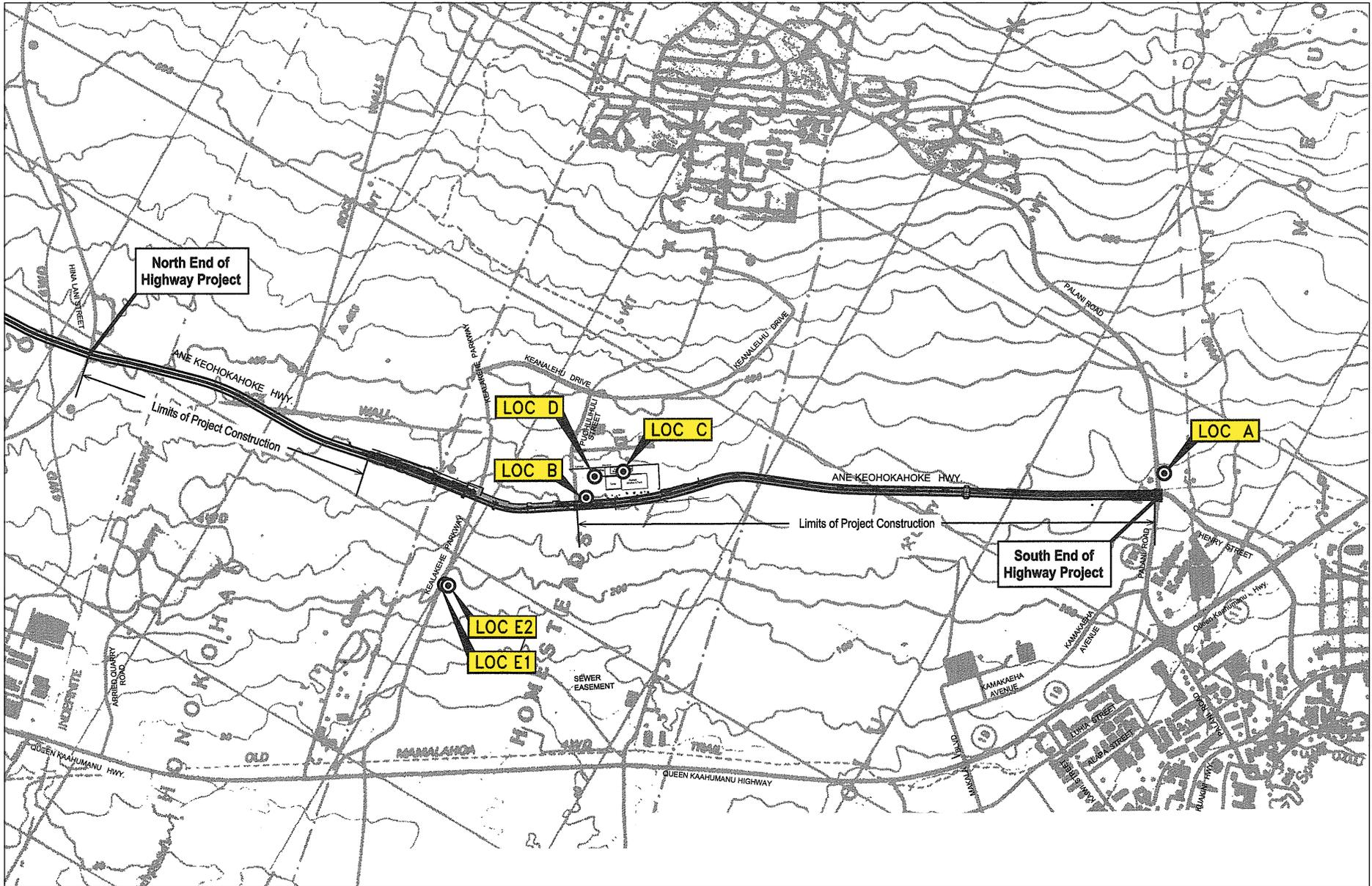
**Undeveloped Areas.** Existing background ambient noise levels in undeveloped areas consist of distant traffic or construction activities, the sounds of birds, and foliage moving in the wind. Noise levels were estimated to range from 45 to 50 dB ( $L_{eq}$ ), based on residual noise levels during quiet periods.

### 3.10.2 POTENTIAL IMPACTS

#### Short-Term, Construction-Related Impacts

No substantial impacts as a result of construction-related noise would occur as a result of the Proposed Action. Construction noise represents a short term impact on the noise environment. The duration and level of construction noise depends on the phase of the activity. The Proposed Action would involve site preparation activities, such as ground clearing, excavation and grading, and construction of the roadways. The first two phases, ground clearing and excavation, typically generate the highest noise levels. The dominant noise sources during construction would be earth moving equipment such as bulldozers and trucks. Noise levels associated with construction equipment typically range from 80 to 95 dBA at 50 feet from the source. Varying in location and duration, noise levels may be continuous (e.g., generator motors), fluctuating (e.g., crane operations), or impulsive (e.g., metal drill pipes banging together).<sup>41</sup>

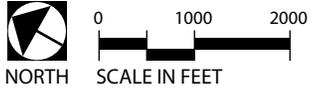
<sup>41</sup> American Industrial Hygiene Association. *Noise and Hearing Conservation Manual*. 1996.



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**Figure 3-14**  
**LOCATION OF ANE KEOHOKALOLE HIGHWAY**  
**AND NOISE MEASUREMENT SITES**

Ane Keohokalole Mid-Level Highway Project  
 Environmental Assessment



Source: Y. Ebisu & Associates, February 2009. Acoustic Study for the Ane Keohokalole Highway Project.

## TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

<u>LOCATION</u>	<u>Time of Day</u> <u>(HRS)</u>	<u>Ave. Speed</u> <u>(MPH)</u>	<u>Hourly Traffic Volume</u>			<u>Measured</u> <u>Leq (dB)</u>	<u>Predicted</u> <u>Leq (dB)</u>
			<u>AUTO</u>	<u>M.TRUCK</u>	<u>H.TRUCK</u>		
A. 50 FT from the double yellow line of Palani Road (2/11/08)	0645 TO 0745	45	1,737	9	12	68.8	69.0
A. 50 FT from the double yellow line of Palani Road (2/11/08)	1550 TO 1650	40	2,188	9	2	67.5	68.3
E1. 50 FT from the median on south side of Kealakehe Parkway (2/11/08)	1406 TO 1506	45	331	7	11	63.3	63.7
E2. 100 FT from the median on south side of Kealakehe Parkway (2/11/08)	1406 TO 1506	45	331	7	11	55.2	57.6
B. On the west boundary of Kealakehe H.S. next to nw parking area (2/10/08)	0845 TO 0945	N/A	N/A	N/A	N/A	55.0	N/A
C. At nw corner of Bldg. Y at Kealakehe H.S. (2/11/08)	0830 TO 0930	N/A	N/A	N/A	N/A	54.4	N/A
D. At nw corner of Bldg. BB at Kealakehe H.S. (2/11/08)	0935 TO 1035	N/A	N/A	N/A	N/A	57.9	N/A

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**Figure 3-15**  
**TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS**

The State DOH maintains community noise control standards that apply to construction noise. Measures which would minimize construction noise impacts include: limiting activities to between 7:00 am and 6:00 pm on weekdays and between 9:00 am and 6:00 pm on Saturdays, and require construction equipment to have mufflers in good working order, administrative controls, and placement of construction barriers as required.

Restricting heavy truck and equipment staging areas and altering truck routes as far from noise sensitive properties as possible, would further minimize construction noise impacts from the Proposed Action.

A noise permit would be obtained if the noise levels from construction activities are expected to exceed the allowable levels of the rules as stated in HAR 11-46-6(a).

No impacts from construction-related noise would occur under the No Action Alternative.

### **Long-Term, Roadway Traffic Noise Impacts**

Federal and state transportation agencies set the standards under which attenuation is required to reduce noise levels from newly constructed highways. HDOT noise abatement criteria in this case are 66  $L_{eq}(h)$  or a 15 dB increase. A list and descriptions of acoustical terminology are contained in the noise study (Appendix F). Under HDOT requirements, where projected noise increases meet or exceed these criteria, attenuation must be considered to reduce the projected increase by 5 dBA.

The noise measurements collected were used in conjunction with forecasted traffic data from the traffic report (Appendix E) and the traffic noise model. The measurements were applied to four cross-sections of the existing and proposed highway corridor (Figure 3-16). Each cross-section consisted of four receivers at different distances from the highway, allowing the analysis of setback on noise attenuation. These sections were also analyzed for the impact of sound attenuating walls of various heights at the various distances.

The results of the noise study determined the following:

- The existing traffic noise levels at the highest peak hour are below the HDOT threshold of 66  $L_{eq}$  at all receivers.
- Noise levels at these same locations in the horizon year 2028 were predicted to exceed this threshold at some of the receivers, depending on the intensity of the noise source and distance from it.



- The 15 dBA increase was exceeded at almost all locations in horizon 2028, triggering the attenuation requirement at these locations. The use of walls ranging from 5 to 8 feet in height (depending on the location) would meet the abatement requirement of 5 dB. The results of the traffic noise model analysis are summarized in Figure 3-17.

The noise study also analyzed the impacts of 25 miles per hour (mph) speed limit (versus a 35 mph speed limit) as a potential attenuation design measure on traffic noise levels at five locations along the proposed highway corridor. The study also predicted the setback needed to achieve to the 66  $L_{eq}(h)$  level and the 71  $L_{eq}(h)$  level for the horizon year 2028 at these five locations. Results of the model indicated that a reduction of the posted speed limit from 35 to 25 mph (causing a reduction in actual vehicle speed from 45 to 35 mph), combined with a setback of 12 to 25 feet (depending on the location), would meet the HDOT attenuation requirements of a 5 dBA reduction. The results of this analysis are summarized in Table 3-12.

The report reached the following general conclusions on the impacts of traffic noise levels as a result of the Proposed Action that are possible by the horizon year 2028. These conclusions are valid for the future traffic volumes, mix, and average speed assumptions used for this traffic noise study:

- By the horizon year 2028, traffic noise levels along the proposed highway (north of Palani Road to north of Kealakehe Parkway) are expected to exceed 66  $L_{eq}(h)$  along the mauka and makai rights-of-way, impacting noise sensitive developments within 27 to 39 feet of the ROW. Noise sensitive developments located within 27 to 39 feet of the highway ROW would be candidates for traffic noise attenuation measures. Developments located farther from the ROW would need no attenuation.
- By the horizon year 2028, traffic noise levels along the mauka and makai ROWs of the proposed highway (just south of Hina Lani Street) are not expected to exceed 66  $L_{eq}(h)$ .
- If noise sensitive developments precede construction of the Proposed Action then traffic noise attenuation measures for developments should be located within distances of approximately 100 feet from the highway ROWs.
- The HDOT 66  $L_{eq}(h)$  or 15 dB increase noise abatement criteria should not be exceeded at Kealakehe High School.

**EXISTING AND PREDICTED TRAFFIC NOISE LEVELS VS. BARRIER HEIGHTS  
( 4.92 FT HIGH RECEPTOR, HIGHEST PEAK HOUR )**

RECEPTOR LOCATION	SETBACK DIST. FROM HWY. B.L.	RECEPTOR GROUND ELEVATION (FT)	EXISTING (CY 2008) Leq	FUTURE (CY 2028) Leq				
				W/O BAR/ (CHANGE)	5.0 FT WALL (CHANGE)	6.0 FT WALL (CHANGE)	7.0 FT WALL (CHANGE)	8.0 FT WALL (CHANGE)
<u>HHFDC (GRIDLINE #1)</u>								
Receiver #1A	65 FT East	300	50.0	69.2 / 19.2 *	63.8 / 13.8	60.0 / 10.0	58.1 / 8.1	56.5 / 6.5
Receiver #1B	90 FT East	301	50.0	66.1 / 16.1 *	61.1 / 11.1	59.3 / 9.3	58.3 / 8.3	57.3 / 7.3
Receiver #1C	120 FT East	301	50.0	63.1 / 13.1	58.8 / 8.8	57.4 / 7.4	56.6 / 6.6	55.9 / 5.9
Receiver #1D	200 FT East	312	50.0	59.2 / 9.2	57.5 / 7.5	57.1 / 7.1	56.2 / 6.2	55.3 / 5.3
<u>HHFDC (GRIDLINE #2)</u>								
Receiver #2A	77 FT East	319	48.0	68.2 / 20.2 *	67.6 / 19.6 ***	63.8 / 15.8 ***	60.7 / 12.7	58.7 / 10.7
Receiver #2B	90 FT East	319	48.0	66.9 / 18.9 *	64.4 / 16.4 ***	62.1 / 14.1 ***	60.5 / 12.5	59.3 / 11.3
Receiver #2C	120 FT East	322	48.0	64.6 / 16.6 *	62.3 / 14.3 ***	61.0 / 13.0 ***	60.0 / 12.0 ***	58.9 / 10.9
Receiver #2D	200 FT East	325	48.0	59.9 / 11.9	57.7 / 9.7	56.9 / 8.9	56.2 / 8.2	55.5 / 7.5
<u>HHFDC (GRIDLINE #3)</u>								
Receiver #3A	77 FT East	302	47.0	67.9 / 20.9 *	65.4 / 18.4 ***	62.2 / 15.2	60.3 / 13.3	58.6 / 11.6
Receiver #3B	90 FT East	302	47.0	66.5 / 19.5 *	63.0 / 16.0 ***	61.1 / 14.1	59.7 / 12.7	58.6 / 11.6
Receiver #3C	120 FT East	305	47.0	64.2 / 17.2 *	61.6 / 14.6 ***	60.3 / 13.3 ***	59.2 / 12.2	58.2 / 11.2
Receiver #3D	200 FT East	312	47.0	60.0 / 13.0	58.6 / 11.6	58.1 / 11.1	57.1 / 10.1	56.3 / 9.3
<u>KEALAKEHE HIGH SCHOOL (GRIDLINE #4)</u>								
Receiver Location "B"	105 FT East	274	55.0	64.8 / 9.8	N/A	N/A	N/A	N/A
Receiver Location "C"	430 FT East	279	54.4	48.9 / -5.5	N/A	N/A	N/A	N/A
Receiver Location "D"	400 FT East	279	57.9	50.1 / -7.8	N/A	N/A	N/A	N/A

1. Gridline locations as shown in Figure 2.
2. \* Denotes exceedance of State DOT "66 Leq" Criteria for Activity Category B or exceedance of State DOT "15 dB increase" Criteria.
3. \*\* Denotes exceedance of State DOT "71 Leq" Criteria for Activity Category C or exceedance of State DOT "15 dB increase" Criteria.
4. \*\*\* Denotes need for additional barrier height to meet State DOT "5 dBA Minimum Attenuation" Criteria.
5. For Receiver Locations "B", "C", and "D" at Kealakehe High School, see Figure 1 and Table 1.

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**Figure 3-17  
EXISTING AND PREDICTED TRAFFIC NOISE LEVELS VS. BARRIER HEIGHTS**

**Table 3-12: Future (CY 2028) Traffic Volumes and Noise Level Analysis**

	Location	Total Vehicles per Hour	45 mph			35 mph		
			60' L <sub>eq</sub>	100' L <sub>eq</sub>	200' L <sub>eq</sub>	60' L <sub>eq</sub>	100' L <sub>eq</sub>	200' L <sub>eq</sub>
<b>AM Peak Period</b>	Ane Keohokalole Hwy. – North of Palani Road	1,567	69.4	64.2	57.3	65.9	60.9	54.3
	Ane Keohokalole Hwy. – At Keahuolu Access	1,549	69.1	64.0	57.1	65.9	60.8	54.3
	Ane Keohokalole Hwy. – South of Kealakehe Pkwy	1,586	69.2	64.1	57.2	66.0	60.9	54.3
	Ane Keohokalole Hwy. – North of Kealakehe Pkwy	1,009	67.3	62.1	55.2	64.1	59.0	52.4
	Ane Keohokalole Hwy. – South of Hina Lani St.	539	64.5	59.4	52.5	61.2	56.2	49.7
<b>PM Peak Period</b>	Ane Keohokalole Hwy. – North of Palani Road	2,131	70.5	65.3	58.5	67.2	62.2	55.6
	Ane Keohokalole Hwy. - At Keahuolu Access	2,012	70.3	65.1	58.2	67.0	61.9	55.3
	Ane Keohokalole Hwy. – South of Kealakehe Pkwy	1,892	70.0	64.8	57.9	66.7	61.7	55.1
	Ane Keohokalole Hwy. – North of Kealakehe Pkwy	1,568	69.2	64.0	57.1	65.9	60.9	54.3
	Ane Keohokalole Hwy. – South of Hina Lani St.	617	65.0	59.9	53.1	61.7	56.7	50.2

Note: Noise levels exceeding the 66 dBA level are shown in red.

- The HDOT abatement criteria of 71  $L_{eq}(h)$  for commercial industrial properties should not be exceeded at future developments in the vicinity of the Proposed Action.
- No existing park lands or public use structures should experience traffic noise levels from the Proposed Action which exceed 66  $L_{eq}(h)$  or which exceed existing background ambient noise levels by 15 dB.

### **Attenuation**

If the proposed highway is built before future developments are planned or constructed, noise abatement would not be required as part of highway construction. If the Proposed Action is constructed after the development of noise sensitive residences, and future traffic noise levels at developed properties are projected to exceed the 15 dB increase or the 66  $L_{eq}(h)$  maximum, the application of reasonable and feasible traffic noise attenuation measures at these developed properties must be considered as part of construction. Lands which are undeveloped at the time of the project, but are known to be under consideration for development in the future, are treated as developed and the highway noise impacts assessed accordingly.

The noise study considered various approaches to noise attenuation, which included studying the impact of a 10 mph reduction in vehicle speed. Based on this analysis (Appendix F), construction of noise barriers, in combination with reducing the posted speed limit from 35 to 25 mph, were the most feasible and lowest-cost approaches to noise attenuation. The attenuation approaches also considered that the U.S. Department of Transportation (USDOT) maximum price for cost-effective noise attenuation is \$30,000 per benefited residence (e.g. future housing project), a condition that must be met in each case for attenuation to be considered reasonable and feasible.

No substantial noise impacts would occur as a result of the Proposed Action. Although noise level thresholds would be exceeded in some locations as a result of increases in traffic, design measures such as reducing posted speed limits, building noise-attenuating walls, and using setbacks would reduce noise levels sufficiently to meet HDOT requirements. In undeveloped locations where future developments such as housing may be affected by highway noise, local officials will be notified and provided with information on the projected noise levels along the proposed highway to ensure that future land developments are informed on anticipated highway noise levels and can take appropriate measures.

No impacts to the noise environment would take place under the No Action Alternative.

## 3.11 NATURAL HAZARDS

The natural hazards to which the project area could be subjected include earthquakes and volcanic eruptions. Because of the nature of the land, rainfall patterns, and soil types in the project area, floods due to storm water surface runoff are unlikely to occur. The project area is outside of the tsunami inundation zone.<sup>42</sup>

### 3.11.1 AFFECTED ENVIRONMENT EARTHQUAKE HAZARDS

The County of Hawai'i is one of the most seismically active areas on Earth, with more destructive earthquakes than in any other comparably sized area in the United States. The Kona area is subject to earthquakes with intensities up to VIII on the Modified Mercalli Scale.<sup>43</sup>

### VOLCANIC HAZARDS

The Proposed Action is situated on the west-facing flank of Hualalai Volcano. Of the three active volcanoes on the Island of Hawai'i, Hualalai Volcano is considered to be the least active. Its last eruption in 1801 produced lava flows that inundated the Ka'upulehu and Keahole areas of North Kona. Hualalai Volcano is considered by geologists to be representative of a post-shield stage of Hawaiian volcanism, which is characterized by a marked decrease in the eruption rate as the volcano drifts off the Hawaiian hotspot. The estimated lava production rate for Hualalai Volcano over the past 3,000 years is about two percent of the current rate of Kilauea Volcano.<sup>44</sup>

**Lava Flows.** Hualalai Volcano is identified as being fully contained in lava-flow Hazard Zone 4. Maps showing volcanic hazard zones on the island of Hawai'i were first prepared in 1974 by Donald Mullineaux and Donald Peterson of the U.S. Geological Survey (USGS) and were revised in 1987. The USGS divides the island into zones that are ranked from 1 through 9 based on the probability of coverage by lava flows, with 9 being the lowest probability. The Proposed Action is located in lava-flow Hazard Zone 4. Other direct hazards from eruptions, such as tephra fallout and ground cracking and settling, are not specifically considered on the

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<sup>42</sup> County of Hawai'i Civil Defense Agency. *Tsunami Evacuation Zones for Hawai'i County*. <http://co.hawaii.hi.us/cd/tsunami/maps.htm>. Accessed January 2009.

<sup>43</sup> According to FEMA, during an earthquake with an intensity of VIII on the Modified Mercalli Scale, drivers have trouble steering. Houses that are not bolted down might shift on their foundations. Tall structures such as towers and chimneys might twist and fall. Well-built buildings suffer slight damage. Poorly built structures suffer severe damage. Tree branches break. Hillsides might crack if the ground is wet. Water levels in wells might change.

<sup>44</sup> Belt Collins Hawaii Ltd. *Final Environmental Impact Statement Keahuolu Affordable Housing Project*. October 2008.

hazard map; however, these hazards also tend to be greatest in the areas of highest hazard from lava flows.<sup>45</sup>

**Tephra.** In addition to lava-flow hazard zones, hazard zones for tephra falls (ash fall) have also been defined for the island of Hawai'i (Mullineaux et al., 1987). The hazard from tephra fall for all of Hualalai Volcano is ash fall Hazard Zone 2, which indicates that tephra falls from lava fountains could be frequent but thin. Tephra is a general term for fragments of volcanic rock and lava that are blown into the air by explosive volcanic eruptions, hot gases in eruptive columns, or by lava fountains.

### 3.11.2 POTENTIAL IMPACTS

No substantial impacts to potential threats from natural hazards would occur as a result of the Proposed Action. The Proposed Action is unlikely to increase risks to public health and safety associated with natural hazards, including earthquakes and volcanic eruptions.

No impacts to potential threats from natural hazards would occur under the No Action Alternative.

## 3.12 INFRASTRUCTURE

### 3.12.1 UTILITIES AND SOLID WASTE

#### 3.12.1.1 Affected Environment

The existing section of Ane Keohokalole Highway contains waterline; sewer line; underground electrical, telephone, and cable systems; and streetlights. The undeveloped portions of the proposed highway corridor have no existing overhead or underground utilities. No solid waste service is currently required as the project area is undeveloped and vacant.

Palani Road has an existing waterline owned by the County of Hawai'i Department of Water Supply (DWS). The waterline provides water to the 0.3 million gallon water tank on Palani Road and to Kailua-Kona. An existing overhead 69-kilovolt (kV) electrical line within the Palani Road ROW connects to the Palani Road substation near the Henry Street intersection. Overhead 11.5-kV electrical lines and telephone lines also exist along both the north and south sides of Palani Road. In addition, there are short sections of underground electrical lines and cable lines within the ROW. There are existing streetlights along Palani Road and traffic signals at the Henry Street intersection.

<sup>45</sup> USGS. Lava Flow Hazard Zone Maps. <http://pubs.usgs.gov/gip/hazards/maps.html>. Accessed February 19, 2009.

### 3.12.1.2 Potential Impacts

No substantial impacts on utilities or solid waste disposal facilities would occur as a result of the Proposed Action. Construction of the Proposed Action would require protection of existing utilities or improvements to the utility systems. The existing water system would be maintained and extended within the new sections of the proposed highway. Sewer line and manholes would be installed within the proposed highway corridor. A reclaimed water system is also planned for installation within the proposed highway corridor. The reclaimed water would be utilized to irrigate landscaping along the proposed highway corridor and the surrounding areas. Electrical, telephone, and cable infrastructure may be installed overhead or underground, based on availability of funding. Electricity would be required for streetlights that are planned along the proposed highway and Palani Road.

The County of Hawai'i requires all construction, demolition, and solid waste to be disposed of at an approved solid waste disposal or recycling facility. All waste generated during the project construction would be taken to the West Hawai'i Landfill or a County transfer station, or recycled to the extent possible. The current life of the West Hawai'i Landfill is 55 years based on current tonnage.<sup>46</sup>

No impacts to utilities or solid waste disposal facilities would occur under the No Action Alternative.

## 3.12.2 DRAINAGE

### 3.12.2.1 Affected Environment

The existing section of Ane Keohokalole Highway has an existing drainage system, Runoff is collected and directed to drywells. The undeveloped portions of the proposed highway and Palani Road do not have drainage systems.

### 3.12.2.2 Potential Impacts

No substantial impacts to the drainage infrastructure of the project area would occur as a result of the Proposed Action. Appropriate drainage infrastructure would be constructed and installed along the proposed highway. Any runoff from roadway surfaces and the associated increase in runoff resulting from the Proposed Action would be accommodated with storm water design features (i.e., bio-retention cells) to minimize impacts to adjacent properties and water resources in the project area.

Traditionally, storm water management has involved the rapid conveyance of water via storm sewers to surface waters. LID is a different approach that retains and

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<sup>46</sup> Waste Management, Inc. West Hawai'i Landfill. <http://www.keepinghawaiiiclean.com/whawaii.htm>. Accessed February 26, 2009.

infiltrates rainfall on-site. The purpose of LID is to reduce the speed, volume, and polluting capacity of runoff, particularly large runoff events. The LID approach emphasizes site design and planning techniques that mimic the natural infiltration-based, groundwater-driven hydrology of the historic landscape. Bio-retention is one of the most important BMP tools in the application of LID technology for controlling runoff volume and pollutants.<sup>47</sup> Drainage along the proposed highway will be provided by bio-retention cells into which storm water would be directed for filtration and contaminant removal. After a certain residence period in the biotreatment areas, excess runoff would flow into drywells.

No impacts to drainage infrastructure would occur under the No Action Alternative.

### **3.12.3 BICYCLE, PEDESTRIAN, AND TRANSIT FACILITIES**

#### **3.12.3.1 Affected Environment**

The project area is undeveloped and does not currently have any bicycle and pedestrian facilities or transit services.

#### **3.12.3.2 Potential Impacts**

In accordance with the KCDP, the region shall include a network of transit, pedestrian, and bicycle routes that provide alternatives to the automobile. Hence, the Proposed Action includes pedestrian sidewalks and bicycle lanes, and when the development of the area makes it appropriate, the County of Hawai'i will address specific aspects of transit. With Kona's consistently mild climate, a network of interconnected bike lanes, trails, and sidewalks would provide a safe, healthy, and fuel-efficient alternative to automobile use that would be available year-round.

No substantial impacts to bicycle and pedestrian facilities or transit services would occur as a result of the Proposed Action. Rather, the Proposed Action would have beneficial effects by providing additional roadways and dedicated paths for pedestrians and bicyclists.

No impacts to bicycle and pedestrian facilities or transit services would occur under the No Action Alternative.

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<sup>47</sup> USEPA. "Stormwater Best Management Practice Design Guide Volume 2, Vegetative Biofilters." p. 7-1. September 2004.

## **3.13 VISUAL RESOURCES**

### **3.13.1 AFFECTED ENVIRONMENT**

The present view of the project area from Queen Ka‘ahumanu Highway looking mauka can be characterized as gently upward sloping land, lava fields with dense stands of kiawe, and stands of various grasses, with the backdrop of Hualalai Volcano and residential areas bordering the project area. The makai view across the project area from the upper elevations at Palani Road to Hina Lani Street is across this landscape to the Pacific Ocean, with Kailua-Kona to the south. The proposed highway corridor is presently undeveloped land overgrown with scrub vegetation that includes trees and dense undergrowth, and the short section of the existing Ane Keohokalole Highway which runs from Kealakehe Highway to Puohulihuli Street.

### **3.13.2 POTENTIAL IMPACTS**

No substantial impacts to visual resources would occur as a result of the Proposed Action. The proposed highway will replace the current visual landscape of scrub vegetation, a short section of existing road, and exposed lava along the corridor. Construction activities would be visible from surrounding roadways and the existing neighboring developments, but construction-related visual impacts would be temporary. Once construction is completed, the proposed highway would be visible from Queen Ka‘ahumanu Highway until the vegetation grows back along the roadbed, after which only an occasional vehicle top moving along the roadway and street lighting may be visible.

Viewsheds and night sky viewsheds in the project area are important to visitors of the Kaloko-Honokohau National Historical Park and to cultural practitioners. The proposed highway could potentially affect the viewshed for Ala Kahakai National Historic Trail users, including cultural practitioners, particularly at night due to lighting along the highway. Street lighting is required for “urban collector” roadways in accordance with the American Association of State Highway and Transportation Officials (AASHTO) criteria, as well as by the County of Hawai‘i policy for commercial and residential roads; but the effects of street lighting on the night sky viewshed will be minimized through the implementation of low pressure sodium lamps and shielding in compliance with the County Outdoor Lighting Ordinance (Hawai‘i County Code §14-50 *et seq.*).

No impacts to visual resources would occur under the No Action Alternative.

## 3.14 PUBLIC SERVICES

### 3.14.1 AFFECTED ENVIRONMENT

#### Police and Fire Protection

The Hawai'i County Police Department's Kona station is located at Kealakehe, just above Queen Ka'ahumanu Highway. It serves as the local station and main office for West Hawai'i bureaus. Some 78 positions were authorized for the Kona district as of 2005.<sup>48</sup>

The Hawai'i County Fire Department employs 350 paid fire fighters and 225 volunteer fire fighters at 20 fire stations across the island.<sup>49</sup> The North Kona fire station is located in Kailua-Kona, about 0.75 miles from the project area.

The Public Facilities and Programs working group of the KCDP process issued a "Final Actions" report in 2006, urging improvements in fire and police protection, accomplished by increased citizen patrols and higher wages for police officers.<sup>50</sup>

#### Civil Defense

The role of the Civil Defense Agency is to direct and coordinate the development and administration of the county's total emergency preparedness and response program to ensure prompt and effective action when natural or man-caused disaster threatens or occurs anywhere in the county of Hawai'i.<sup>51</sup> Recently, the major focus of the Civil Defense Agency has been the ongoing eruption of Kilauea Volcano.<sup>52</sup>

#### Education

The Proposed Action will be located within the Kealakehe school catchment area. It is served by:

- Kealakehe Elementary School, located on Kealaka'a Street, approximately one mile mauka of the proposed highway corridor.

<sup>48</sup> County of Hawai'i Police Department. *2004-2005 Annual Report*. <http://www.hawaiipolice.com/topPages/annualreports.html>. Accessed February 2009.

<sup>49</sup> County of Hawai'i. *Annual Report for Fiscal Year 2007-2008*. [http://www.co.hawaii.hi.us/annual\\_reports/annual2008/toc.htm](http://www.co.hawaii.hi.us/annual_reports/annual2008/toc.htm). Accessed February 27, 2009.

<sup>50</sup> County of Hawai'i Planning Department. *Working Group: Public Facilities and Programs. Final Actions*. [http://www.hcrc.info/community-planning/community-development-plans/kona/working-groups/working-group-reports/FinalActions\\_Facilities\\_Programs\\_061212.doc/view](http://www.hcrc.info/community-planning/community-development-plans/kona/working-groups/working-group-reports/FinalActions_Facilities_Programs_061212.doc/view). Accessed February 2009.

<sup>51</sup> County of Hawai'i Civil Defense Agency. <http://co.hawaii.hi.us/cd/>. Accessed February 2009.

<sup>52</sup> County of Hawai'i. *Annual Report for Fiscal Year 2007-2008*. [http://www.co.hawaii.hi.us/annual\\_reports/annual2008/toc.htm](http://www.co.hawaii.hi.us/annual_reports/annual2008/toc.htm). Accessed February 27, 2009.

- Kealakehe Intermediate School, located on Kealaka‘a Street; approximately one mile from the proposed highway corridor.
- Kealakehe High School. Opened in 1997 in the Villages of La‘i ‘Opua, serving students from Hualalai to Waikoloa Village. Kealakehe High School is located at the junction of the existing stretch of Ane Keohokalole Highway and Puohulihuli Street. The classroom buildings are set back approximately 300 feet from the proposed highway corridor.

### 3.14.2 POTENTIAL IMPACTS

No substantial impacts to public services would occur as a result of the Proposed Action. Development of the Proposed Action is not anticipated to substantially increase demand for police, fire, civil defense, or educational services. The Proposed Action would improve the delivery of public services, as it would provide better access to the surrounding areas for emergency responders. The Proposed Action would also improve accessibility to schools by encouraging multi-modal transportation, including bicycling and walking.

No impacts to public services would occur under the No Action Alternative.

## 3.15 SOCIO-ECONOMIC CONDITIONS

### 3.15.1 AFFECTED ENVIRONMENT

The Proposed Action is located in the Hawai‘i County district of North Kona on the west side of the island of Hawai‘i. The most populated region on this side of the island, North Kona stretches from Keahole to Waikoloa and includes major commercial and tourist centers.

For much of the 20th century, West Hawai‘i was an agricultural area, with coffee (from South Kona), sugar (from North Kohala), and cattle (from the uplands of South Kohala) as major commodities. Major public facilities for West Hawai‘i, such as the hospital and the area’s first high school, were located in Kealakekua in the South Kona district.

According to the 2000 Census, the population of Hawai‘i County numbered 148,677 individuals, with 28,543 individuals residing in the North Kona district.<sup>53</sup> The racial compositions of Hawai‘i County and the North Kona district are shown in Table 3-13. The median household income for Hawai‘i County in 1999 was \$39,805, with

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<sup>53</sup> U.S. Census Bureau. *Census 2000*.  
[http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=DEC&\\_ds\\_name=DEC\\_2000\\_SLDS&\\_sbmenuld=datasets\\_3&\\_lang=en](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_ds_name=DEC_2000_SLDS&_sbmenuld=datasets_3&_lang=en). Accessed August 17, 2009.

15.7 percent of the population below the poverty level. The median household income for the North Kona district in 1999 was \$47,610, with 9.7 percent of the population below the poverty level.

**Table 3-13: Racial Composition of Hawai'i County and the North Kona District<sup>54</sup>**

Race	Hawai'i County		North Kona District	
	No. of Individuals	Percent of Total Population	No. of Individuals	Percent of Total Population
White alone	46,904	31.5%	13,455	47.1%
Black or African America alone	698	0.5%	126	0.4%
American Indian or Alaska Native alone	666	0.4%	133	0.5%
Asian alone	39,702	26.7%	4,655	16.3%
Native Hawaiian and Other Pacific Islander alone	16,724	11.2%	3,057	10.7%
Some other race alone	1,695	1.1%	403	1.4%
Two or more races	42,288	28.4%	6,714	23.5%
TOTAL	148,677		28,543	

The most recent American Community Survey, conducted for Hawai'i County in 2007 by the Census Bureau, reported 173,057 residents, representing a 16 percent increase in population since the 2000 Census. Approximately 27.6 percent of Hawai'i County residents had obtained a bachelor's degree or higher, and 64.3 percent of its residents actively participated in the workforce. The median household income for Hawai'i County in 2007 was reported to be \$59,111, representing a 49 percent increase since the 2000 Census.

The visitor industry in North Kona grew after statehood, and the district received the majority of the island's visitor units. By 1990, however, the South Kohala coastal resorts had become important tourist destinations as well. As the coastal resorts expanded, West Hawai'i became more dependent on tourism. Kailua-Kona is now a regional center with commercial, industrial, and resort facilities. The North Kona district has seen continuing increases in population, visitor numbers, and commercial activity. As of 2002, Kailua-Kona had 165 retail establishments with

<sup>54</sup> U.S. Census Bureau. *Census 2000*. [http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=DEC&\\_ds\\_name=DEC\\_2000\\_SLDS&\\_sbmenuld=datasets\\_3&\\_lang=en](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_ds_name=DEC_2000_SLDS&_sbmenuld=datasets_3&_lang=en). Accessed August 17, 2009.

gross sales of \$410 million, 24 percent of the island total. The retail workforce in Kailua-Kona numbered 2,174.

Island-wide, the ratio of visitors to residents in Hawai'i County is about 1 to 6. In West Hawai'i, the ratio is about 1 to 3. In 2000, West Hawai'i had 56,301 residents and an average visitor census of 17,784. The primary industry in North Kona is tourism. Agriculture (coffee, ranching, etc.) also contributes to the regional economy. The Natural Energy Laboratory of Hawai'i Authority's facilities house biotechnology start-up corporations, creating a small industry in this field.

If historical trends continue, the North Kona population will exceed 43,700 in 2020.<sup>55</sup> The populations of North Kona and South Kohala include a larger share of recent U.S. mainland in-migrants than the general island population.

In 2000, approximately 10,000 people worked in Kailua-Kona. Of this number, 70 percent commuted to Kailua-Kona from other places on the island.<sup>56</sup> Data for West Hawai'i zip codes from 2000 show that the length of commutes typically increases the farther a home area is from the job centers of Kailua-Kona and the South Kohala coast.<sup>57</sup> West Hawai'i residents have repeatedly pointed to traffic congestion as a problem affecting their quality of life. The problem is exacerbated by the high cost of housing near Kailua-Kona. This forces workers to seek more affordable housing considerable distances away from their jobs. Many Kona-area workers are living in areas such as Hawai'i Ocean View Estates, which is affordable but located 45 miles south of Kailua-Kona with a mean travel time to work of one hour.

The region's visitor plant extends along the coast, from Keauhou to the Mauna Kea Resort. Retail activity is centered at the intersection of Queen Ka'ahumanu Highway with Palani Road. New and proposed retail areas are dispersed, but much is within a few miles of this intersection (e.g., Lowe's on Henry Street, Costco in the Kaloko Industrial Park, and the new Kona Commons next to the existing QLT industrial subdivision makai of Queen Ka'ahumanu Highway).

The idea that development is eroding residents' quality of life has motivated protests over new development proposals along Queen Ka'ahumanu Highway and generated demands that the state and county move quickly to improve major roadways. Residents' urgent demands for road improvements have been heard in

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<sup>55</sup> The County of Hawai'i developed three projections at the district level in 2000 for planning purposes. Since these projections did not draw on 2000 Census data, they are viewed here as outdated. It should be noted that the County's projections showed more rapid growth than the State projections discussed here.

<sup>56</sup> This Census calculation is for the Kailua-Kona Census Designated Place (CDP). Residents of the subdivisions to the north of Kailua-Kona such as Kona Palisades would count as "commuters" to Kailua-Kona along with residents of more distant areas (U.S. Census data calculated by the State of Hawai'i Department of Business, Economic Development and Tourism [DBEDT], available at <http://www.hawaii.gov/dbedt/info/census/Folder.2005-10-13.2927/DaytimePop>).

<sup>57</sup> County of Hawai'i Planning Department. *Keahole to Honaunau Regional Circulation Plan. County Action Plan*. August 14, 2006.

roadside demonstrations, planning focus groups, meetings with County authorities, and hearings on development proposals. A small survey of registered voters in West Hawai'i suggests that education and housing are also prominent concerns.

### 3.15.2 POTENTIAL IMPACTS

The Proposed Action would have a positive effect on the local economy as it is part of a regional plan to develop a multi-modal transportation network to serve a number of mixed-use, affordable developments, including DHHL's properties. Related jobs for local workers and local material suppliers and much needed affordable housing will result.

The Proposed Action, together with the ongoing improvements on Queen Ka'ahumanu Highway and Palani Road to improve safety and traffic flow north of Kailua-Kona, would result in less traffic congestion.<sup>58,59</sup> The current roadway improvements, combined with the Proposed Action, are consistent with the objectives and goals of the KCDP in providing essential infrastructure, facilities, transportation choices, and connectivity options that are concurrent with growth in order to enhance the quality of life for the residents and visitors of Kona. The current and future development of transportation infrastructure and facilities would ensure that all communities are adequately connected and served, and that a safe and efficient multi-modal transportation system is integrated into the planning of future land uses to prevent traffic congestion.

Under the No Action Alternative, traffic congestion along Queen Ka'ahumanu Highway would continue to worsen, as regional traffic is projected to increase in the future. The increase in regional traffic would affect quality of life for residents, as commute times would increase, possibly leading to declines in road safety and increasing frustration associated with traffic. Public sentiment on the subject of development of projects without supporting infrastructure is already generally negative. It is possible that Kona's economic development would be negatively impacted as visitors, particularly those traveling from the airport or trying to get around town in heavy traffic, are likely to perceive that the character of the region is declining, and they would avoid congested areas entirely. As a consequence, under the No Action Alternative, substantial negative impacts on the socio-economic environment of the region would occur.

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<sup>58</sup> Quirk. "Kona-side Traffic Should Ease in Three Years." *Hawai'i Tribune-Herald*. March 18, 2007.

<sup>59</sup> Fehr & Peers/Kaku Associates. *Traffic Study for the Keahuolu Affordable Housing Master Plan Project*. January 2008.

# CHAPTER 4

## CUMULATIVE IMPACTS

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### 4.1 CUMULATIVE IMPACTS

Cumulative impacts are effects on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what entity undertakes such actions. The proposed highway would connect Henry Street to Palani Road and beyond to the future West Hawai'i Civic Center (another long-range County of Hawai'i project), the Kealakehe Schools, and the Villages of La'i 'Opu'a. A smaller project, the Manawalea Connector, would link the Kealakehe Schools with residential areas located above, bypassing Queen Ka'ahumanu Highway and improving traffic connectivity and circulation.

The cumulative impact analysis considered reasonable future actions within the reasonable geographic boundaries for each potentially affected resource. At the current time, a number of large housing, commercial, and mixed-use developments are planned in and around the project area that would add population, human activities, and traffic to the region (summarized in Table 4-1). Addressing traffic generated by these planned developments is a major justification for the Proposed Action.

Various infrastructure projects are also in the planning or construction stages. The County of Hawai'i Department of Water Supply (DWS) is planning to upgrade its water system by providing a new transmission line from Mamalahoa Highway to Palani Road. The County DWS is also converting exploratory wells at Keopu-Pu'u'honua and Palani Ranch into production wells and building reservoirs to provide storage. The State of Hawai'i Department of Transportation (HDOT) is widening Queen Ka'ahumanu Highway to four lanes from Kailua-Kona to the Kona International Airport.

The cumulative impact analysis was used to evaluate potential impacts of the Proposed Action in the context of these other activities. Resources impacted by the Proposed Action and evaluated for cumulative impacts include climate and air quality, cultural resources, surface water and drainage, groundwater and hydrogeology, roads and traffic, noise, and socio-economics. The following resources were not evaluated for cumulative impacts as the Proposed Action would not have a direct or indirect impact on the resource or result in cumulative impacts:

land use; flora and fauna; geology, topography, and soils; natural hazards; infrastructure; visual resources; and public services.

**Table 4-1: Related Project Trip Generation in the Vicinity of the Proposed Action\***

Location on Map**	Project Name	Number of Units	Daily Trips
1	Palamanui	965	7,486
2	Makalei Estates	80	766
3	Lokahi Makai	190	1,818
4	Seascape (aka Lokahi Kau)	108	726
5	O 'oma Plantation	19	182
6	Kula Nei Residential Development	270	2,584
7	O 'oma Beachside Village	n/a	n/a
8	The Shores at Kohanaiki	500	4,785
9	Kohanaiki Business Park	n/a	n/a
10	Kaloko Heights	300	2,871
11	Kona 327 LLC	350	3,350
12	West Hawai'i Business Park	n/a	n/a
13	Villages of La'i 'Opua	400	3,828
14	Keahuolu Affordable Housing	n/a***	16,034
15	Rutter Affordable Housing	268	2,565
	<b>Total</b>	<b>3,450</b>	<b>46,995</b>

Notes:

- \* Related project trip generation data obtained from the traffic analysis, Appendix E.
- \*\* See Figure 3-11, Locations of Future Development in the Region.
- \*\*\* Keahuolu Affordable Housing subsequently reported 2,330 units in 2008 EIS.

### 4.1.1 Climate and Air Quality

The reasonable geographic boundary for air quality is defined by the immediate project area and globally (the latter for greenhouse gas [GHG] concerns).

Some cumulative short- and long-term impacts on air quality would be associated with the future regional developments. Since several projects could occur at the same time, coordination between the agencies and the developers would help to minimize short-term construction-related air quality impacts. Traffic management plans will keep vehicles moving and thus reduce vehicular emissions and their impacts on air quality. Fugitive dust emissions will be minimized as required by Hawai'i Administrative Rules (HAR) 11-60.1-33. These temporary cumulative impacts on air quality would not be substantial.

Long-term cumulative impacts from the planned future residential and commercial developments may include an increase in GHG emissions, but this increase would not substantially contribute to climate change. Any increases in vehicular emissions and associated pollutant concentrations would be offset by the effects on air quality resulting from improved traffic flow, therefore, no substantial cumulative impacts on air quality are expected.

## 4.1.2 Cultural Resources

The reasonable geographic boundaries for cultural resources are the ahupua'a affected by the Proposed Action.

### Historic Properties

The project area is located in the North Kona district and crosses through the ahupua'a of Keahuolu, Kealakehe, Kaloko, and Honokohau. The North Kona district contains a vast number of resources representing the evolution of Hawaiian settlement patterns and house types; fishing and agricultural activities; social, political, religious, economic, and land use systems; and recreational and artistic pursuits. These resources include habitation, recreational, and religious sites; items of material culture, such as tools, utensils, and artwork; roads and trails; and structures associated with agriculture, husbandry, and fishing. Section 3.4.1.1 describes the historic properties identified within the Proposed Action's area of potential effect (APE).

With each new project being developed in the North Kona area, the potential exists for historic properties to be affected, and these effects are cumulative. The cumulative impacts of developments in the North Kona area, including the proposed highway, were evaluated in *Keahuolu Lands of Kailua-Kona Final Environmental Impact Statement* (EIS).<sup>1</sup> As identified in the Final EIS, loss of some historic properties would occur. Compliance with applicable federal and state laws and rules, together with the implementation of proper mitigation measures such as data recovery and monitoring plans, as well as appropriate consultation with the Hawai'i State Historic Preservation Officer (SHPO), will minimize cumulative impacts by ensuring that proper documentation takes place and historic properties of unusual significance are not adversely affected.

There is potential for the fragmentation of the cultural landscape as a result of the cumulative loss of historic properties, including those associated with mauka-makai trails, and the associated cultural impacts. Based on input provided during the National Historic Preservation Act (NHPA) Section 106 consultation process, appropriate mitigation measures to address the fragmentation of the cultural

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<sup>1</sup> Belt Collins & Associates. October 23, 1990.

landscape have been developed. These design elements are made part of the project and will be stipulated in a Memorandum of Agreement (MOA) resulting from the NHPA Section 106 process. Stipulations in the Draft MOA (see Appendix G) which will serve to minimize cumulative impacts on historic trails include the following:

- Provisions for a 10-foot-wide pedestrian crossing for State Inventory of Historic Places (SIHP) 50-10-27-18099 shall be provided for future use when a management plan for this mauka-makai trail can be implemented with the adjacent landowners. The preferred location for this crosswalk is over the existing trail, but the actual location shall be dependent upon future plans for the nearby roadway intersection and public safety.
- Recognition of historic trails (SIHP 50-10-27-13006, SIHP 50-10-27-18099, and SIHP 50-10-28-26833) with commemorative signage that acknowledges historic and cultural significance at each of the three trail locations. The proposed text for the signage will be included in the archaeological mitigation plan.

Cumulative impacts on historic properties would occur as a result of the Proposed Action and other projects identified in Table 4-1, but with the design constraints identified in this Environmental Assessment (EA), impacts would be minimized. Furthermore, stipulations within the NHPA Section 106 MOA are intended to mitigate the adverse effect on historic properties from the Proposed Action and provide a net benefit to the Native Hawaiian community and community at large. With the federal funding provided under this action, historic preservation and interpretive efforts can finally occur and serve to minimize not only the adverse effect on historic properties for this Proposed Action, but also minimize cumulative impacts on cultural resources in the area. The MOA will provide opportunities for further archaeological studies, an interpretive center to share this information (education and outreach), and measures to support preservation of historic properties. In particular, the MOA and federal funding will enhance preservation measures of and the interpretive development of QLT's existing 25-acre Archaeological/Historic Preserve Area on the north side of Palani Road, between the proposed highway and Kamaka'eha Avenue.

### **Traditional Cultural Practices**

The cultural background for the project area is presented in the CIAs described in Section 3.4.2 and contained in Appendix B. These documents were the principal source for the assessment of cultural resources and traditional uses in the project area. Existing published information was compiled and early consultation was conducted with organizations that may possess knowledge of cultural resources in the region. Information gathered from the archival research and consultations facilitated the search for potential historic sites or traditional cultural practices.

Contemporary or continuing cultural practices include gathering of ocean resources and specific plants from the 300-foot elevation, makai of the proposed highway. Cumulative impacts on traditional cultural practices are not anticipated to be substantial.

It is reasonable to conclude that, based upon the limited range of resources, including native plants, the exercise of Native Hawaiian rights related to gathering, access, or other customary activities would not be affected, and there would be no adverse impact upon cultural practices or beliefs.

### **4.1.3 Surface Waters and Drainage**

The reasonable geographic boundary for surface waters and drainage is defined by the immediate project area and down gradient water bodies (i.e., surface and groundwater).

Of primary relevance to the discussion of surface waters and drainage impacts from the Proposed Action are cumulative impacts of sedimentation and storm water.

The Proposed Action and other future development projects will be designed and constructed in accordance with Clean Water Act (CWA) regulations, as well as state and county requirements that address storm drainage and associated water quality. Following CWA, state, and county requirements will ensure that patterns of flow and maximum peak flow rates of storm water drainage, downstream drainage, and water quality will be similar to pre-construction conditions. The implementation of sustainable storm water designs, such bio-retention cells (Section 3.8), will control storm water flow rates and quality. These will treat and filter first-flush runoff to remove pollutants and sediment. Drainage injection wells or subsurface drainage structures will be designed with a debris catch basin to allow the detention and periodic removal of rubbish and sediment deposited by runoff. Storm water runoff will first enter the debris catch basin before flowing into the drainage well. The volume of the debris catch basin will be designed using current industry and engineering standards.

With the implementation of these Best Management Practices (BMPs), cumulative impacts on surface or ground water quality in and around the project site and other future developments would not be substantial.

### **4.1.4 Groundwater and Hydrogeology**

The reasonable geographic boundary for groundwater and hydrogeology is defined by the immediate project area and the underlying affected aquifer.

With implementation of bio-retention cells and other drainage structures that are part of the Proposed Action, the highway improvements would not negatively impact groundwater. However, since the highway would facilitate a portion of future regional development, cumulative effects should be considered. The National Park Service (NPS) is concerned about regional development effects on groundwater that could affect downstream anchialine ponds located at Kaloko-Honokohau National Historical Park. The County of Hawai'i Department of Public Works (DPW) has initiated a study by the U.S. Geological Survey (USGS) to assess the potential for County DPW roadside dry wells to deliver contaminants to nearshore areas or drinking-water wells. The study will be completed in two phases. The objective of phase 1 is to provide an island-wide inventory of County DPW dry wells, determine the drainage area of each, and rank them on the basis of criteria that pertain to their potential to contaminate receiving waters. The objective of phase 2 is to assess the nature of contaminants and the flow to receiving waters for selected dry wells. This phase will use water and sediment sampling and dye-tracer tests. Findings from this study can then be used to develop plans to appropriately address these regional concerns.

The County of Hawai'i understands the NPS' concerns relating to planned regional development and potential effects on anchialine ponds and will take these concerns into consideration when reviewing future changes to the County General Plan, Code, and ordinances.

#### **4.1.5 Roads and Traffic**

The Proposed Action represents a potentially substantial contribution to the much larger "landscape" of the emergence of the city of Kailua-Kona and future regional developments. Over the past 40 years, Kailua-Kona has grown from a small community to a regional growth center, with much of the growth occurring in the past 10 years. The pace of commercial and residential growth, however, has exceeded the development of transportation infrastructure to accommodate it, leaving traffic conditions along the principal arterials (Queen Ka'ahumanu Highway and Mamalahoa Highway) to deteriorate.

In the traffic impact analysis report prepared by Fehr & Peers Transportation Consultants (see Appendix E), Level of service (LOS) methodology was used to analyze the operating conditions at a number of key intersections and street segments in the study area in the horizon year 2028, both under the No Action Alternative (i.e., future base conditions) and with the Proposed Action (i.e., future project conditions). Cumulative impacts were identified using the following criteria:

<b>No Action (Future Base Conditions)</b>	<b>Proposed Action (Future Project Conditions)</b>	<b>Cumulative Impact?</b>
LOS D or better	LOS D or better	No
LOS D or better	LOS E or LOS F	Yes
LOS E or LOS F	LOS E or LOS F	Yes

Note: Both the Proposed Action and cumulative analyses include ambient traffic growth. When intersections representing No Action and Proposed Action both operate at LOS E or F, this is not a direct impact as the Proposed Action is not the cause of the degraded intersection, but is considered a cumulative impact.

Table 4-2 summarizes the cumulative impacts for the ten study intersections. One study intersection, the intersection of Queen Ka’ahumanu Highway and Hina Lani Street (Intersection 1), is projected to operate at LOS E during the PM peak hours under future base conditions, resulting in a cumulative impact.

**Table 4-2: Intersection Level of Service Analysis – Cumulative Impacts**

<b>Intersection</b>	<b>Peak Period</b>	<b>Future (2028) Base LOS</b>	<b>Future (2028) Project LOS</b>	<b>Cumulative Impact?</b>
1. Queen Ka’ahumanu Highway & Hina Lani Street	AM	D	C	No
	PM	E	D	Yes
2. Ane Keohokalole Highway & Hina Lani Street	AM	C	B	No
	PM	D	B	No
3. Palani Road & Hina Lani Street	AM	C	B	No
	PM	D	C	No
4. Queen Ka’ahumanu Highway & Kealakehe Parkway	AM	C	B	No
	PM	E	C	No
5. Ane Keohokalole Highway & Kealakehe Parkway	AM	B	B	No
	PM	B	A	No
6. Palani Road & Palihilo Street	AM	B	B	No
	PM	B	B	No
7. Queen Ka’ahumanu Highway & Palani Road	AM	C	C	No
	PM	D	C	No
8. Kamaka’eha Avenue & Palani Road	AM	A	A	No
	PM	A	A	No
9. Henry Street/Ane Keohokalole Highway & Palani Road	AM	C	C	No
	PM	D	D	No
10. Queen Ka’ahumanu Highway & Henry Street	AM	C	C	No
	PM	D	D	No

Despite the cumulative impact identified under the Future (2028) Base (No Action Alternative), the Proposed Action would provide beneficial cumulative effects (i.e., the Proposed Action would improve traffic conditions at most of the intersections). Without the Proposed Action, the cumulative impacts of these future development projects on the LOS at these study intersections would be overwhelmingly negative.

#### **4.1.6 Noise**

With concurrent project construction (mostly housing and mixed-use developments in the parcels adjacent to the project area), construction-related noise would increase. This increase in noise would be temporary. Construction of the Proposed Action would be divided into several phases as the southern and then the northern section would be built. Noise impacts from construction would be distributed both temporally and geographically over these phases and confined to the particular area under construction at any given time. In each case, construction activities would comply with State of Hawai'i Department of Health (DOH) noise rules, HAR 11-46, which serve to minimize the impact of noise from construction and related activities. All construction projects at other future developments would also have to comply with these rules. Construction activities would not all take place simultaneously, but be distributed temporally and geographically. With all projects in compliance with State DOH noise rules, no cumulative impacts from construction noise would occur.

Once the Proposed Action is built and operational, and other developments have been completed, ambient noise in the area would rise. Noise from traffic would be the major contributor as a result of increased local trips generated by the population increases at the new developments, as well as from through traffic on the proposed highway. The noise study was prepared based on data from the traffic study that explicitly identified the cumulative effects of development on traffic. Therefore, the results presented in the noise study reflect both project-related and cumulative impacts of traffic and development on noise. According to the noise study, cumulative noise effects could occur in some specific locations along the proposed highway, but with the implementation of noise attenuation measures in accordance with federal and state requirements, cumulative noise would be within acceptable levels. Cumulative noise effects from the Proposed Action would not be substantial.

#### **4.1.7 Socio-economic Conditions**

By serving the stated goals of a variety of land use plans as discussed in Chapter 5, the Proposed Action and other developments in the region would have beneficial cumulative effects on socio-economic conditions in the Kona area. As discussed in Section 3.15, a regional roadway network connecting dense, mixed-use neighborhoods with businesses, services, and other amenities would increase job opportunities, raise the standard of living, and enhance the quality of life in the region.

The Kona Community Development Plan (KCDP) identifies a number of economic policies and goals that are necessary to achieve its vision of a sustainable community planned and built through the application of smart growth principles. Redevelopment is identified as an important economic factor in achieving this

vision, including multi-modal transportation, infill development, and mixed-use and affordable housing projects. The Proposed Action would deliberately support multi-modal transportation and provide infrastructure to enable infill in the areas it is intended to serve. Moreover, the Proposed Action would serve a number of development projects that in their own planning documents have specifically cited the principles of smart growth as goals (i.e., mixed-use, compact development, mixed price-point housing, a variety of transportation choices, job opportunities close to housing, and diverse, healthy communities). These plans echo the guiding principles of the KCDP.

No substantial cumulative impacts on socio-economic conditions would occur as a result of the Proposed Action and other future development projects with the implementation of sustainable community plans described above.

# CHAPTER 5

## CONSISTENCY WITH GOVERNMENT PLANS, POLICIES, AND CONTROLS

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Federal, State of Hawai'i, and County of Hawai'i laws, regulations, executive orders (EO), plans and policies, and required permits and approvals applicable to the Ane Keohokalole Mid-Level Highway project are described below.

### 5.1 FEDERAL

#### 5.1.1 Laws

##### 5.1.1.1 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC §470), recognizes the nation's historic heritage and establishes a national policy for the preservation of historic properties as well as the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of federal undertakings on historic properties, such as the historic support buildings within the project area, and affords the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on "adverse effect" determinations. The Section 106 process, as defined in 36 Code of Federal Regulations (CFR) Part 800, provides for the identification and evaluation of historic properties, for determining the effects of undertakings on such properties, and for developing ways to resolve adverse effects in consultation with consulting parties.

As required under NHPA Section 106, Federal Highway Administration (FHWA) has consulted with the ACHP, the Hawai'i State Historic Preservation Officer (SHPO), Native Hawaiian organizations, and other consulting parties, to address potential effects of the Proposed Action to historic properties identified within the area of potential effect (APE). The following meetings and correspondence occurred as part of the NHPA Section 106 consultation process:

- Individual consultation meetings with the Hawai'i SHPO; National Park Service (NPS) Ala Kahakai National Historic Trail; NPS Kaloko-Honokohau National Historic Park; State of Hawai'i Department of Land and Natural

Resources (DLNR) Na Ala Hele – Hawai'i Trail & Access System; State DLNR State Historic Preservation Division (SHPD) – Hawai'i Island Burial Council; State of Hawai'i Office of Hawaiian Affairs (OHA); Queen Lili'uokalani Trust (QLT); and Forest City Enterprises, Inc.

- May 20, 2009 meetings with consulting parties to share information regarding historic properties that may be affected by the Proposed Action and obtain input.
- July 7, 2009 letter to consulting parties, initiating the formal 30-day comment period for the NHPA Section 106 consultation process that closed on August 7, 2009.
- August 4, 2009 meeting with consulting parties to share the Pre-Draft Memorandum of Agreement (MOA) and obtain input.
- August 4, 2009 letter to ACHP, informing ACHP of the Proposed Action and the determination of “adverse effect” on historic properties.
- September 2, 2009 letter to the Hawai'i SHPO, requesting concurrence from the Hawai'i SHPO on the “adverse effect” determination. On September 10, 2009, the Hawai'i SHPO concurred in writing with this determination.

Based on the findings and recommendations of the SHPD-approved archaeological inventory survey (AIS) reports (Appendix A), together with input from the consultation process, FHWA has made a determination of “adverse effect” on historic properties. Stipulations to mitigate adverse effects will be identified in a MOA between FHWA and the Hawai'i SHPO. Documentation of NHPA Section 106 consultations and correspondence and a copy of the Draft MOA are included in Appendix G.

#### **5.1.1.2 U.S. Department of Transportation Act**

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (49 USC §303) was enacted as a means of protecting Section 4(f) property – publicly owned parks, recreation areas, wildlife and wildfowl refuges, and historic sites of local, state, or national significance – from conversion to transportation uses. USDOT has established a review process for any Section 4(f) resource that may be impacted by a federally aided transportation project or program. With respect to historic sites, Section 4(f) resources include those listed on or eligible for listing on the NRHP.<sup>1</sup>

If USDOT makes a determination that a project will have a “*de minimis*” (minimal) impact on a protected resource, or that the Section 4(f) property is “excepted” from the requirement for Section 4(f) approval in accordance with 23 CFR §774.13, then the Section 4(f) process is complete. If “use” of a Section 4(f) property is not *de*

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<sup>1</sup> Historic sites of significance are synonymous with historic properties under 36 CFR Part 800.

*minimis*,<sup>2</sup> then the agency must evaluate whether there are “feasible and prudent” avoidance alternatives to use of the property; and if there are no feasible and prudent avoidance alternatives, then the agency must undertake all possible planning to minimize harm to the property. For the Proposed Action, use of Section 4(f) property is not *de minimis*, nor is the Section 4(f) property excepted, and therefore the Section 4(f) evaluation is presented herein.

### **Description of 4(f) Resources and Impact**

Section 4(f) resources identified for the Proposed Action are historic properties listed on or eligible for listing on the NRHP, with the exception of those that are important chiefly because of what can be learned by data recovery and have minimal value for preservation in place (23 CFR §774.13). After considering the historic properties affected by the Proposed Action (see Tables 3-2 and 3-3), it was determined that one historic property requires a Section 4(f) evaluation and approval – the Kuakini Wall (SIHP 50-10-27-6302/14235). The location of the Kuakini Wall with respect to the Proposed Action is shown in Figure 3-5c.

The Kuakini Wall is an intermittent structure that runs parallel to and approximately one mile inland from the coastline for several miles. As cited in the AIS conducted by Cultural Surveys Hawai‘i, Inc. (CSH) for the area south of Palani Road (see Appendix A-1),<sup>3</sup> the Kuakini Wall has been described as follows:

*Site 6302 is situated in the western portion of the project area, west of Henry Street. This massive core-filled wall extends for miles along the Kona Coast, and has been recorded by numerous researchers. In the Native Testimony records of the 1860s and the Boundary Commission records of 1879 and the 1880s, reference is often made to a prominent stone wall, known variously as the Great Wall, the Pa pipi, the Great Stone Wall, Governor Adam’s Wall, or Kuakini Wall. Based on a number of historical records, the construction of this wall was begun in the early 1800’s. During 1820 to 1840, Kuakini, the brother of Kamehameha’s favorite wife Ka’ahumanu, acted as governor of the island of Hawaii. Although construction of the wall may not have been originally ordered by Governor Kuakini, by the mid 1850s the final configuration of the wall was attributed to him. A variety of functions have been assigned to the wall. It may have been designed to enclose pigs, built to keep cattle in the uplands out of the shoreward house lots, or conversely, built to keep cattle in shoreward house lots out of the upland agricultural areas (Kelly 1983:75-76; Maly 1996).*

<sup>2</sup> As defined in 23 CFR §774.17, “use” of a Section 4(f) property occurs: (1) when land is permanently incorporated into a transportation facility; (2) when there is temporary occupancy of land that is adverse in terms of the statute’s preservation purpose as determined by the criteria in §774.13(d); or (3) when there is a constructive use of a Section 4(f) property as determined by the criteria in §774.15.

<sup>3</sup> Hammatt. *Archaeological Inventory Survey of a 100-foot Wide Corridor on the South Side of Palani Road in Support of the Proposed Ane Keohokalole Highway Project*. August 2009.

*Site 6302 within the project area evidences partial disturbance. The northern end of the wall, south of Palani Road is intact, measuring c. 1.7 m in height and 1.6 m in width, and is constructed of stacked and core-filled pahoehoe cobbles and boulders. The southern portion has been disturbed in varying degrees, likely through a combination of modern bulldozing activity and historic cattle grazing...The portion of the wall in the project area is comparable in size and morphology to other parts of the wall elsewhere. [Henry et al. 1998:41-42]*

In this AIS, CSH also made the following observations regarding the current state of the Kuakini Wall:

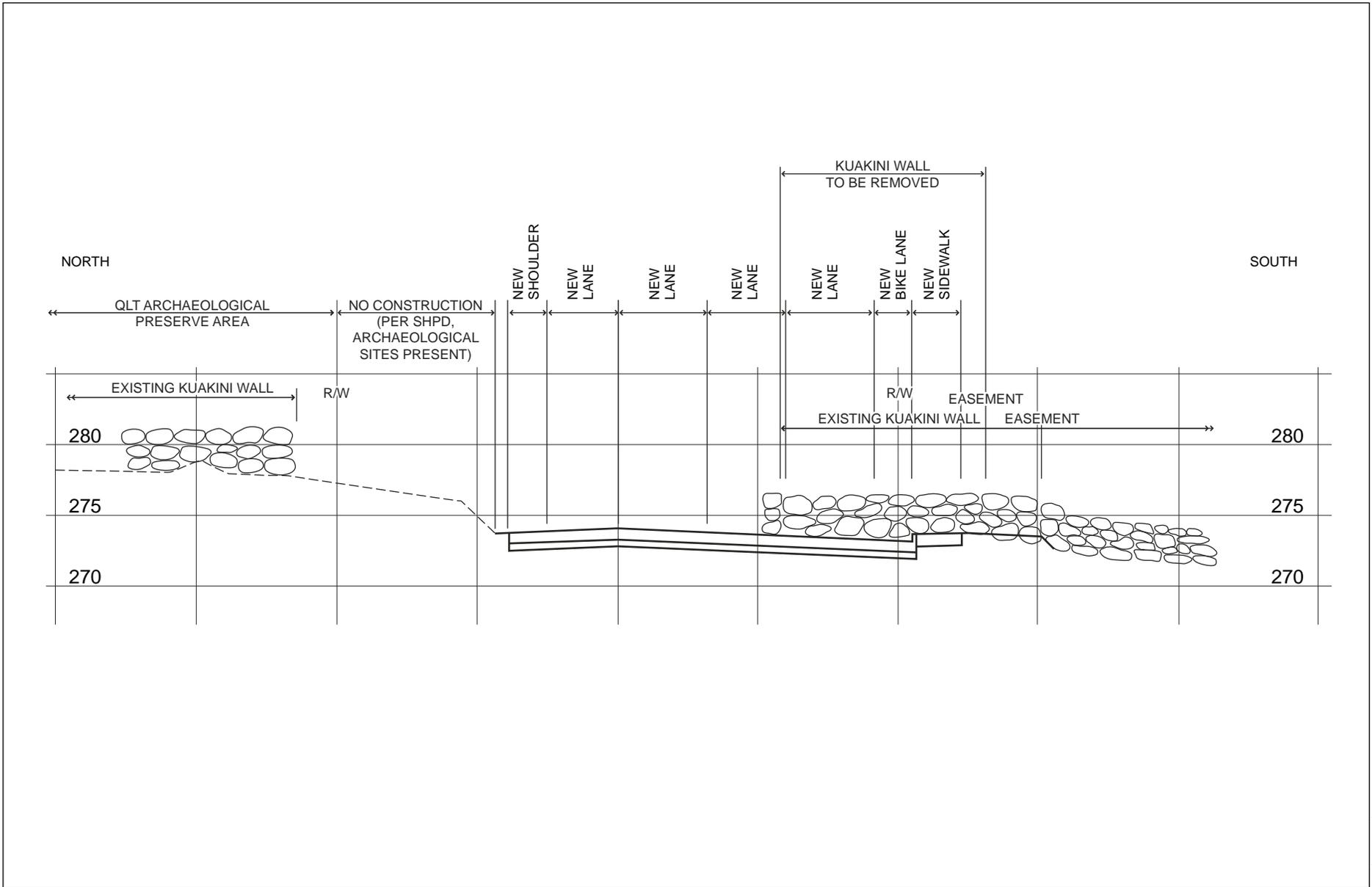
*SIHP 50-10-27-6302/14235 was observed to be in generally good condition within the project area. The northern end of the wall, near Palani Road, is in excellent condition. Portions of the wall near the southern boundary of the project area have partially collapsed and appear to have been disturbed by land clearing and squatter activity in the vicinity. The entire wall within the project area is presently covered with a dense mat of night-blooming cereus cactus, which is contributing to the gradual degradation of the wall.*

The Kuakini Wall was evaluated for significance according to the broad criteria established for the NRHP. It is significant under Criterion A (associated with events that have made an important contribution to the broad patterns of our history), Criterion B (associated with the lives of persons important in our past) for its association with Kuakini, Criterion C (embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value), and Criterion D (have yielded, or is likely to yield information important for research on prehistory or history).

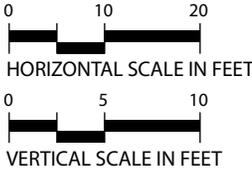
With the proposed widening of Palani Road to the south, the existing breach in the Kuakini Wall would be widened no more than 10 meters (32.8 feet), as shown in Figure 5-1. This additional breach was determined by FHWA, in consultation with the Hawai'i SHPO, to be an adverse effect under the NHPA Section 106 process.

Other historic properties that are eligible for listing in the NRHP and are affected by the Proposed Action, but do not require Section 4(f) approval, are component features of the Kona Field System. Although not subject to Section 4(f) approval, the Kona Field System is discussed herein for completeness.

In general, the extent of the Kona Field System District is defined by four coordinates provided in the archaeological submittal forms for the Hawai'i Register of Historic Places (HRHP). However, boundaries of the District are not finite or fixed and are subject to changes as more archaeology is discovered. The District, which includes the towns of Kailua-Kona, Holualoa, Kealakekua, Captain Cook, and other



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**Figure 5-1**  
**PROPOSED ACTION—PALANI ROAD AT KUAKINI WALL**  
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 Environmental Assessment

communities in South Kona, can roughly be described as a four-mile-wide strip that is approximately 23 miles long. Its length approximately parallels the coastline.

The Kona Field System includes such archaeological and agricultural features as walls, enclosures, fields, boundary markers, and rock piles (ahu). Features of the Kona Field System that were documented in the current survey area are typical of the numerous agricultural and temporary habitation features found within other portions of the District (at least the portions of the District that are of similar elevation above sea level and distance from the ocean as the current survey area) and are contributing components to the Kona Field System District. Because these component features are significant under HRHP and NRHP Criterion D for their information content, and information content has already been recorded from these features, the Proposed Action will not have an adverse effect on the overall Kona Field System District should these features be removed with project construction. Therefore, the component features of the Kona Field System District in the project area do not require Section 4(f) approval.

### ***Feasible and Prudent Avoidance Alternative Analysis***

A feasible and prudent avoidance alternative avoids use of Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweigh the importance of protecting the Section 4(f) property. In order to avoid the Section 4(f) property – the Kuakini Wall, widening of Palani Road to the south would need to be avoided because the existing breach in the Kuakini Wall is at the edge of the pavement on the south side of Palani Road (Figure 5-1). Any further widening (including above- and below-grade alternatives) to accommodate the additional vehicular lanes, bike lane, and sidewalk would involve the use of the Section 4(f) property.

On the north side of Palani Road, historic properties present between the existing shoulder and the right-of-way (ROW) are believed to be part of the adjacent 25-acre Archaeological/Historic Preserve Area. Road widening on the north side of Palani Road has been avoided because the Preserve has been acknowledged by SHPD for approximately 20 years, and findings from past archaeological surveys and the archaeological reconnaissance conducted as part of the EA process underscore the great importance of the historic properties within the Preserve relative to the historic properties outside of the Preserve. In the AIS conducted for the southernmost portion of the proposed highway corridor (see Appendix A-2),<sup>4</sup> which includes the archaeological reconnaissance for the Preserve, Pacific Legacy, Inc. (PLI) described findings within the Preserve as follows:

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<sup>4</sup> Reeve et al. *Archaeological Inventory Survey of the Southern End of the Proposed Ane Keohokalole Highway and Archaeological Reconnaissance of the Queen Lili'uokalani Turst Preserve Area*. August 2009.

*The density of sites in this parcel is phenomenal. Thirty large and very visible sites were recorded. These included platforms, terraces, stone walled enclosures, lava tubes, and stacked stone walls. Most of these 30 sites appear to be residential complexes, with a few structures that appear to be ceremonial in nature and may represent small heiau or field shrines. In addition to these conspicuous features, the survey crew noted literally hundreds of low stone walls, stone mounds, and modified outcrops.*

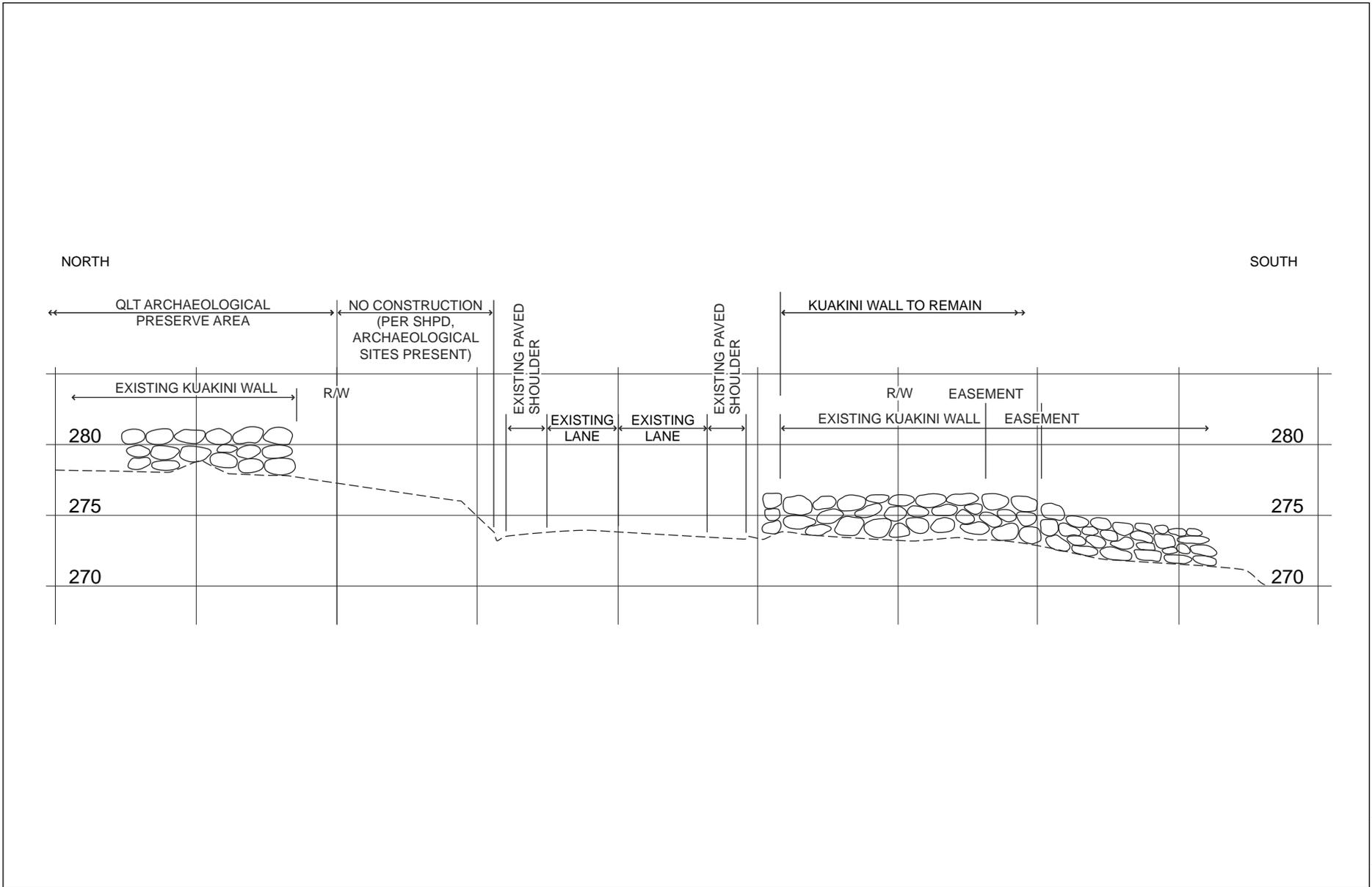
Further AIS investigations would be needed within the Preserve to determine the significance criteria for HRHP and NRHP eligibility and whether historic properties in the Preserve constitute Section 4(f) resources. Based on archaeological information to date, it is likely that Section 4(f) property exists within the Preserve. The importance of the Preserve was emphasized in a consultation meeting with the Hawai'i SHPO on April 13, 2009, as it was noted that the Kona Field System is broad, and that therefore it is important to focus on the pockets of the System worthy of preservation such as the Preserve. Hence, it is understood from NHPA Section 106 consultations that use of the Preserve should be avoided.

Alternatives presented for the Section 4(f) evaluation of the Kuakini Wall are listed below. These alternatives do not meet the project purpose and need or are not feasible as defined under 23 CFR §774.17,<sup>5</sup> but are presented herein for completeness. Because road widening would need to occur for the existing Palani Road, the alternative of building a road at a location that does not require use of the Section 4(f) property is not available.

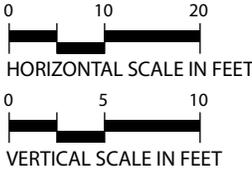
- **No Road Widening Alternative:** This alternative would eliminate road widening on Palani Road (Figure 5-2). It would avoid impacting the Kuakini Wall, but would not provide the vehicular capacity needed to accommodate future traffic with or without the project, and therefore would not meet the project purpose and need.
- **Above-grade Alternative:** This alternative would require much of the southern portion of the 60-foot-wide transportation corridor to bridge over the approximately 3-foot-high by 2-foot-wide Kuakini Wall (Figure 5-3). It would avoid increasing the existing 60-foot (approximate) breach in the Wall by another 32.8 feet (10 meters) and would minimize harm on the Wall, but would still involve use of the Section 4(f) property.

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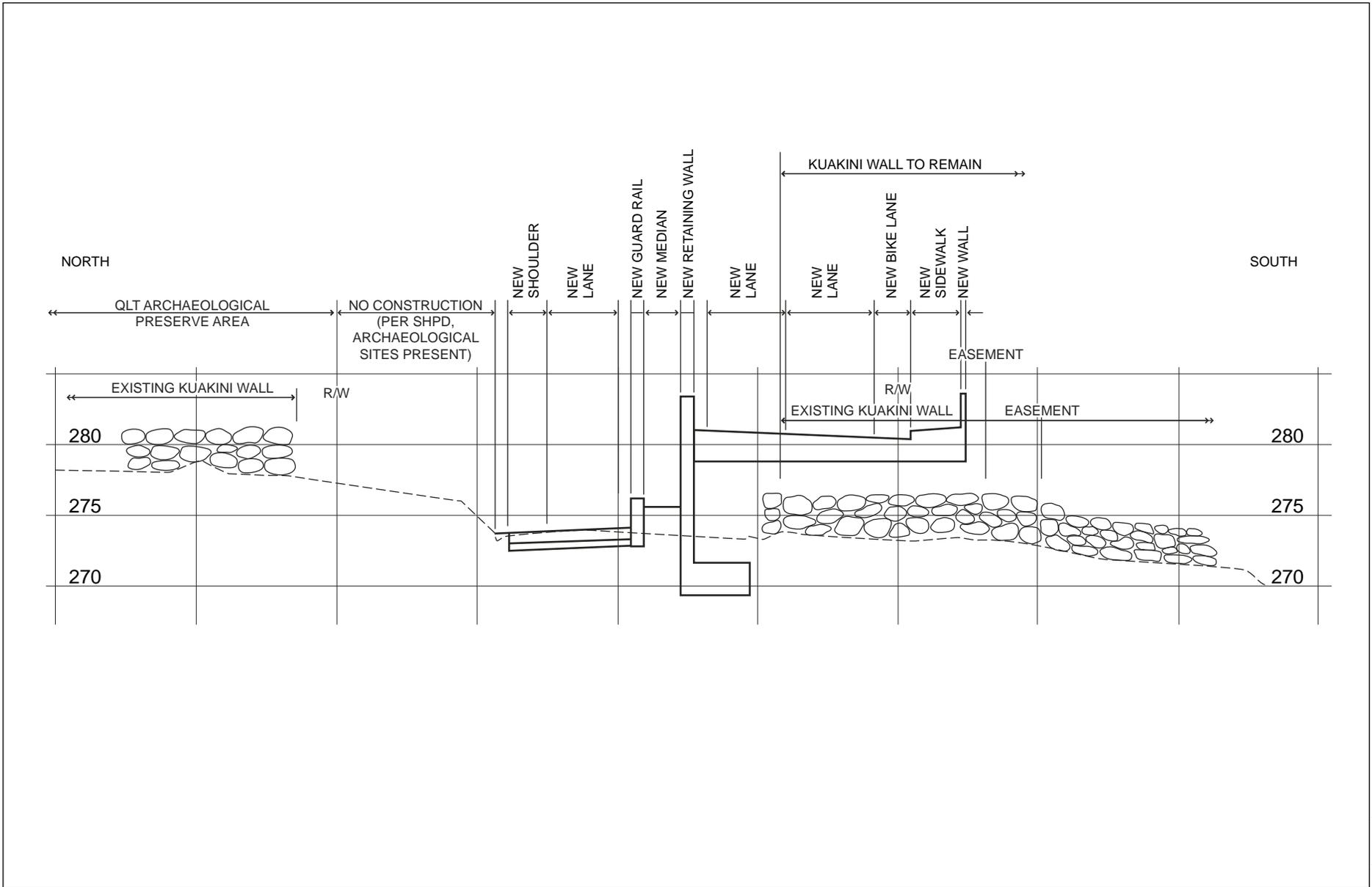
<sup>5</sup> As defined under 23 CFR §774.17, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment.



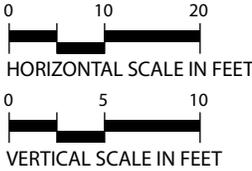
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**Figure 5-2**  
**NO ROAD WIDENING ALTERNATIVE—PALANI ROAD AT KUAKINI WALL**  
Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment



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**Figure 5-3**  
**ABOVE-GRADE ALTERNATIVE—PALANI ROAD AT KUAKINI WALL**  
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 Environmental Assessment

The Above-grade Alternative is not feasible as it cannot be built in conformance with the American Association of State Highway and Transportation Officials (AASHTO) design standards, as described below.

-- The bridging structure and the ramps required to return to the existing grade of Palani Road would have to be contained within approximately 600 feet to minimize impacts to the existing Henry Street intersection. One eastbound lane would need to be eliminated from the project due to the offset clearances between the retaining wall and adjacent traffic lane edges as required by AASHTO.

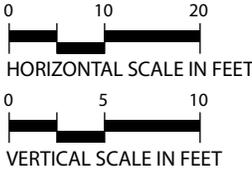
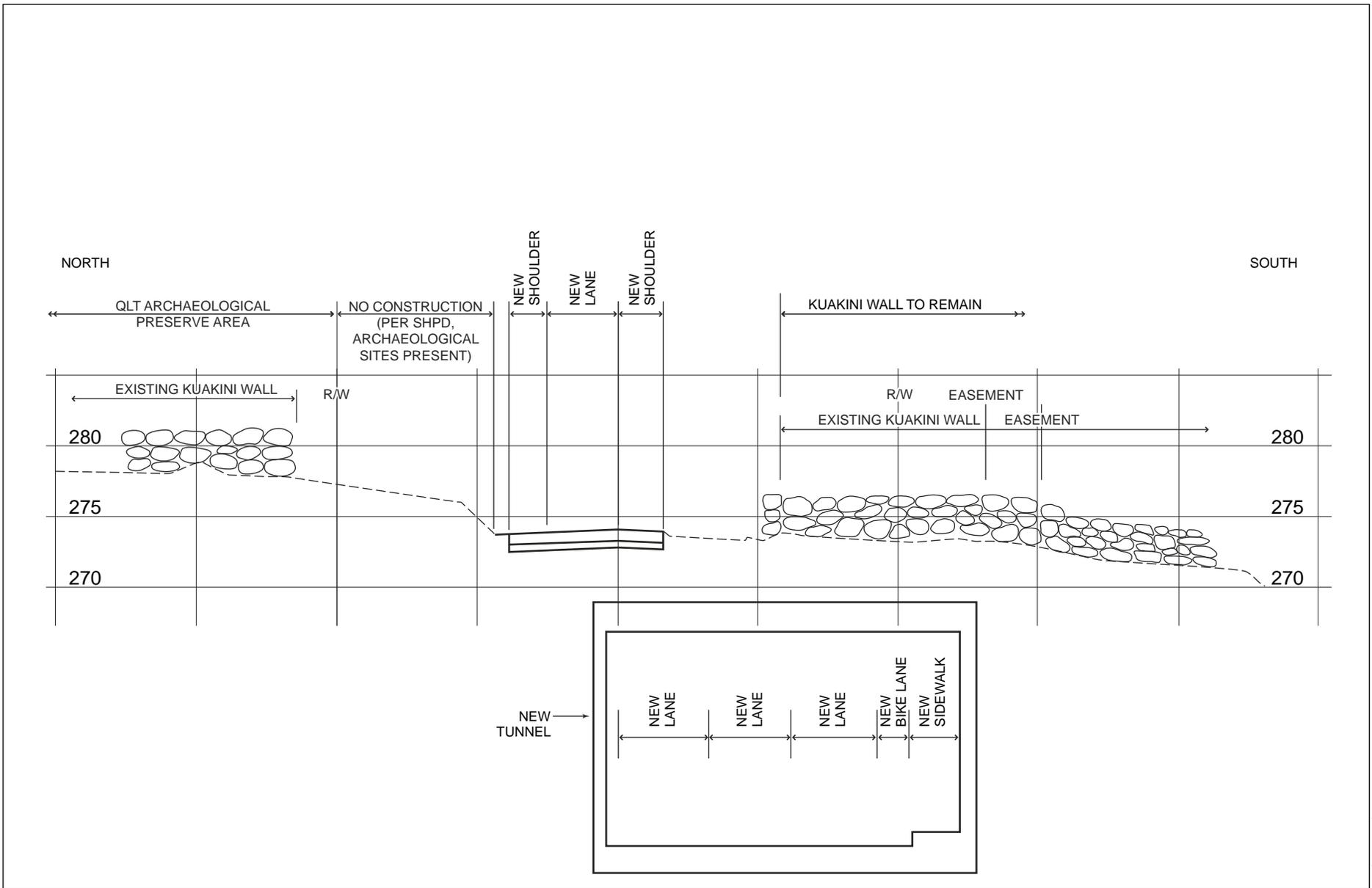
-- If further widening of the elevated ramps were made to accommodate all lanes (i.e., to prevent the elimination of the eastbound lane described above), the additional ROW or easement required would cause the eastbound through lanes at the Henry Street intersection to be misaligned.

-- The elevated roadway would create a relatively steep road segment, resulting in a roller coaster profile that would present poor driving characteristics and is expected to compromise traffic operating speeds and capacity. The revised vertical profile will require the roadway design speed of 45 mph be lowered to 30 mph. The reduced design speed and revised vertical profile will not be in conformance with the AASHTO Greenbook design standards. The revised vertical alignment will also require a design exception for design speed and vertical alignment from the State of Hawai'i Department of Transportation (HDOT).

- **Below-grade Alternative:** This alternative would require the 60-foot-wide transportation corridor to tunnel under the Kuakini Wall (Figure 5-4). It would avoid increasing the existing 60-foot (approximate) breach in the Wall another 32.8 feet (10 meters) and would minimize harm on the Wall, but would still involve use of the Section 4(f) property.

The Below-grade Alternative is not feasible as it cannot be built in conformance with AASHTO design standards. The tunnel would need about a 15-foot clearance height to accommodate traffic, resulting in the roadway being located over 20 feet below the existing road. Thus, the tunnel is not practical as it is not possible to match the existing grade at the Henry Street intersection with any reasonable vertical roadway profile and satisfactory traffic engineering characteristics.

None of these alternatives is suitable as a feasible and prudent avoidance alternative for the Section 4(f) property.



**Figure 5-4**  
**BELOW-GRADE ALTERNATIVE—PALANI ROAD AT KUAKINI WALL**

Ane Keohokalole Mid-Level Highway Project  
Environmental Assessment

## ***Findings***

Based on the Section 4(f) evaluation presented above, FHWA has determined that there is no feasible and prudent avoidance alternative to the use of the Section 4(f) property, the Kuakini Wall.

## ***Mitigation and Measures to Minimize Harm***

No feasible and prudent avoidance alternatives were identified for the Section 4(f) property; therefore, mitigation and measures to minimize harm to the Kuakini Wall are described for the Proposed Action only.

As a result of the planning conducted under the NHPA Section 106 process and this Section 4(f) evaluation for the Proposed Action, all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the Kuakini Wall for Section 4(f) protection are planned. As a result of NHPA Section 106 consultations with the Hawai'i SHPO, removal of a portion (no more than 10 meters [32.8 feet]) of the Wall near Palani Road, at the existing breach, may occur without significantly detracting from the integrity of the historic property; hence, the Proposed Action limits the widening to this amount. To prevent further deterioration of the Kuakini Wall resulting from the Proposed Action, mitigation includes wall stabilization.

Subsequent mitigation to preserve and enhance features and values of the Kuakini Wall were identified during NHPA Section 106 consultations. Because it was revealed that many sections of the Wall outside the project area are in need of substantial repairs, the MOA resulting from the NHPA Section 106 process includes stipulations that support future wall repairs. Stipulations include documenting details of the cross-section of the Wall exposed as a result of the Proposed Action and requiring that the stones removed as a result of the Proposed Action be conserved for use in future maintenance and stabilization of damaged portions of the Wall. The mitigation plan identified in the MOA will include the details for implementing wall maintenance and stabilization, such as where future repairs will occur. Commemorative signage, another stipulation in the MOA, will serve to educate and inform the community of the Kuakini Wall and will aid in preservation efforts.

## ***Coordination and Public Involvement***

Coordination efforts amongst FHWA, State of Hawai'i, and County of Hawai'i officials with jurisdiction over the Kuakini Wall has occurred, primarily as part of the NHPA Section 106 process. A summary of the pertinent meetings and correspondence addressing the Kuakini Wall follows:

- Individual consultation meetings with the Hawai'i SHPO; NPS Ala Kahakai National Historic Trail; NPS Kaloko-Honokohau National Historic Park; State of Hawai'i DLNR Na Ala Hele – Hawai'i Trail & Access System; State DLNR SHPD – Hawai'i Island Burial Council; State of Hawai'i OHA; QLT, the landowner; and Forest City Enterprises, Inc.
- May 20, 2009 meetings with consulting parties to share information regarding historic properties, including the Kuakini Wall, that may be affected by the Proposed Action and obtain input. As a result of one of these meetings, the OHA Community Resource Coordinator for the island of Hawai'i expressed concern over the potential impacts of the Proposed Action on the Kuakini Wall.
- July 7, 2009 letter to consulting parties, initiating the formal 30-day comment period for the NHPA Section 106 consultation process that closed on August 7, 2009. This letter identified the Kuakini Wall and potential impacts resulting from the Proposed Action.
- August 4, 2009 meeting with consulting parties to share the Pre-Draft MOA, which included mitigation measures for the Kuakini Wall, and to obtain input. The presentation specifically called out the Kuakini Wall and pre-draft mitigation measures.
- September 2, 2009 letter to the Hawai'i SHPO, requesting concurrence from the Hawai'i SHPO on the "adverse effect" determination for the undertaking (Proposed Action) and concurrence that the mitigation measures identified for the Kuakini Wall serve to preserve, rehabilitate, and enhance the features and values of the Kuakini Wall; and that such measures will result in a net benefit to the Section 4(f) property. On September 10, 2009, the Hawai'i SHPO concurred in writing with this statement.

This Section 4(f) evaluation will be distributed as part of the National Environmental Policy Act (NEPA) distribution and provided to other interested parties upon request.

***Applicability of Programmatic Section 4(f)***

Based on the evaluation above and the applicability criteria for "Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property," an individual Section 4(f) evaluation is not needed for the Ane Keohokalole Mid-Level Highway project. Applicability criteria for the programmatic Section 4(f) and associated justifications follow.

1) *The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.*

The project would use a Section 4(f) historic site – the Kuakini Wall (SIHP 50-10-27-6302/14235). The existing breach in the Wall would need to be widened by no more

than 10 meters (32.8 feet) in order for the existing Palani Road to accommodate additional transportation lanes.

*2) The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.*

As identified under the Mitigation and Measures to Minimize Harm section, all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified it for Section 4(f) protection are documented in the MOA resulting from the NHPA Section 106 process.

*3) For historic properties, the project does not require the major alteration of the characteristics that qualify the project for the NRHP such that the property would no longer retain sufficient integrity to be considered eligible for listing. For archaeological properties, the project does not require the disturbance or removal of the archaeological resources that have been determined important for preservation in-place rather than for the information that can be obtained through data recovery. The determination of a major alteration or the importance to preserve in-place will be based on consultation consistent with 36 CFR Part 800.*

As a result of NHPA Section 106 consultation with the Hawai'i SHPO, it has been determined that data recovery and preservation in the form of avoidance and protection is recommended for the Kuakini Wall; however, removal of a portion (no more than 10 meters [32.8 feet]) of the Wall near Palani Road, at the existing breach, may occur without significantly detracting from the integrity of the historic property. This information is documented in the NHPA Section 106 MOA.

*4) For historic properties, consistent with 36 CFR Part 800, there must be agreement reached amongst the SHPO, the FHWA and the Applicant [County of Hawai'i] on measures to minimize harm when there is a use of Section 4(f) property. Such measures must be incorporated into the project.*

Measures to minimize harm on the Kuakini Wall are identified in the NHPA Section 106 MOA. This MOA includes the signatures of the Hawai'i SHPO, FHWA, and County of Hawai'i and have been incorporated into the project, including contracting documents being prepared for the project.

*5) The official(s) with jurisdiction over the Section 4(f) property agree in writing with the assessment of the impacts; the proposed measures to minimize harm; and the mitigation necessary to preserve, rehabilitate and enhance those features and values of the Section 4(f) property; and that such measures will result in a net benefit to the Section 4(f) property.*

On August 24, 2009, the Hawai'i SHPO accepted the *Revised Draft Archaeological Inventory Survey Report for a 3-Acre Corridor Along Palani Road in Support of the Proposed Ane Keohokalole Highway Project Keahuolu Ahupua'a, North Kona District, Island of Hawai'i TMK: (3)7-4-08:63 (por.)*.<sup>6</sup> The Hawai'i SHPO concurred with the AIS report's recommendation that the project "may have an adverse effect on the portion of the wall located within the project area" and concurred with the recommended mitigation, as documented in its letter dated August 24, 2009 (SHPD Log No. 2009.3303). The Hawai'i SHPO reiterated specific mitigation measures for the Kuakini Wall to include: (1) data recovery of the section of the wall to be removed in accordance with an approved data recovery plan; (2) monitoring during wall removal; (3) detailed recording of the cross section exposed during removal; (4) careful stabilization of the end of the intact wall to ensure that it does not further deteriorate; (5) conservation of removed stones for use in maintenance and stabilization of damaged portions of the wall; (6) documentation of the data recovery and monitoring results in appropriate reports; and (7) short and long term preservation measures to safeguard the site during project construction and subsequent uses of the area. These mitigation measures are made part of the NHPA Section 106 MOA and serve to minimize harm; preserve, rehabilitate, and enhance the features and values of the Kuakini Wall; and create a net benefit to the Wall (Section 4(f) property).

On September 2, 2009, FHWA submitted its effects determination letter to the Hawai'i SHPO in accordance with the NHPA Section 106 process. In this letter, FHWA also requested the Hawai'i SHPO's concurrence that the mitigation measures identified serve to preserve, rehabilitate, and enhance the features and values of the Kuakini Wall, and that such measures will result in a net benefit to the Section 4(f) property. On September 10, 2009, the Hawai'i SHPO concurred in writing with this statement.

### ***Approval***

This programmatic Section 4(f) evaluation is for the proposed Ane Keohokalole Mid-Level Highway project in North Kona, Island of Hawai'i, Hawai'i, regarding use of the Kuakini Wall. As a result of this evaluation, the FHWA Division Administrator has determined that:

- 1) the project meets the applicability criteria set forth above;
- 2) all of the alternatives set forth in the Findings section have been fully evaluated;
- 3) the findings in the programmatic evaluation (which conclude that the alternative recommended is the only feasible and prudent alternative) result in a clear net benefit to the Section 4(f) property;

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<sup>6</sup> Hammatt. August 2009.

- 4) the project complies with the Mitigation and Measures to Minimize Harm section of this evaluation;
- 5) the coordination and public involvement efforts required by this programmatic evaluation have been successfully completed and necessary written agreements have been obtained; and
- 6) the information that clearly identifies the basis for the above determinations and assurances is documented.

### **5.1.1.3 Coastal Zone Management Act**

The purpose of the Coastal Zone Management Act (CZMA) of 1972 (16 USC §§1451-1465) is to encourage coastal states to manage and conserve coastal areas as a unique, irreplaceable resource. To the maximum extent practicable, federal actions affecting land/water use or coastal zone natural resources must be consistent with the enforceable policies of an approved state coastal zone management program. Coastal Zone Management (CZM) consistency determinations are required for federal actions that would have reasonably foreseeable direct or indirect effects on any use of or resource in the coastal zone.

FHWA has evaluated the Proposed Action and certifies that it complies with the enforceable policies of the State of Hawai'i CZM program and will be conducted in a manner consistent with the State CZM program (see Section 5.2.2). An application for CZM Federal Consistency Review was submitted to the State of Hawai'i Department of Business, Economic Development and Tourism (DBEDT), Office of Planning, with the public comment period closing on August 6, 2009. On August 12, 2009, the Office of Planning completed its evaluation and concurred in writing that the Proposed Action is consistent with the State CZM program. CZM Federal Consistency Review correspondence is provided in Appendix H.

### **5.1.1.4 Endangered Species Act**

The Federal Endangered Species Act (ESA) of 1973 (16 USC §§1531-1534) establishes a process for identifying and listing threatened and endangered species. It requires federal agencies to carry out programs for the conservation of federally listed endangered and threatened plants and wildlife and designated critical habitats for such species, and prohibits actions by federal agencies that would likely jeopardize the continued existence of those species or result in the destruction or adverse modification of designated critical habitat. Section 7 of the ESA requires consultations with federal wildlife management agencies on actions that may affect species or designated critical habitat.

During the course of biological surveys conducted for the Proposed Action, no federal- or state-listed threatened or endangered species or critical habitat were identified within the survey corridor. As required by ESA Section 7, FHWA has consulted with the U.S. Fish and Wildlife Service (USFWS). On August 24, 2009, USFWS concurred in writing that the Proposed Action will not likely adversely affect any listed species known from the island of Hawai'i. ESA Section 7 correspondence is provided in Appendix I.

#### **5.1.1.5 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC §§703-712), is a law governing and implementing a bilateral treaty with Canada, Mexico, Japan, and Russia to protect migratory birds that may spend time in more than one country. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the U.S. Department of the Interior. Bird species listed as protected under the MBTA that are found in Hawai'i include the Pacific golden plover (*Pluvialis fulva*), the Hawaiian coot (*Fulica alai*), the Hawaiian goose (*Branta sandvicensis*), the Laysan albatross (*Phoebastria immutabilis*), and the wedge-tailed shearwater (*Puffinus pacificus*). Pacific golden plovers have been observed in the project area.

#### **5.1.1.6 Clean Water Act**

The Federal Water Pollution Control Act (FWPCA; 33 USC §§1251 *et seq.*), is the federal statute regulating the discharge of water pollution. Congress revised the FWPCA into the Clean Water Act (CWA) in 1972. The goals of the CWA included: (1) "the discharge of pollution into the navigable waters be eliminated by 1985," (2) "the discharge of toxic pollutants in toxic amounts be prohibited," and (3) an "interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and... recreation in and on the water... by July 1, 1983" (CWA §101a, 33 USC §1251a). Section 402, CWA requires a National Pollutant Discharge Elimination System (NPDES) permit for point source discharges, including storm water discharges associated with construction activities. The permit is required for construction activities that disturb one acre (0.4 hectare) or more and discharge storm water from the project site to waters of the United States.

#### **5.1.1.7 Clean Air Act**

The Clean Air Act (CAA) and amendments (42 USC §§7401 *et seq.*) is the comprehensive federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) to protect

public health and the environment. Pursuant to the CAA and amendments, state-operated permit programs serve to control emissions. In Hawai'i, the operating permit program is implemented by the State of Hawai'i Department of Health (DOH), and emissions of regulated air pollutants within the state may be subject to permitting as required under Hawai'i Administrative Rules (HAR) 11-60.1.

### 5.1.1.8 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976, as amended (42 USC §§6901 *et seq.*), is the nation's primary law governing the disposal of solid and hazardous waste. RCRA amended the Solid Waste Disposal Act of 1965 and set national goals for: protecting human health and the environment from the potential hazards of waste disposal, conserving energy and natural resources, reducing the amount of waste generated, and ensuring that wastes are managed in an environmentally sound manner. RCRA provides USEPA the authority to control hazardous waste from the "cradle-to-grave," including generation, transportation, treatment, storage, and disposal. RCRA also set forth a framework for the management of nonhazardous wastes.

## 5.1.2 Executive Orders

EOs identified during development of this document are identified below. Applicable EOs with which the Proposed Action will comply include:

- **EO 11514, Protection and Enhancement of Environmental Quality, 5 March 1970 (as amended by EO 11991).** This EO states that federal agencies shall provide leadership in protecting and enhancing the quality of the nation's environment to sustain and enrich human life. Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals.

Preparation of this Environmental Assessment (EA) in accordance with the USDOT Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, dated 30 October 1987, complies with this EO.

- **EO 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971.** This EO (implemented by USDOT Order 5650.1, dated 20 November 1972) states that federal agencies provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation. Federal agencies shall: (1) administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; (2) initiate measures necessary to direct their policies, plans, and programs in such a way that federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the

people; and (3) in consultation with the ACHP (16 USC §470i), institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance.

The evaluation of cultural resources, presented in Section 3.4, addresses the policies established by this EO.

- **EO 11988, Floodplain Management, 24 May 1977.** This EO (implemented by USDOT Order 5650.2, dated 23 April 1979) states that federal agencies shall provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

The Proposed Action is located in Flood Zone X (moderate to low risk area) according to the Flood Insurance Rate Maps (FIRM).<sup>7</sup> In addition, the drainage system will be designed to comply with the County of Hawai'i's Storm Drainage Standards, such that runoff volumes and rates would not increase as a result of development of the project site. Therefore, the Proposed Action will comply with this EO, as it will maintain the low risk of flooding in the project area.

- **EO 11990, Protection of Wetlands, 24 May 1977.** This EO (implemented by USDOT Order 5660.1, dated 24 August 1978) states that federal agencies shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands.

No impacts to wetlands will occur as a result of the Proposed Action, as there are no wetlands present in the vicinity of the project area. Thus, the Proposed Action is in compliance with this EO.

- **EO 12898, Environmental Justice, 11 February 1994.** This EO requires federal agencies to address the potential for disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. Federal agencies shall ensure that their actions that substantially affect human health or the environment do not directly or indirectly use criteria, methods, or practices that discriminate on the basis of race, color, or national origin. National Environmental Policy Act (NEPA) documents are specifically required to analyze effects of federal actions on minority and low-income populations and, whenever feasible, to develop mitigation measures to address significant and adverse effects on such communities.

To address this EO, a demographic frame of reference, including census data on racial composition and income, is provided in Section 3.15.1. According to the 2000 Census, Whites made up nearly half of the population in the North Kona district; North Kona's median household income (\$47,610)

<sup>7</sup> Federal Emergency Management Agency (FEMA) Map Service Center. [www.fema.gov/hazard/flood/info.shtm](http://www.fema.gov/hazard/flood/info.shtm). Map ID 1551660684C, 1551660692C, 1551660703C, 1551660711C, and 1551660713D. Last accessed February 19, 2009.

was higher than the island-wide median household income (\$39,805); and the percentage of residents below the poverty level in North Kona (9.7 percent) was lower than the island-wide percentage (15.7 percent). Thus, the North Kona district as a whole does not constitute a minority or low-income Environmental Justice area. However, due to the presence of the Department of Hawaiian Homelands (DHHL) communities in the immediate vicinity of the project area, there is a concentrated minority population of Native Hawaiians that could potentially be affected by the Proposed Action. Native Hawaiian organizations and individuals in the community have had the opportunity to provide input regarding the Proposed Action through the public development process for the KCDP, as well as the EA and NHPA Section 106 consultation processes.

The Proposed Action will not adversely affect minority or low-income populations, and will not negatively impact the environment in a way that will disproportionately affect minority or low-income populations. Rather, the Proposed Action is expected to benefit both the Native Hawaiian minority and the low-income populations in North Kona. The lack of affordable housing in the Kailua-Kona area is considered to be one of the most pressing, if not *the* most pressing, issues for the area. The Proposed Action is part of a regional plan to develop a multi-modal transportation network that will serve a number of mixed-use, affordable developments, including DHHL and the Hawai'i Housing Finance and Development Corporation (HHFDC) properties in the immediate vicinity of the proposed highway. Without the Proposed Action, access to these developments and the housing and jobs therein would be severely limited, continuing to deprive the local workforce of economic and social opportunities.

## 5.2 STATE OF HAWAI'I

### 5.2.1 State Land Use Law, Chapter 205, Hawai'i Revised Statutes

The State Land Use Law (Hawai'i Revised Statutes (HRS) Chapter 205) established the State Land Use Commission (LUC) and authorized this body to designate all lands in the state into one of four districts: Urban, Rural, Agricultural, or Conservation. These districts are defined and mapped by the LUC to ensure compatibility with neighboring land uses and protection of public health. The project area lies within the Urban and Agricultural Districts (Figure 3-1).

The Urban District generally includes city-like concentrations of people, structures, services, and vacant areas to accommodate future development and foreseeable growth. Approximately 54,267 acres or 2 percent of the county's total land area comprise the Urban District. Individual counties govern the zoning within the district.

The Agricultural District includes activities or uses such as farming, aquaculture, and game and fish propagation; agricultural services; farm buildings and employee housing; district mills, storage facilities and processing facilities; vehicle and equipment storage areas; roadside stands; wind turbines, wind farms, and other renewable energy installations; small-scale meteorological, air quality, noise, and other scientific and environmental data collection and monitoring facilities; agricultural parks; and open-area recreational facilities, including golf courses and golf driving ranges, provided that they are not located on land in the highest productivity categories as determined by the LUC. This district includes lands with both a high and low capacity for intensive cultivation. Minimum lot sizes in this district under the State Land Use Law are one acre. This district has the second greatest land area with approximately 1,184,599 acres or slightly over 46 percent of the total land area of the county.

The LUC and/or county regulate special uses within the Agricultural District depending upon lot size. Land uses within the Urban and Agricultural Districts are governed by ordinances or regulations of the county in which the district is situated.

The proposed highway is a permitted use in both the Urban and Agricultural Districts. In addition, the proposed highway is an integral part of land use approvals that have been previously granted by the LUC, including the QLT and the HHFDC Keahuolu Affordable Housing Project.

### **5.2.2 Coastal Zone Management Act, Chapter 205A, Hawai'i Revised Statutes**

The federal CZMA of 1972 provides guidelines for development regulations within the coastal zone. In Hawaii, all lands in the state are considered to be within the coastal zone. In enacting HRS Chapter 205A in response to the federal CZMA of 1972, the State of Hawai'i delegated authority to the counties to regulate uses in the coastal zone as Special Management Areas (SMAs). Although located within the coastal zone, the Proposed Action is outside the SMA and will not require an SMA permit. As part of the NEPA process, an application for CZM Federal Consistency Review has been submitted to the State DBEDT, Office of Planning, with the public comment period closing on August 6, 2009. On August 12, 2009, the Office of Planning completed its evaluation and concurred in writing that the Proposed Action is consistent with the State CZM program. CZM Federal Consistency Review correspondence is provided in Appendix H.

The objectives of the CZM Program are to provide the public with recreational opportunities, protect historic resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce hazards and manage development. Program objectives and applicability to the Proposed Action are discussed below:

## RECREATIONAL RESOURCES

### Objective:

*Provide coastal recreational opportunities accessible to the public.*

### Policies:

- A) *Improve coordination and funding of coastal recreational planning and management; and*
- B) *Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:*
  - (i) *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
  - (ii) *Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;*
  - (iii) *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
  - (iv) *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
  - (v) *Ensuring public recreational use of county, state and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
  - (vi) *Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;*
  - (vii) *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches and artificial reefs for surfing and fishing; and*
  - (viii) *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.*

**Discussion:** The Proposed Action is located well inland, approximately 1.5 miles away from the shoreline, mauka of the existing Queen Ka'ahumanu Highway. Therefore, there would be no impacts on existing coastal recreational resources.

## **HISTORIC RESOURCES**

### **Objective:**

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

### **Policies:**

- A) *Identify and analyze significant archaeological resources;*
- B) *Maximize information retention through preservation of remains and artifacts or salvage operations; and*
- C) *Support state goals for protection, restoration, interpretation and display of historic resources.*

**Discussion:** The Proposed Action would be in keeping with the guidelines and objectives of the aforementioned objective and policies. Plans for the Proposed Action have been designed to improve public safety while preserving the historic nature of the area.

As part of the EA, results of prior AISs of the area were reviewed, and field work was conducted to verify previous AIS findings. Based on the findings and recommendations of the SHPD-approved AIS reports (Appendix A), together with input from the NHPA Section 106 consultation process, FHWA has made a determination of "adverse effect" on historic properties. Stipulations to mitigate adverse effects will be identified in a MOA between FHWA and the Hawai'i SHPO. With the implementation of these mitigation measures, the Proposed Action would have no substantial impacts on historic resources in the project area.

In addition, cultural impact assessments (CIA) have been conducted for the project area. The CIA reports concluded that, with appropriate mitigation measures, including sensitivity to cultural histories, practices, materials, and remains, the Proposed Action would have no substantial impacts on Native Hawaiian cultural resources, beliefs, and practices.

## SCENIC AND OPEN SPACE RESOURCES

### Objective:

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

### Policies:

- A) *Identify valued scenic resources in the coastal zone management area;*
- B) *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
- C) *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- D) *Encourage those developments that are not coastal dependent to locate in inland areas.*

**Discussion:** The Proposed Action would not have substantial impacts on shoreline views or open space resources. The proposed highway is adjacent to currently undeveloped land both mauka and makai, with the exceptions of the Kealakehe High School and two aupaka preserves. Anticipated future land uses in the vicinity of the Proposed Action are single-family residential, multi-family residential, retail/commercial, public use, and open/park space. As these future developments will be located inland, at a distance from the coastline, shoreline scenic and open space resources would be preserved.

## COASTAL ECOSYSTEMS

### Objective:

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

### Policies:

- A) *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
- B) *Improve the technical basis for natural resource management;*

- C) *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*
- D) *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
- E) *Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine water ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

**Discussion:** The Proposed Action would not have substantial impacts on surface water or groundwater resources of the coastal ecosystem. No impacts to surface waters in the project area would occur during the construction of the Proposed Action, as the contractor will be required to conform to NPDES permit requirements to protect surface waters from potential pollutants in discharges of storm water associated with construction activities. Appropriate BMPs will be implemented in order to protect surface waters during construction and to preserve the integrity of the coastal ecosystems located approximately 1.5 miles from the project site.

To address concerns about potential effects on the coastal anchialine ponds located at NPS' Kaloko-Honokohau National Historical Park (approximately 1.5 miles makai of the project site) which are hydrologically connected the aquifer, bio-retention cells have been incorporated into the design of the Proposed Action. The installation of bio-retention cells will prevent any non-point source pollution of the groundwater. The bio-retention cells will capture and treat all runoff from the proposed highway to prevent pollutants from entering the groundwater (Section 3.8.2 describes the function of bio-retention cells in further detail).

## **ECONOMIC USES**

### **Objective:**

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

### **Policies:**

- A) *Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;*
- B) *Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located,*

*designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*

- C) *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*
  - (i) *Utilization of presently designated locations is not feasible;*
  - (ii) *Adverse environmental effects are minimized; and*
  - (iii) *Important to the State's economy.*

**Discussion:** The Proposed Action would have a short-term beneficial effect on the economy during construction by providing construction-related employment. The Proposed Action would also have long-term beneficial effects. It is located on land that has been zoned for urban expansion with the explicit purpose of confining urbanization to designated areas, limiting urban sprawl, and promoting sustainable economic development. Growth without sprawl contributes more to local economies than does urban sprawl. The development of transportation infrastructure and facilities will ensure that all the communities are adequately connected and served, and that a safe and efficient multi-modal transportation system is integrated into the planning of future land uses.

## **COASTAL HAZARDS**

### **Objective:**

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

### **Policies:**

- A) *Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;*
- B) *Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;*
- C) *Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*
- D) *Prevent coastal flooding from inland projects.*

**Discussion:** The Proposed Action is located approximately 1.5 miles inland, and is outside of all potential tsunami inundation areas and flood zones. The design of the Proposed Action will conform to all regulatory requirements to ensure adequate and proper storm drainage and erosion control to the surrounding properties.

## **MANAGING DEVELOPMENT**

### **Objective:**

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

### **Policies:**

- A) *Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;*
- B) *Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and*
- C) *Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.*

**Discussion:** The Proposed Action is an integral part of several State and County land use plans, including the Kona Community Development Plan (KCDP) which was adopted as an ordinance by the County of Hawai'i in 2008. The public has been given the opportunity to participate in the planning and review process for the Proposed Action through the public development process for the KCDP, as well as through the EA and NHPA Section 106 consultation processes.

Furthermore, the Proposed Action will require a NPDES permit for discharges of storm water discharges associated with construction activities; County of Hawai'i Department of Public Works (DPW) Grubbing, Grading, Excavation and Stockpiling Permits; a State of Hawai'i DOH Underground Injection Control (UIC) permit for drainage injection; and a State of Hawai'i Department of Transportation (DOT) permit to perform work in the Kealahou Parkway ROW. These permits will require review of plans and documents from State and County agencies, which may include the solicitation for public comment.

## **PUBLIC PARTICIPATION**

### **Objective:**

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

### **Policies:**

- A) *Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;*
- B) *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and*
- C) *Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

**Discussion:** The Proposed Action is in keeping with the objectives of public awareness, education, and participation. As previously noted, public awareness of the Proposed Action has been promoted through pre-assessment consultations, the EA process, and the NHPA Section 106 process. Copies of the Draft EA were sent to applicable agencies and organizations to solicit and encourage comments regarding the Proposed Action. In addition, a public information meeting was held in Kona on June 23, 2009, to discuss the Proposed Action with area residents.

The County of Hawai'i shall make available, during all phases of construction, a public outreach person to provide the general public with information about the project activities and to answer and/or resolve concerns regarding the project construction from the general public. The County of Hawai'i shall publicize and maintain a telephone "hotline" to facilitate this process.

## **BEACH PROTECTION**

### **Objective:**

*Protect beaches for public use and recreation.*

### **Policies:**

- A) *Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;*

- B) *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*
- C) *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

**Discussion:** The Proposed Action would not have substantial impacts on any coastal areas, sites, or resources, as it is located approximately 1.5 miles from the shoreline. During construction activities, appropriate BMPs will be utilized to ensure that the Proposed Action does not contribute to erosion or sedimentation and that the down-gradient coastal environment is not impacted.

## **MARINE RESOURCES**

### **Objective:**

*Implement the State's ocean resources management plan.*

### **Policies:**

- A) *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
- B) *Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*
- C) *Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;*
- D) *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*
- E) *Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and*
- F) *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

**Discussion:** The Proposed Action would not have substantial impacts on marine and coastal resources. Efforts will be made during the design and construction of

the Proposed Action to minimize potential environmental impacts, including those related to marine and coastal resources and activities.

### 5.2.3 Hawai'i State Plan

The Hawai'i State Plan, HRS Chapter 226 (1995) provides guidelines for the future growth of the State of Hawai'i. The Hawai'i State Plan identifies broad goals, objectives, policies and priorities for allocating the state's resources, including public funds, services, human resources, land, energy, and water. The Plan articulates a number of specific objectives related to transportation. These objectives include: supporting transportation infrastructure to accommodate planned growth objectives; developing a transportation system that is consistent with the economic growth objectives of the state and local communities; and encouraging multi-modal, energy-efficient, environmentally-benign transportation networks that include mass transit.

**Discussion:** The Proposed Action would provide an initial link for a north-south arterial roadway to reduce demands on the existing regional roadways, and would meet many of the stated objectives of the Hawai'i State Plan. It would facilitate development of high-density neighborhoods and regional centers to support the planned growth objectives of the region, including mixed-use transit-oriented developments (TODs). Together with the planned developments along the corridor, it would enable the more efficient movement of people, particularly the local workforce, while meeting their housing needs. It would accommodate a number of modes of transportation, including automobiles, transit, pedestrians, and bicyclists, providing a range of transportation choices and minimizing air pollution and the dependence on fossil fuels.

### 5.2.4 State Transportation Functional Plan (1991)

The 1991 State Transportation Functional Plan sought to (1) construct facility and infrastructure improvements in support of Hawai'i's economy and growing population base, (2) develop a transportation system balanced with an array of new alternatives, (3) implement Transportation Systems Management to maximize the use of existing facilities and systems, (4) foster innovation and use of new technology in transportation, (5) maximize joint efforts with the private sector, (6) pursue land use initiatives which help reduce travel demand, and (7) encourage resident quality of life improvements through improved mobility opportunities and travel reduction.

**Discussion:** The Proposed Action would meet the objectives of the State Transportation Functional Plan by playing a significant role in the regional transportation network, helping to serve growing local mixed-use communities, connecting residential areas with jobs, relieving congestion on major arterials such

as the Queen Ka‘ahumanu Highway, providing opportunities for alternative transportation, and incorporating design elements that ensure that the Proposed Action is aligned with the economic, transportation, recreation, and housing needs of the community.

### 5.2.5 DHHL Kealakehe/La‘i ‘Opua Regional Plan (December 2008)

The Kealakehe/La‘i ‘Opua Regional Plan (December 2008) was prepared to facilitate the ongoing projects of the DHHL to develop lands and improve community life in the three properties just north of Kailua-Kona: Honokohau, Keahuolu, and the Villages of La‘i ‘Opua. The proposed highway would pass directly through the Villages of La‘i ‘Opua – some planned, some already built – and provide connectivity with another DHHL parcel at Keahuolu. These master-planned communities are intended to provide a substantial amount of affordable housing, employment opportunities, economic development, and amenities to their residents. For this reason, it is identified as a priority project in the Plan.<sup>8</sup>

**Discussion:** Construction of the Proposed Action is an essential element of DHHL’s plan to develop master-planned communities in the project area. Because one of the objectives of the proposed highway is to relieve congestion on the Queen Ka‘ahumanu Highway, Honokohau would realize secondary benefits in the form of reduced traffic on the Queen Ka‘ahumanu Highway.

## 5.3 COUNTY OF HAWAI‘I

### 5.3.1 County of Hawai‘i General Plan

The County of Hawai‘i General Plan (February 2005) is the policy document for the long range comprehensive development of the island of Hawai‘i. It contains land use maps referred to as “General Plan Land Use Pattern Allocation Guides” (Figure 3-2). The transportation section of the Plan sets out two main goals: (1) provide a transportation system whereby people and goods can move efficiently, safely, comfortably, and economically and (2) make available a variety of modes of transportation that best meet the needs of the County.<sup>9</sup> In addition, the Plan identifies road improvements recommended by the 1997 Keahole to Kailua Development Plan-Revised Roadway Plan Implementation Strategy, to accommodate future traffic volumes upon full build-out of the area between Queen Ka‘ahumanu Highway and Mamalahoa Highway. These include the extension of Ane Keohokalole Highway.<sup>10</sup> The General Plan also supports the concept of

<sup>8</sup> Kealakehe/La‘i ‘Opua Regional Plan, p. 27

<sup>9</sup> *County of Hawai‘i General Plan* Section 13.1.2

<sup>10</sup> *Ibid* Section 13.2.5.7.2

concentrating development in areas already serviced by existing infrastructure, rather than scattering development, and incorporating mixed-use zoning into the zoning code.

**Discussion:** The Proposed Action is within the Urban Expansion area designated in the General Plan. The General Plan encourages and supports the development and improvement of transportation services. The extension of Ane Keohokalole Highway is specifically recommended as necessary to realize the transportation goals of the County of Hawai'i General Plan. The purpose of the Proposed Action is congruent with the broader goals of the General Plan with respect to concentrating development in or near already developed areas, and providing opportunities for multiple modes of transportation.

### 5.3.2 County of Hawai'i Zoning

The Proposed Action would pass through portions of land designated as Agricultural A-5a, A-200a, and General Commercial CG-7 Districts.

**Discussion:** Since the Proposed Action is a public facility-type use, it would be consistent with the existing zoning and is considered a permitted use in both the agricultural and general commercial districts.

### 5.3.3 West Hawai'i Regional Plan

The West Hawai'i Regional Plan was developed by the Office of Planning in 1989. It was intended to complement the County of Hawai'i's General Plan and Community Development Plan to address regional issues arising from rapid development of West Hawai'i.

**Discussion:** The West Hawai'i Regional Plan includes the project area in the Kailua-Kona to Keahole Urban Expansion Planning Area. The Proposed Action is consistent with the West Hawai'i Regional Plan and is considered a permitted use.

### 5.3.4 Keahole-to-Kailua Development Plan

In 1988, the County of Hawai'i launched the Keahole-to-Kailua Development Plan study with the intention of developing a mixed residential, commercial, resort, industrial, and recreational community, with appropriate shoreline uses, public facilities, and infrastructure. It was intended to be built in phases over the course of 20 years. The plan was adopted by the County of Hawai'i in 1990. Objectives included (1) developing an efficient, safe, and attractive road network which operates at Level of Service (LOS) C over the next 20 years which would interconnect various land uses within the planning area and accommodate various

modes of travel; and (2) developing a plan for an integrated community that would be served by the required infrastructure and provide a mix of land uses. The plan called for new north-south collector and arterial roads.

**Discussion:** The proposed highway is a critical segment of a roadway network outlined in the Keahole-to-Kailua Development Plan. The traffic study indicated that, at the 2028 planning horizon, the Proposed Action would improve the LOS at all study intersections would function at LOS C or better, with the exception of two intersections during the PM peak period. Thus, the Proposed Action is consistent with the objectives of the Keahole-to-Kailua Development Plan.

### 5.3.5 Keahole to Honaunau Regional Circulation Plan – County Action Plan (2006)

The purpose of the action strategy outlined in the Keahole to Honaunau Regional Circulation Plan – County Action Plan is to relieve congestion, control the pace of development in relation to infrastructure capacity, preserve future roadway corridors, finance improvements, and advance the state of knowledge and monitor progress in the above areas.<sup>11</sup>

**Discussion:** The Proposed Action is consistent with this plan, as the proposed highway is named in section 4.1.2 Item 2-I as an action to alleviate congestion by increasing the capacity of north-south roadways.

### 5.3.6 Kona Community Development Plan

The Ane Keohokalole Mid-Level Highway project is part of the KCDP. Adopted by the Hawai'i County Council as Ordinance #08-131 on September 25, 2008, the KCDP is part of the overall County of Hawai'i General Plan. Community Development Plans (CDPs) help the County determine how it should distribute funds, pass laws, govern development, provide roads and public facilities, and generally make decisions in each area until the year 2015. The KCDP process provided forums for gathering, discussing, and articulating the community's views on how the Kona area should be developed. Over 100 public meetings, including three large stakeholder meetings, were held throughout Kona from November 2005 through January 2006. Between May 2006 and November 2006, approximately 80 working group meetings were conducted to develop specific parts of the plan. Objectives of the KCDP include guiding development in accordance with the vision of the community, providing an infrastructure financing plan, and directing growth to appropriate areas.

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<sup>11</sup> Keahole to Honaunau Regional Circulation Plan – County Action Plan, August 14, 2006.

**Discussion:** The Proposed Action is consistent with the KCDP as adopted by the County of Hawai'i. The Ane Keohokalole Mid-Level Highway project is specifically cited as a critical element in the KCDP's overall strategy to reduce traffic congestion, provide a multi-modal corridor, and support future regional development.<sup>12</sup>

## 5.4 REQUIRED PERMITS, APPROVALS, AND CONSULTATIONS

Table 5-1 indicates the government permits, approvals, and consultations that may be required to implement the Proposed Action and the No Action Alternative.

**Table 5-1: List of Required Permits, Approvals, and Consultations**

Agency	Permit, Approval, or Consultation	Proposed Action	No Action Alternative
Federal			
U.S. Fish and Wildlife Service	Consultation in accordance with Section 7 of the Endangered Species Act	✓	Not Applicable (N/A)
State of Hawai'i			
State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning	Coastal Zone Management Federal Consistency Review	✓	N/A
State of Hawai'i Department of Health	National Pollutant Discharge Elimination System permit for discharges of storm water associated with construction activities	✓	N/A
State of Hawai'i Department of Health	Underground Injection Control permit for drainage injection	✓	N/A
State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife	Consultation on dryland forest and land use	✓	N/A
State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division	Archaeological Inventory Survey, Archaeological Mitigation Plan, Archaeological Monitoring Plan, and Burial Treatment Plan approvals	✓	N/A
State of Hawai'i Department of Land and Natural Resources – State Historic Preservation Division	Consultation in accordance with Section 106 of the National Historic Preservation Act	✓	N/A
State of Hawai'i Department of Transportation	Permit to perform work upon State highways for any work within the Kealakehe Parkway right-of-way	✓	N/A

<sup>12</sup> Kona Community Development Plan, Volume 1, pp. 4-7

**Table 5-1: List of Required Permits, Approvals, and Consultations** *(continued)*

Agency	Permit, Approval, or Consultation	Proposed Action	No Action Alternative
County of Hawai'i			
County of Hawai'i Department of Public Works	Grubbing, Grading, Excavation, and Stockpiling Permits	✓	N/A

# CHAPTER 6

## OTHER CONSIDERATIONS

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### 6.1 UNAVOIDABLE ADVERSE EFFECTS

There would be no unavoidable adverse effects from the Proposed Action.

### 6.2 RELATIONSHIP BETWEEN SHORT-TERM USES AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

Short-term uses and long-term productivity relate to the short-term construction phases and the long-term socio-economic benefits that would accrue to the state and the county in the form of a major collector roadway and added revenue resulting from economic activity that would otherwise not occur in the area. Development of the project area as a transportation and utility corridor constitutes a permanent commitment that would remove the property from the inventory of available agricultural land. The site is unsuitable for agriculture due to poor soils and other conditions. This action is a permitted use and is consistent with the State and County plans for the area.

The Ane Keohokalole Mid-Level Highway project is a product of the Kona Community Development Plan (KCDP) and the resulting County of Hawai'i Ordinance 08-131. The proposed highway will add capacity to the north-south arterial network and reduce demand on the existing regional facilities. It would also become the central multi-modal corridor serving future regional and local development, concentrating economic activity around transit-oriented developments, and allowing future growth to take advantage of the transportation infrastructure thus created. Long-term productivity in the region would increase.

### 6.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments are those that result in the permanent loss of future options. The term applies primarily to non-renewable resources, such as minerals or cultural resources, or the loss of a species, and to those factors that are renewable only over long time spans. Irretrievable commitments represent the loss

of production, harvest, or use of renewable resources. These opportunities are foregone for the period of the Proposed Action, during which other resource utilization cannot be realized. These decisions are reversible, but the utilization opportunities foregone are irretrievable.

The Proposed Action would irreversibly alter the use and character of the area. It should be noted, however, that the area is not pristine, as much of it has previously undergone decades or more of significant disturbance, and large areas are already planned for future development. In addition, the loss of historic properties are cultural resources that would be irreversibly committed by the Proposed Action.

The Proposed Action would require the irretrievable expenditure of energy in the form of fuel for construction vehicles and equipment and the consumption of natural and man-made resources in the form of construction materials (metal, glass, concrete, asphalt, wood, plastic, etc.). The Proposed Action would also require the irretrievable investment of human labor that might otherwise be employed elsewhere.

# CHAPTER 7

## ANTICIPATED DETERMINATION, FINDINGS AND REASONS

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### 7.1 DETERMINATION

To determine whether the Proposed Action will have a significant impact on the environment under Hawai'i Revised Statutes (HRS) Chapter 343, all phases and expected consequences of the Proposed Action have been evaluated. For the reasons and considerations identified in Section 7.2 (below), the Proposed Action will not have a significant impact on the environment.

### 7.2 FINDINGS AND REASONS

Hawai'i Administrative Rules (HAR) 11-200-12, establishes 13 significance criteria that agencies shall use in evaluating an action's impacts. Following is a discussion of how the Proposed Action relates to the 13 criteria.

*(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

**Discussion:** No federal- or state-listed natural resources would be committed to loss or destruction due to the Proposed Action. Vegetation is dominated by scrub vegetation composed largely of alien species. As identified in Endangered Species Act (ESA) Section 7 correspondence between the Federal Highway Administration (FHWA) and U.S. Fish and Wildlife Service (USFWS), the Proposed Action is not likely to adversely affect threatened or endangered species in the area (Appendix D).

The Proposed Action will result in a loss of cultural resources, specifically historic properties. However, stipulations within the National Historic Preservation Act (NHPA) Section 106 Memorandum of Agreement (MOA) are intended to mitigate adverse effect on historic properties from the Proposed Action and provide a net benefit to the Native Hawaiian community and community at large. With the federal funding provided under this action, historic preservation and interpretive efforts can finally occur and serve to minimize not only the adverse effect on historic properties for this Proposed Action, but also minimize cumulative impacts on cultural resources in the area. The MOA will provide opportunities for further archaeological

studies, an interpretive center to share this information (education and outreach), and measures to support preservation of archaeological sites. In particular, the MOA and federal funding will enhance preservation measures of and the interpretive development of Queen Lili'uokalani Trust's (QLT's) existing 25-acre Archaeological/Historic Preserve Area on the north side of Palani Road, between the proposed highway and Kamaka'eha Avenue.

Based on information obtained from the Cultural Impact Assessments (CIA) conducted for the project area, the Proposed Action will have no substantial impacts on Hawaiian cultural resources, beliefs, and practices with sensitivity to cultural histories, practices, materials, and remains. As evidenced through the preparation of the CIAs, conduct of the NHPA Section 106 consultations, required Burial Treatment Plan, and the contents of the MOA, sensitivity to cultural histories, practices, materials, and remains (iwi kupuna) is present and being reflected in the Proposed Action.

*(2) Curtails the range of beneficial uses of the environment:*

**Discussion:** The Proposed Action does not curtail the range of beneficial uses of the environment. The project area is identified in State and County land use plans for future urban expansion, and the Proposed Action is a permitted use in both the Urban and Agricultural Districts. The project area is not heavily used in its current form. The Proposed Action will not curtail the future beneficial use of the environment; rather the Proposed Action will support future uses by providing connectivity with surrounding roads, a utility corridor, and integration of future transit services for the area.

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

**Discussion:** The stated purpose of HRS Chapter 344 is to establish a state policy that will encourage productive and enjoyable harmony between people and their environment, promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawai'i. The Proposed Action is consistent with the environmental policies, goals, and guidelines expressed in HRS Chapter 343. Potential sources of impacts have been identified and appropriate measures have been developed to either avoid or minimize potential impacts to levels that are not significant.

*(4) Substantially affects the economic or social welfare of the community or state;*

**Discussion:** The Proposed Action will not have a substantial negative effect on the economic or social welfare of the community or state. Development of the Ane Keohokalole Mid-Level Highway is consistent with the County's desire to focus

development in West Hawai'i in the region between Keahole and Kailua-Kona in order to support economic and housing opportunities and improve quality of life in the area. The Proposed Action will have positive impacts on the social welfare of the North Kona community by providing alternative roadway infrastructure and additional lanes on Palani Road to alleviate traffic congestion in West Hawai'i and by enabling the development of workforce housing close to jobs. The Proposed Action will also have positive short-term impacts on the economic welfare of the community and the state through the creation of construction-related jobs.

*(5) Substantially affects public health;*

**Discussion:** The Proposed Action will not substantially affect public health. Factors affecting public health, including air quality, water quality, and noise, are expected to be minimally affected. The roadway and ancillary infrastructure systems will be constructed to comply with applicable state and county standards and rules, and any potential impacts will be prevented in accordance with applicable regulations. The inclusion of infrastructure for transit, pedestrians, and cyclists will support modes of transportation that promote physical activity and will have a positive impact on public health.

*(6) Involves substantial secondary impacts such as population changes or effects on public facilities;*

**Discussion:** There will be long-range impacts as the properties along the proposed highway corridor are developed. These changes are consistent with the vision and specific recommendations of a variety of regional planning documents and processes, including the County of Hawai'i General Plan and the Kona Community Development Plan (KCDP), which has been adopted as a county ordinance. These plans acknowledge that population change is taking place, and that population growth needs to be channeled into compact, rather than sprawling, developments. These developments would minimize the growth burden on public facilities and infrastructure, and would maximize the economic benefits that this population growth would bring to the region. The Ane Keohokalole Mid-Level Highway is needed to support the planned development in the region.

*(7) Involves a substantial degradation of environmental quality;*

**Discussion:** The Proposed Action does not involve substantial degradation of environmental quality. Construction will involve ground disturbance, including clearing, grubbing, and grading of the project area. Federal, state, and county regulations and permit conditions will prevent substantial degradation of environmental quality.

*(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

**Discussion:** Cumulative effects related to the development of the region will occur. The Proposed Action is planned to support this planned development and if timed correctly, will serve to avoid the adverse effects of developments without the proper infrastructure (in this case roads) and the traffic congestion that results.

Cumulative effects on archaeological resources in the area are anticipated, as the region has been a site of human habitation for centuries. As identified in the early stages of the area's planned development (including this mid-level road) and documented in *Keahulou Lands of Kailua-Kona Final Environmental Impact Statement* (EIS) (Belt Collins & Associates, October 23, 1990), loss of historic properties would occur. However, compliance with applicable federal and state laws and rules, together with the implementation of proper mitigation measures such as data recovery and monitoring plans, as well as appropriate consultation with the Hawai'i State Historic Preservation Officer (SHPO), will minimize cumulative impacts by ensuring that proper documentation takes place and historic properties of unusual significance are not adversely affected.

Every development project will be required to consult with the SHPO on the appropriate treatment for historic properties, including data collection, preservation, and other actions that are intended to protect these important cultural resources. This process should ensure that the cumulative effects of development on the archaeological history of the region are minimized to the greatest extent possible.

*(9) Substantially affects a rare, threatened, or endangered species, or its habitat;*

**Discussion:** Botanical and faunal studies were conducted as part of this Environmental Assessment (EA). The results of these surveys are discussed in Section 3.5, and the survey reports are contained in Appendices C and D. No rare, threatened, or endangered species or critical habitat have been identified within the project area.

*(10) Detrimentially affects air or water quality or ambient noise levels;*

**Discussion:** The Proposed Action will result in increased motor vehicle use in the area, which may affect air quality, although not substantially. The proposed highway is intended to serve as a multi-modal roadway that will support other transportation alternatives and help to minimize traffic congestion and other factors detrimental to air quality. The anticipated short-term impacts to air quality likely to occur during the construction phase will be mitigated through the appropriate measures and Best Management Practices (BMPs).

Water quality in and around the project area would not be affected, as compliance with federal, state, and county regulations and permit conditions will prevent adverse impacts. In addition, the Proposed Action includes specific drainage and bio-retention designs to prevent changes to existing ground water quality.

Ambient noise levels may be increased in the project area, but are not expected to exceed acceptable levels with a few exceptions that are amenable to standard approaches to noise mitigation. Potential short-term construction-related noise impacts are possible, however, noise impacts would be minimized with the use of standard curfew periods, properly muffled equipment, administrative controls, and construction barriers as required.

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

**Discussion:** An assessment of the potential for natural hazards is contained in Section 3.11. The project site is not located within a flood plain, tsunami zone, erosion prone area, or near fresh or coastal waters.

The National Park Service (NPS) is concerned about regional development effects on groundwater that could affect downstream anchialine ponds located at Kaloko-Honokohau National Historical Park. With implementation of bio-retention cells and other drainage structures that are part of the Proposed Action, the highway improvements would not adversely affect the ponds. The County of Hawai'i understands the NPS' concerns relating to planned regional development and effects on anchialine ponds and will take these concerns into consideration when reviewing future changes to the County Code.

*(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies;*

**Discussion:** The effect of the Proposed Action on visual resources is considered in Section 3.13. The Proposed Action will not impact scenic vistas or viewplanes identified in county or state plans or studies. The proposed highway and the proposed Palani Road widening will be designed and constructed to be compatible with existing roads and surrounding developments, and landscaped to minimize visual impacts.

*(13) Requires substantial energy consumption.*

**Discussion:** The Proposed Action will require energy in order to construct the road and for road maintenance. However, the amount of energy is in keeping with other roads and is therefore not considered substantial. With the alleviation of traffic congestion on Queen Ka'ahumanu Highway and Palani Road, the Proposed Action may serve to reduce vehicular fuel use.

# CHAPTER 8

## PUBLIC PARTICIPATION

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### 8.1 PRE-ASSESSMENT CONSULTATIONS

The Ane Keohokalole Mid-Level Highway project has been developed as part of the Kona Community Development Plan (KCDP) process over the course of more than two years and over 100 public meetings. In order to inform the public of the Environmental Assessment (EA) process and to obtain input for use in developing the Draft EA, early consultation was conducted through a public information meeting and charrette held on April 24, 2008. The charrette process allowed the public and various stakeholders (listed below) to provide input and comment on the project.

The charrette process utilized an approach called Context Sensitive Solutions (CSS), also referred to Context Sensitive Design (CSD) CSS is a collaborative, interdisciplinary approach that involves stakeholders in developing transportation facilities that fit their physical settings and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. The approach was valuable in obtaining stakeholder input to determine what resources should be preserved and integrated into the planning and design.

The charrette process was very successful in that stakeholders clearly identified their wishes/preferences for a multi-modal facility with enhanced pedestrian and bike provisions. They fully supported bus options and incorporating traffic calming devices such as roundabouts into the design and function of the road. Infrastructure such as bioswales to maintain water quality of storm water recharge and the use of non-potable irrigation for landscaping were also important components for greater sustainability.

Table 8-1 lists the agencies, community organizations, and other stakeholders that were involved in pre-assessment consultations for the Ane Keohokalole Mid-Level Highway project.

**Table 8-1: List of Pre-Assessment Consulting Parties**

<b>Federal Agencies</b>
U.S. Department of the Interior, National Park Service
U.S. Department of the Interior, U.S. Fish and Wildlife Service
<b>State Agencies</b>
Department of Business, Economic Development and Tourism, Hawai'i Housing Finance and Development Corporation
Department of Business, Economic Development and Tourism, Office of Planning, Coastal Zone Management Program
Department of Education
Department of Hawaiian Home Lands
Department of Health, Environmental Planning Office
Department of Health, Office of Environmental Quality Control
Department of Land and Natural Resources, Board of Land and Natural Resources
Department of Land and Natural Resources, Na Ala Hele – Hawai'i Trails & Access System
Department of Land and Natural Resources, State Historic Preservation Officer
Department of Transportation, Highways Division
Kailua-Kona Public Library
Office of Hawaiian Affairs
<b>County Agencies</b>
Civil Defense Agency
Department of Environmental Management
Department of Public Works
Department of Research and Development
Hawai'i County Council
Mass Transit Agency
Office of the Mayor
Planning Department
<b>Community Organizations and Other Stakeholders</b>
Forest City Enterprises, Inc.
Hawai'i Cycling Club
Hawai'i Forest and Trail
Historic Hawai'i Foundation
Hui Malama I Na Kupuna 'O Hawai'i Nei
Kona Community Planning and Steering Committee
Kona Traffic Safety Committee
Lanikai Partners. LLC
McClellan Honokohau Properties, LLC
National Trail Association Trail Cleaners

**Table 8-1: List of Pre-Assessment Consulting Parties (continued)**

<b>Community Organizations and Other Stakeholders (continued)</b>
People’s Advocacy for Trails Hawai’i (PATH)
Queen Lili’uokalani Trust
Sierra Club, Hawai’i Chapter – Chapter Office (O’ahu)
Sierra Club, Hawai’i Chapter – Moku Loa Group
Stanford S. Carr Development Corporation

## 8.2 DRAFT EA DISTRIBUTION

The notice of availability of the Draft EA and anticipated Finding of No Significant Impact (FONSI) were announced in the June 23, 2009, issue of the Office of Environmental Quality Control’s (OEQC) *The Environmental Notice*. The Draft EA document and appendices were made available in OEQC’s online document library ([http://oeqc.doh.hawaii.gov/gis/north\\_kona\\_list.html](http://oeqc.doh.hawaii.gov/gis/north_kona_list.html)), and copies were distributed to the parties listed in Table 8-2.

**Table 8-2: Draft EA Distribution List**

<b>Name</b>	<b>Organization</b>
Mr. Aric Arakaki, Superintendent	U.S. Department of the Interior, National Park Service, Ala Kahakai National Historic Trail
Mr. Rick Gmirkin	U.S. Department of the Interior, National Park Service, Ala Kahakai National Historic Trail
Ms. Geraldine K. Bell, Superintendent	U.S. Department of the Interior, National Park Service, Kaloko-Honokohau National Historic Park
Mr. Frank Hays, Director	U.S. Department of the Interior, National Park Service, Pacific West Region – Honolulu
Mr. Michael Molina, Environmental Review Coordinator	U.S. Department of the Interior, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office
Mr. Patrick Leonard, Field Supervisor	U.S. Department of the Interior, U.S. Fish and Wildlife Service, Pacific Islands Ecological Field Office
Mr. Gordon W. Tribble, Center Director	U.S. Department of the Interior, U.S. Geological Survey, Pacific Islands Water Science Center
Mr. Abraham Wong, Division Administrator	U.S. Department of Transportation, Federal Highway Administration
Mr. Pat Phung, Transportation Engineer	U.S. Department of Transportation, Federal Highway Administration
Ms. Connell Dunning, Environmental Scientist	U.S. Environmental Protection Agency, Region 9
Mr. Dean Higuchi, Public Affairs Specialist	U.S. Environmental Protection Agency, Region 9

**Table 8-2: Draft EA Distribution List** *(continued)*

Name	Organization
Ms. Karen S. Seddon, Executive Director	State of Hawai'i, Department of Business, Economic Development and Tourism, Hawai'i Housing Finance and Development Corporation
Mr. Stanley S. Fujimoto, Project Manager	State of Hawai'i, Department of Business, Economic Development and Tourism, Hawai'i Housing Finance and Development Corporation
Mr. Tom Yamamoto	State of Hawai'i, Department of Business, Economic Development and Tourism, Hawai'i Housing Finance and Development Corporation
Mr. Abbey Seth Mayer, Director	State of Hawai'i, Department of Business, Economic Development and Tourism, Office of Planning
Mr. Douglas Tom, Planning Program Manager	State of Hawai'i, Department of Business, Economic Development and Tourism, Office of Planning
Ms. Patricia Hamamoto, Superintendent	State of Hawai'i, Department of Education
Mr. Wilfred Murakami, Principal	State of Hawai'i, Department of Education, Kealakehe High School
Mr. Micah A. Kane, Chairperson	State of Hawai'i, Department of Hawaiian Home Lands
Mr. Larry M. Sumida, Administrator	State of Hawai'i, Department of Hawaiian Home Lands, Land Development Division
Mr. Kelvin H. Sunada, Manager	State of Hawai'i, Department of Health, Environmental Planning Office
Ms. Laura H. Thielen, Chairperson	State of Hawai'i, Department of Land and Natural Resources, Board of Land and Natural Resources
Ms. Moana Rowland, Na Ala Hele Abstractor	State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife, Na Ala Hele – Hawai'i Trail and Access System
Mr. Irv Kawashima, Trails & Access Specialist	State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife, Na Ala Hele – Hawai'i Trail and Access System
Dr. Pua'alaokalani Aiu, Ph.D., Administrator	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division
Ms. Nancy McMahon, Chief	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division, Archaeology Branch
Ms. Theresa Donham, Hawai'i Island Archaeologist	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division, Hawai'i Island Office
Mr. Analu K. Josephides	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division, Hawai'i Island Office

**Table 8-2: Draft EA Distribution List** *(continued)*

Name	Organization
Ms. Phyllis Coochie Cayan, Chief	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division, History and Culture Branch
Mr. Charles Young, Chair	State of Hawai'i, Department of Land and Natural Resources, State Historic Preservation Division, Island Burial Council – Island of Hawai'i
Mr. John Romanowski, Chair	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. David Sproat, Vice-Chair	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Laurence Balter, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Richard Houck, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. William Lindemann, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. David Marshall, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Melvin Miyamoto, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Owen Miyamoto, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Ku'uhaku Park, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Pete G. Pascua, Jr., Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. John B. Ray, Member	State of Hawai'i, Department of Transportation, Commission on Transportation
Mr. Milton Oka	State of Hawai'i, Department of Transportation, Highways Division
Mr. Robert Sun	State of Hawai'i, Department of Transportation, Highways Division
Mr. Stanley M. Tamura, District Manager	State of Hawai'i, Department of Transportation, Highways Division, Hawai'i District
Mr. Alvin Takeshita, Program Manager	State of Hawai'i, Department of Transportation, Highways Division, Traffic Branch
Mr. Clyde W. Namu'o, Administrator	State of Hawai'i, Office of Hawaiian Affairs
Mr. Robert K. Lindsey, Jr., Trustee – Hawai'i Island	State of Hawai'i, Office of Hawaiian Affairs
Ms. Ruby McDonald, Community Resource Coordinator	State of Hawai'i, Office of Hawaiian Affairs, Island of Hawai'i
Mr. Kai Markell, Director	State of Hawai'i, Office of Hawaiian Affairs, Native Rights, Land and Culture

**Table 8-2: Draft EA Distribution List (continued)**

Name	Organization
Mr. Keola Lindsey, Lead Advocate – Culture	State of Hawai'i, Office of Hawaiian Affairs, Native Rights, Land and Culture
Mr. Jason Jeremiah, Policy Advocate – Historic Preservation	State of Hawai'i, Office of Hawaiian Affairs, Native Rights, Land and Culture
Dr. James E. T. Moncur, Ph.D., Director	University of Hawai'i at Manoa, Environmental Center
Mr. Quince Mento, Administrator	County of Hawai'i, Civil Defense Agency
Mr. Lono A. Tyson, Director	County of Hawai'i, Department of Environmental Management
Mr. Bob Fitzgerald, Director	County of Hawai'i, Department of Parks and Recreation
Mr. Warren Lee, Director	County of Hawai'i, Department of Public Works
Mr. Brian Kajikawa, Division Head	County of Hawai'i, Department of Public Works, Building Division
Mr. Stanley S. Nakasone, Division Head	County of Hawai'i, Department of Public Works, Highway Maintenance Division
Mr. Ronald Thiel, Division Head	County of Hawai'i, Department of Public Works, Traffic Division
Mr. Randall M. Kurohara, Director	County of Hawai'i, Department of Research and Development
Mr. Milton D. Pavao, Manager	County of Hawai'i, Department of Water Supply
Mr. Darryl J. Oliveria, Fire Chief	County of Hawai'i, Fire Department
Mr. Thomas Brown, Transit Operations Administrator	County of Hawai'i, Mass Transit Agency
Mr. Alan Parker, Executive	County of Hawai'i, Office of Aging
Mr. Stephen J. Arnett, Housing Administrator	County of Hawai'i, Office of Housing and Community Development
Mr. Bobby Command	County of Hawai'i, Office of the Mayor
Ms. Bobby Jean Leithead-Todd, Director	County of Hawai'i, Planning Department
Mr. Harry Kubojiri, Police Chief	County of Hawai'i, Police Department
Mr. Robert Ward, Vice Chair	County of Hawai'i, Transportation Commission
Librarian	Hawai'i State Library, Documents Center
Librarian	Hilo Regional Library
Librarian	Kailua-Kona Public Library
Librarian	University of Hawai'i at Hilo Library
The Honorable Mazie Hirono, U.S. Representative	U.S. Congress, House of Representatives, Second Congressional District
The Honorable Daniel Akaka, U.S. Senator	U.S. Congress, Senate
The Honorable Daniel Inouye, U.S. Senator	U.S. Congress, Senate

**Table 8-2: Draft EA Distribution List** *(continued)*

Name	Organization
The Honorable Robert N. Herkes, Representative	Hawai'i State Legislature, House of Representatives, District 5
The Honorable Denny Coffman, Representative	Hawai'i State Legislature, House of Representatives, District 6
The Honorable Cindy Evans, Representative	Hawai'i State Legislature, House of Representatives, District 7
The Honorable Josh Green, M.D., Senator	Hawai'i State Legislature, Senate, District 3
The Honorable Brenda Ford, Council Member	Hawai'i County Council, District 7
The Honorable Kelly Greenwell, Council Member	Hawai'i County Council, District 8
Mr. Jay Ignacio, President	Hawaii Electric Light Company Hawaiian Telcom Oceanic Time Warner
Mr. Charles Flaherty	'Apono Hawai'i
Ms. JoAnn Bishop Freed, Executive Director	Family Support Services of West Hawai'i
Mr. Race Randle, Development Associate	Forest City Enterprises, Inc.
Mr. Mitchell S. Nakagawa, Executive Director	Hawai'i Bicycling League
Mr. Gary Shields, President	Hawai'i Cycling Club
Mr. Rob Pacheco, President	Hawai'i Forest and Trail
Ms. Barbara Hastings, President	Hawai'i Island Chamber of Commerce
Ms. Jacqui L. Hoover, Executive Director	Hawai'i Island Economic Development Board
Ms. Jacqui L. Hoover, President	Hawai'i Leeward Planning Conference
Ms. Kirsten Faulkner, Executive Director	Historic Hawai'i Foundation
Mr. Edward Ayau	Hui Malama I Na Kupuna O Hawai'i Nei
Ms. Dora Aio	Kaniohale Community Association
Mr. Craig Bo Kahui	Kaniohale Community Association
Mr. Roger Harris	Kona Community College
Mr. Earl Greenia, Chief Executive Officer	Kona Community Hospital
Mr. Ken Melrose	Kona Community Planning and Steering Committee
Mr. J. Curtis Tyler, III	Kona Community Planning and Steering Committee
Ms. Cynthia Nazara, President	Kona Hawaiian Civic Club
Ms. Christie Dermengian, President	Kona-Kohala Chamber of Commerce
Ms. Marni Herkes, President	Kona Outdoor Circle
Mr. Joel Gimpel, Co-Chair	Kona Traffic Safety Committee
Ms. Mikahala Roy, President	Kulana Huli Honua
Mr. Jim Greenwell, President	Lanihau Properties, LLC
Mr. Robert S. McClean	McClean Honokohau Properties, LLC
Mr. Dennis Hart	National Trail Association Trail Cleaners

**Table 8-2: Draft EA Distribution List** *(continued)*

Name	Organization
Mr. Wally Lau	Neighborhood Place of Kona
Ms. Laura Dierenfield, Executive Director	People’s Advocacy for Trails Hawai’i (PATH)
Ms. LeeAnn Crabbe, Vice President	Queen Liliu’okalani Trust
Mr. Robert Lee	Robert E. Lee Sr. Construction
Mr. Thomas Hickcox	Royal Order of Kamehameha I, Moku O Kona / Concerned Citizens of Kona
Mr. Wayne Iokepa,	Royal Order of Kamehameha I, Moku O Kona
Mr. Robert D. Harris, Director of Environmental Advocacy	Sierra Club – Hawai’i Chapter
Mr. Paul Campbell, Chair	Sierra Club – Hawai’i Chapter, Moku Loa Group
Mr. Paul J. Kay, Vice President	Stanford S. Carr Development Corporation
Ms. Celeste Damo	
Mr. Alika Desha	
Ms. Nohokula Kahananui	
Ms. Edith Kahaoali’i	
Mr. Clement Kanuha, Jr.	
Ms. Lily Kong, Kupuna – Keauhou	
Mr. Kaleo Kualii’i	
Ms. Elizabeth Lee	
Mr. Arthur M. Mahi, Kupuna – Hamanamana Ahupua’a	
Mr. Clarence Medeiros	
Mr. Jimmy Medeiros	
Mr. Byron Moku	
Mr. Mahealani Pai, Cultural Practitioner	
Mr. Russell Paio	
Clayton & Pamela Punihaole	
Mr. Hiram Rivera	
Mr. Roy Hao Santana	
Mr. Larry Kahekili Ursua	
Ms. Elaine Watai	

### 8.3 DRAFT EA COMMENTS AND RESPONSES

Following the procedures established in HAR 11-200, comments received or postmarked within the 30-day Draft EA comment period between June 23, 2009, and July 23, 2009, were considered, responded to in writing, and incorporated into the EA as appropriate. Draft EA comment letters were received from the parties listed in Table 8-3. Copies of the Draft EA comment and response letters are provided in Appendix J.

**Table 8-3: List of Parties Providing Comments on the Draft EA**

Name	Organization
Mr. Aric Arakaki, Superintendent	U.S. Department of the Interior, National Park Service, Ala Kahakai National Historic Trail
Ms. Geraldine K. Bell, Superintendent	U.S. Department of the Interior, National Park Service, Kaloko-Honokohau National Historic Park
Mr. Gordon Tribble, Director	U.S. Department of the Interior, U.S. Geological Survey, Pacific Islands Water Science Center
Ms. Karen Seddon, Executive Director	State of Hawai'i Department of Business, Economic Development and Tourism, Hawai'i Housing Finance and Development Corporation
Mr. Abbey Seth Mayer, Director	State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning
Mr. Duane Y. Kashiwai, Public Works Administrator	State of Hawai'i Department of Education, Office of School Facilities and Support Services
Mr. Wilfred K. Nagamine, Manager	State of Hawai'i Department of Health, Clean Air Branch
Mr. Alec Wong, P.E., Chief	State of Hawai'i Department of Health, Clean Water Branch
Mr. Steven Y.K. Chang, P.E., Chief	State of Hawai'i Department of Health, Solid and Hazardous Waste Branch
Mr. Tomas S. See, P.E., Chief	State of Hawai'i Department of Health, Wastewater Branch
Mr. Morris M. Atta, Administrator	State of Hawai'i Department of Land and Natural Resources, Land Division
Ms. Nancy McMahon, Deputy SHPO/State Archaeologist and Historic Preservation Manager	State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division, Archaeology Branch
Ms. Phyllis Coochie Cayan, Chief	State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division, History and Culture Branch
Mr. Clyde W. Namu'o, Administrator	State of Hawai'i Office of Hawaiian Affairs
Mr. Lono A. Tyson, Director	County of Hawai'i Department of Environmental Management
Mr. Milton D. Pavao, P.E., Manager	County of Hawai'i Department of Water Supply

**Table 8-3: List of Parties Providing Comments on the Draft EA (continued)**

Name	Organization
Mr. Ken Melrose, Chairman	County of Hawai'i Planning Department, Kona Community Development Plan Action Committee
Mr. Harry S. Kubojiri, Police Chief	County of Hawai'i Police Department
Mr. Hugh S. Lovell, Advisory Committee Member	'Aha Kiolo
Ms. LeeAnn E. P. Crabbe, Vice President	Queen Lili'uokalani Trust
Mr. Arthur Mahi, Kupuna – Hamanamana Ahupua'a	Individual
Mr. Robert Ward	Individual

# CHAPTER 9

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