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TO:	Office of Environmental Quality Control 235 So. Beretania Street, Suite 702 Honolulu, HI 96813		
ATTENTION:			
DATE:	November 13, 2017	LOCATION:	
PROJECT:	Pūpūkea Rural Community Commercial Center	PROJECT NO:	216041-01
SUBJECT:	Submittal of Draft Environmental Impact Statement to OEQC for publication in <i>The Environmental Notice</i> (anticipated Nov. 23, 2017)		NO. OF PAGES:

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COPIES	DATE	NO.	DESCRIPTION
1	Nov. 2017		Publication Form: Non-Chapter 343 Document (Chapter 25 ROH) Both hard copy and pdf format*
1	Nov. 2017		Pūpūkea Rural Community Commercial Center Draft Environmental Impact Statement (written copy; printed and bound format: one volume)
3	Nov. 2017		Pūpūkea Rural Community Commercial Center Draft Environmental Impact Statement (written copies; pdf format)*
1	Nov. 13, 2017		EIS Distribution List for OEQC Verification (hard copy)
1	Nov. 2017		*CD containing three pdf files of written document & Word file of Publication form

G70 is simultaneously submitting the revised Draft EIS to DPP and OEQC, pursuant to HAR §11-200-20, for publication in the November 23, 2017 edition of *The Environmental Notice*.

Please contact Barrie Morgan (441-4634) of G70 with confirmation or changes to the Distribution List, or if additional information is needed.

cc: Department of Planning and Permitting

OFC. OF ENVIRONMENTAL
QUALITY CONTROL
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**NON-CHAPTER 343 DOCUMENT
PUBLICATION FORM
OFFICE OF ENVIRONMENTAL QUALITY CONTROL**

Project Name: Pūpūkea Rural Community Commercial Center

Applicable Law: Chapter 25 ROH

Type of Document: Draft Environmental Impact Statement

Island: O'ahu

District: Waialua

TMK: (1) 5-9-011:068, 069, 070, 016

Permits Required: Special Management Area Use Major Permit, Grading Permit, Building Permit

Applicant or Proposing Agency: Hanapohaku LLC, Andrew Yani
(Address, Contact Person, Telephone, E-mail) 526 Ahina St., Honolulu, HI 96816
(808) 779-5733
hanapohakullc@gmail.com

Approving Agency or Accepting Authority: Department of Planning and Permitting
(Address, Contact Person, Telephone, E-mail) 650 South King Street, 7th Floor Honolulu, HI 96816
Ardis Shaw-Kim, 768-8021, ashaw@honolulu.gov

Consultant: G70, 925 Bethel Street, 5th Floor, Honolulu, HI 96813
(Address, Contact Person, Telephone, E-mail) Jeff Overton AICP LEED AP
(808) 523-5866
pupukea@g70.design

Status: Administrative 45-day public review and comment period starts. Comments are due by January 8, 2018. Please send comments to the approving agency/accepting authority and copy the consultant.

Project Summary:

(Summarize proposed action and purpose/need in less than 200 words in the space below):

Hanapohaku LLC is proposing to develop a rural community commercial center in Pupukea, Oahu to provide a mix of goods and services to residents and visitors of the community. The property is in the Special Management Area and this Draft EIS is being prepared pursuant to Chapter 25-3.3, Revised Ordinances of Honolulu, related to procedural guidelines and assessment requirements. The Property is classified as Urban in the State Land Use Designation, is zoned B-1 Neighborhood Business District established by the City and County of Honolulu Zoning Maps, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The small-scale clustered buildings will be set back with a park-like green space, walkways, and bicycle paths fronting Kamehameha Highway. This gathering place can be utilized by mobile food trucks and pedestrian-friendly community gatherings and cultural events. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TMK (1) 5-9-011:068, 069, 070, 016
PŪPŪKEA, O'AHU, HAWAI'I

APPLICANT:



HANAPOHAKU

59-712 KAMEHAMEHA HIGHWAY
HALE'IWA, HAWAI'I 96712

PREPARED BY:



925 BETHEL STREET, 5TH FLOOR
HONOLULU, HI 96815

APPROVING AGENCY:

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PLANNING AND PERMITTING

This environmental document is prepared pursuant to Revised Ordinances of Honolulu, Chapter 25, Special Management Area and consistent with Hawai'i Revised Statutes, Chapter 343, Environmental Impact Statement Law and Chapter 200 of Title 11, Administrative Rules, Department of Health, Environmental Impact Statement Rules.

This Draft Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision, and the information submitted, to the best of my knowledge, fully addresses document content requirements as set forth in Section 11-200-17 for the Hawai'i Administrative Rules.

Jeffrey H. Overton, AICP, LEED AP

11/2/2017

Date

NOVEMBER 2017

CONTENTS

1.0	PROJECT SUMMARY	1-1
1.1	Project Information Summary.....	1-1
1.2	Introduction.....	1-9
1.3	Proposed Action.....	1-9
1.4	Significant Beneficial and Adverse Impacts and Proposed Mitigation Measures.....	1-10
1.4.1	Beneficial Impacts.....	1-10
1.4.2	Adverse Impacts.....	1-11
1.4.3	Proposed Mitigation Measures.....	1-12
1.4.4	Unresolved Issues.....	1-12
1.5	Summary of Compatibility with Land Use Policies and Plans.....	1-12
1.6	Alternatives Considered to the Proposed Action.....	1-12
1.6.1	No-Action Alternative.....	1-13
1.6.2	Commercial Shopping Center.....	1-13
1.6.3	Alternative Development Timetable (Deferral).....	1-13
1.7	Summary of Public Benefits.....	1-14
1.8	Listing of Required Government Permits and Approvals.....	1-14
2.0	PROJECT DESCRIPTION	2-1
2.1	History of Property.....	2-1
2.2	Existing Conditions.....	2-3
2.3	Purpose and Need for the Rural Center.....	2-4
2.4	Proposed Action.....	2-6
2.4.1	Infrastructure Components.....	2-13
2.5	Project Schedule and Costs.....	2-16
3.0	ENVIRONMENTAL SETTING, PROBABLE IMPACTS, AND RECOMMENDED MITIGATION	3-1
3.1	Climate and Rainfall.....	3-2
3.1.1	Existing Conditions.....	3-2
3.1.2	Probable Impacts and Mitigation Measures.....	3-2
3.2	Geology, Topography, and Soils.....	3-2
3.2.1	Existing Conditions.....	3-2
3.2.2	Probable Impacts and Mitigation Measures.....	3-3
3.3	Natural Hazards.....	3-5
3.3.1	Existing Conditions.....	3-5
3.3.2	Probable Impacts and Mitigation Measures.....	3-8

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

3.4	Terrestrial Flora and Fauna.....	3-8
3.4.1	Existing Conditions.....	3-8
3.4.2	Probable Impacts and Mitigation Measures.....	3-10
3.5	Groundwater.....	3-11
3.5.1	Existing Conditions.....	3-11
3.5.2	Probable Impacts and Mitigation Measures.....	3-14
3.6	Surface Water and Drainage.....	3-16
3.6.1	Existing Conditions.....	3-17
3.6.2	Probable Impacts and Mitigation Measures.....	3-17
3.7	Marine Environment	3-21
3.7.1	Existing Conditions.....	3-21
3.7.2	Probable Impacts and Mitigation Measures.....	3-25
3.8	Cultural Resources	3-26
3.8.1	Existing Conditions.....	3-26
3.8.2	Probable Impacts and Mitigation Measures.....	3-29
3.9	Archaeological and Historic Resources	3-29
3.9.1	Existing Conditions.....	3-29
3.9.2	Probable Impacts and Mitigation Measures.....	3-29
3.10	Land Use	3-30
3.10.1	Existing Conditions.....	3-30
3.10.2	Probable Impacts and Mitigation Measures.....	3-31
3.11	Demographic and Economic Conditions	3-31
3.11.1	Existing Conditions.....	3-31
3.11.2	Probable Impacts and Mitigation Measures.....	3-32
3.12	Public Services	3-33
3.12.1	Existing Conditions.....	3-33
3.12.2	Probable Impacts and Mitigation Measures.....	3-34
3.13	Traffic.....	3-35
3.13.1	Existing Conditions.....	3-35
3.13.2	Probable Impacts and Mitigation Measures.....	3-37
3.14	Air Quality.....	3-39
3.14.1	Existing Conditions.....	3-39
3.14.2	Probable Impacts and Mitigation Measures.....	3-39
3.15	Noise.....	3-40
3.15.1	Existing Conditions.....	3-40
3.15.2	Probable Impacts and Mitigation Measures.....	3-40
3.16	Infrastructure and Utilities	3-41
3.16.1	Existing Conditions.....	3-41
3.16.2	Probable Impacts and Mitigation Measures.....	3-42
3.17	Visual Environment	3-46
3.17.1	Existing Conditions.....	3-46
3.17.2	Probable Impacts and Mitigation Measures.....	3-51

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

3.18 Summary of Probable Impacts3-52

3.18.1 Interrelationships and Cumulative Environmental Impacts.....3-52

3.18.2 Potential Secondary Effects3-54

3.18.3 Relationship Between Local Short-term Uses of the Environment and
the Maintenance and Enhancement of Long-term Productivity.....3-55

3.18.4 Irreversible and Irrecoverable Commitments of Resources.....3-56

3.18.5 Adverse Environmental Effects that Cannot be Avoided.....3-56

3.19 Unresolved Issues3-56

**4.0 RELATIONSHIP OF PROPOSED ACTION TO LAND USE PLANS, POLICIES AND
CONTROLS FOR THE AFFECTED AREA 4-1**

4.1 Federal Controls 4-2

4.1.1 Coastal Zone Management Act..... 4-2

4.1.2 Title III of the American Disabilities Act..... 4-2

4.2 State of Hawai‘i Plans and Controls..... 4-3

4.2.1 Environmental Impact Statements, Hawai‘i Revised Statutes
Chapter 343 4-3

4.2.2 Land Use Commission, Hawai‘i Revised Statutes Chapter 205 4-3

4.2.3 Hawai‘i State Plan, Hawai‘i Revised Statutes Chapter 226 4-4

4.2.4 Hawai‘i 2050 Sustainability Plan4-26

4.2.5 Hawai‘i State Functional Plans4-29

4.2.6 Coastal Zone Management, Hawai‘i Revised Statutes Chapter 205A4-29

4.2.7 Marine Life Conservation Districts – Pūpūkea (HAR Title 13 Chapter
34)4-33

4.2.8 Electric Vehicle Parking and Charging4-34

4.2.9 DLNR Makai Watch Program.....4-34

4.3 City and County of Honolulu Plans, Policies and Controls4-35

4.3.1 Chapter 25, Revised Ordinances of Honolulu.....4-35

4.3.2 City and County of Honolulu General Plan4-37

4.3.3 North Shore Sustainable Communities Plan.....4-53

4.3.4 Coastal View Study4-71

5.0 ALTERNATIVES..... 5-1

5.1 Project Objectives and Evaluation Criteria 5-1

5.2 Alternatives Considered and Dismissed from Further Study..... 5-2

5.3 No-Action Alternative 5-3

5.4 Commercial Shopping Center Alternative 5-5

5.5 Alternative Development Timetable (Deferral) 5-7

5.6 Summary Comparison of Alternatives 5-8

6.0 AGENCIES AND PARTIES CONSULTED 6-1

7.0 REFERENCES..... 7-1

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

APPENDICES

- A. Natural resources assessment for improvements proposed for the Pūpūkea Rural Community Commercial Center, Island of O‘ahu
- B. Assessment of Potential Impacts on Water Resources of the Proposed Pupukea Rural Community Commercial Center
- C. Assessment of Marine Water Chemistry and Community Structure in the Vicinity of the Proposed Pupukea Rural Community Commercial Center, North Shore, Oahu, Hawaii
- D. Cultural Impact Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu, Hawai‘i
- E. Archaeological Assessment
State Historical Preservation Division Acceptance of Archeological Assessment Report
Archaeological Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu, Hawai‘i
- F. Transportation Impact Analysis Report
- G. Noise Study for Proposed Pūpūkea Rural Community Commercial Center, Pūpūkea, Oahu
- H. Preliminary Engineering Report

LIST OF FIGURES

1-1 Project Location..... 1-3

1-2 Parcel Boundaries (Tax Map Key) 1-4

1-3 State Land Use District Designations..... 1-5

1-4 City and County North Shore Sustainable Communities Plan Land Use Map..... 1-6

1-5 City and County Zoning 1-7

1-6 Special Management Area 1-8

2-1 Photographs of the former Niimi General Store (ca. 1978) 2-2

2-2 North Shore Sustainable Communities Plan Rural Communities Center Policies 2-4

2-3 Conceptual Site Plan 2-7

2-4 Site Plan – Elevation View 2-11

2-5 Ground Level Perspective View at the Central Green..... 2-12

2-6 Potential Food Truck Locations 2-13

3-1 Soils Classification Map (U.S. Department of Agriculture Soil Conservation Service) 3-4

3-2 Flood and Tsunami Inundation Zones 3-7

3-3 O’ahu Groundwater Hydrologic Units 3-12

3-4 On-Site Wastewater Disposal Systems in Pūpūkea and Sunset Beach Communities..... 3-15

3-5 Low Impact Development Features for Storm Water Control 3-20

3-6 Marine Water Quality Sampling Transects 3-22

3-7 Historical Moku and Ahupua’a Boundary Map..... 3-27

3-8 View Study Photo Key 3-47

3-9A-F Various Site Views pp 3-48 to 3-50

LIST OF TABLES

1-1	Required Reviews and Permits.....	1-15
2-1	Development Program	2-9
3-1	Water Quality Results from Five Marine Transects as Sampled by MRCI in May 2017	3-24
3-2	North Shore Commuter Flow and Daytime Population.....	3-32
3-3	Existing Intersection Levels of Service	3-36
3-4	Near Term (2021) Baseline Intersection Levels of Service.....	3-38
3-5	Comparative Runoff Volumes for Pre- and Post-Development of the Three Hanapohaku Parcels for 24-Hour Storms of Varying Recurrence Intervals	3-45
4-1	Hawai‘i State Plan, Hawai‘i Revised Statutes, Chapter 226.....	4-4
4-2	Hawai‘i 2050 Sustainability Plan (SB 2532 HD1, 2010 Legislative Session).....	4-26
4-3	Coastal Zone Management Program HRS Section 205 A – Objectives and Policies	4-30
4-4	Special Management Area – Objectives and Policies – City and County of Honolulu.....	4-36
4-5	City & County of Honolulu General Plan – Objectives and Policies.....	4-38
4-6	North Shore Sustainable Communities Plan – Objective and Policies – City and County of Honolulu	4-53
5-1	Comparison of Alternatives by Project Objectives	5-8
5-2	Comparison of Alternatives by Evaluation Criteria.....	5-10
5-3	Comparison of Alternatives by Environmental Impact Category	5-12
6-1	Agencies and Parties Consulted.....	6-1

ABBREVIATIONS AND ACRONYMS

AA	Archaeological Assessment
ACS	American Community Survey
ADA	Americans with Disability Act
AWWA	American Water Works Association
BMPs	Best Management Practices
BWS	Honolulu Board of Water Supply
CAB	Department of Health, Clean Air Branch
cfs	Cubic Feet Per Second
CFU	Colony Forming Units
CIA	Cultural Impact Assessment
Chl <i>a</i>	Chlorophyll <i>a</i>
CNCP	Coastal Nonpoint Pollution Control Program
CO	carbon monoxide
CUP	Conditional Use Permit
CWA	Clean Water Act
CWB	Department of Health, Clean Water Branch
CWRM	The Commission on Water Resource Management
CZARA	Coastal Zone Act Reauthorization Amendments
CZC	Comprehensive Zoning Code
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DBEDT	State Department of Business, Economic Development & Tourism
DFM	Department of Facility Maintenance
DOH	Hawai'i State Department of Health
DPP	City and County of Honolulu, Department of Planning and Permitting
EIS	Environmental Impact Statement
EJSCREEN	Environmental Justice Screening Tool
EMD	City and County of Honolulu Emergency Medical Dispatch
EMS	City and County of Honolulu Emergency Medical Services
EPA	U.S. Environmental Protection Agency
FAR	Floor Area Ratio
gpd	Gallons Per Day

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

gpm	Gallons Per Minute
HAR	Hawai'i Administrative Rules
HDOT	State of Hawai'i Department of Transportation
HEPA	Hawai'i's Environmental Protection Act
HPD	Honolulu Police Department
HRS	Hawai'i Revised Statutes
IBC	International Building Code
IWS	Individual Wastewater System
LCAs	Land Commission Awards
Leq(h)	Average Hourly Sound Level
LID	Low Impact Development
LOS	Level of Service
LUO	Land Use Ordinance
μM	Micromolar
MGD	Million Gallons Per Day
mL	Milliliters
MLCD	Marine Life Conservation District
mph	Miles Per Hour
MRCI	Marine Research Consultants, Inc.
NAAQS	National Ambient Air Quality Standards
NH ₄ ⁺	Ammonium Nitrogen
NO ₃ ⁻	Nitrate + Nitrite Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NOX	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSSCP	North Shore Sustainable Communities Plan
O ₃	ozone
OEQC	Office of Environmental Quality Control
OSDS	On-Site Disposal Systems
PER	Preliminary Engineering Report
PM _{2.5}	particulate matter smaller than 2.5 microns
PM ₁₀	10 microns
PO ₄ ⁻³	Orthophosphate Phosphorus

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

ROH	Revised Ordinances of Honolulu
SAAQS	State Ambient Air Quality Standards
SCP	Sustainable Communities Plan
SDWB	Safe Drinking Water Branch
SF	Square Feet
SHPD	State Historic Preservation Division
Si	Silica
SMA	Special Management Area
SMP	Special Management Area Use Permit
SOX	sulfur oxides
STV	Statistical Threshold Value
SWPPP	Storm Water Pollution Protection Plan
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UIC	Underground Injection Control
WkB	Waialua Silty Clay
WWB	Department of Health Wastewater Branch

1.0

PROJECT SUMMARY

1.0 PROJECT SUMMARY

1.1	Project Information Summary.....	1-1
1.2	Introduction.....	1-9
1.3	Proposed Action.....	1-9
1.4	Significant Beneficial and Adverse Impacts and Proposed Mitigation Measures.....	1-10
1.5	Summary of Compatibility with Land Use Policies and Plans.....	1-12
1.6	Alternatives Considered to the Proposed Action.....	1-12
1.7	Summary of Public Benefits.....	1-13
1.8	Listing of Required Government Permits and Approvals.....	1-14

This section provides an overview of the contents and purpose of this Environmental Impact Statement (EIS) for the Pūpūkea Rural Community Commercial Center along with a description of the public consultation process. The project, its potential impacts, the proposed mitigation measures, as well as alternatives to the proposed project, are summarized in this overview.

1.1 PROJECT INFORMATION SUMMARY

Type of Document: Environmental Impact Statement

Project Name: Pūpūkea Rural Community Commercial Center

Landowner & Applicant: TMK Nos. (1) 5-9-011:068, 069 & 070
Hanapohaku LLC
526 Ahina Street
Honolulu, HI 96816
Contact: Andrew Yani
Phone: (808) 779-5733

Landowner: TMK No. (1) 5-9-011:016
The Sullivan Family Limited Partnership
Maurice and Joanna Sullivan Family Foundation
3536 Harding Avenue
Honolulu, HI 96816
Contact: Roger Wall
Phone: (808) 735-7258

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Accepting Authority:	City and County of Honolulu Department of Planning and Permitting 650 South King Street, 7 th Floor Honolulu, Hawai'i, 96813 Contact: Land Use Permits Division Phone: (808) 768-8013
Planning/Environmental Consultant:	G70 925 Bethel Street, 5th Floor Honolulu, Hawai'i 96813 Contact: Jeff Overton, AICP Phone: (808) 523-5866
Project Location	Pūpūkea, Hale'iwa, O'ahu, Hawai'i (<i>Figure 1-1</i>)
Tax Map Key:	(1) 5-9-011:068, 069, 070, 016 (<i>Figure 1-2</i>)
Land Area:	4.56 acres
State Land Use Designation:	Urban District (<i>Figure 1-3</i>)
City and County of Honolulu Land Use Plan:	North Shore Sustainable Communities Plan (<i>Figure 1-4</i>)
City and County of Honolulu Zoning:	B-1 Neighborhood Business (<i>Figure 1-5</i>)
Special Management Area (SMA):	Project site is located within the SMA (<i>Figure 1-6</i>)
SMA Approving Authority:	Honolulu City Council
Flood Management Zone:	Zone X – Outside of 0.2% Annual Chance Floodplain (<i>Figure 3-2</i>)

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement



Figure 1-1 Project Location

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

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Figure 1-2 Parcel Boundaries (Tax Map Key)



Figure 1-3 State Land Use District Designations

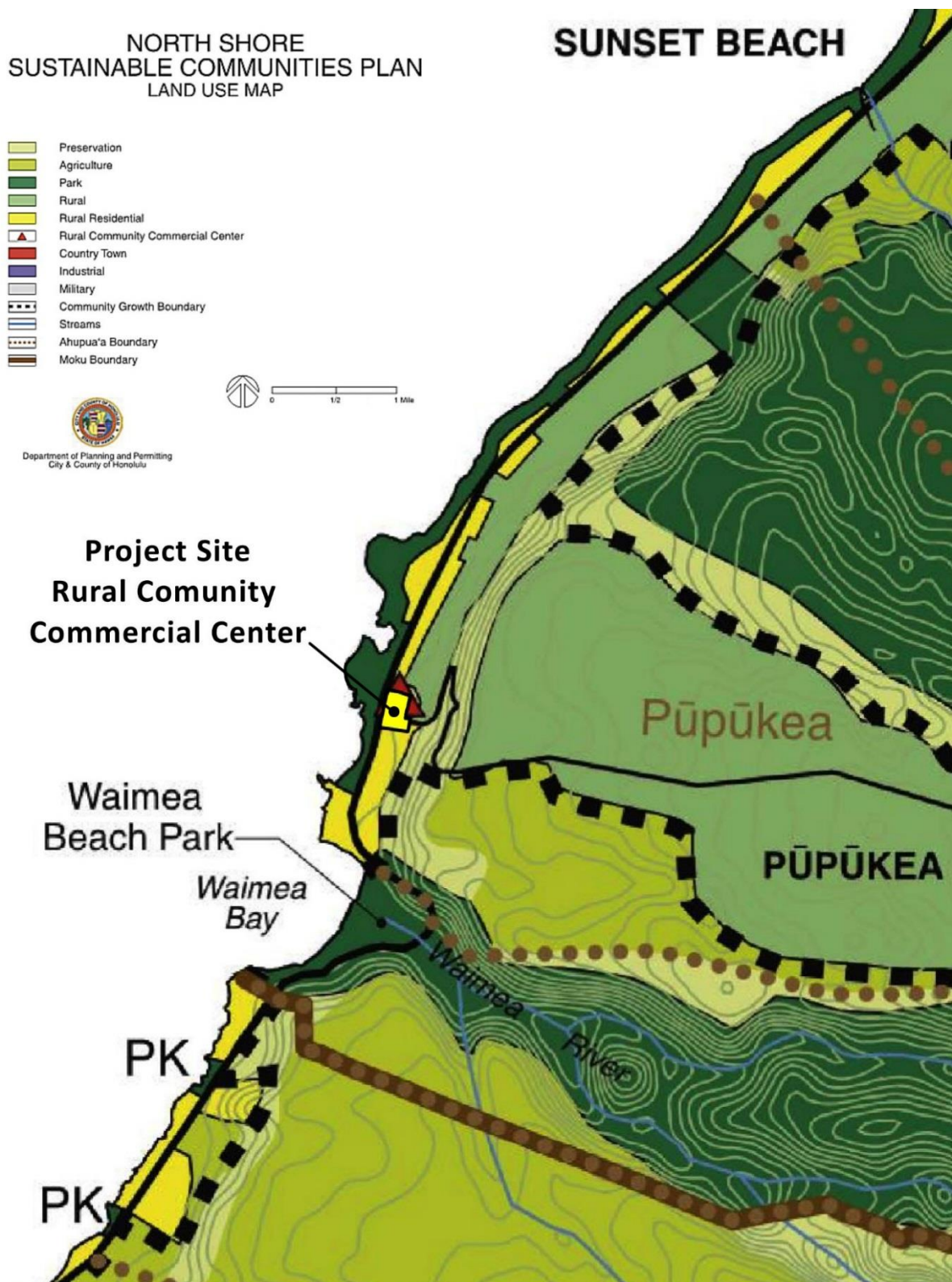


Figure 1-4 City and County of Honolulu, North Shore Sustainable Communities Plan Land Use Map

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Figure 1-5 City and County Zoning

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Draft Environmental Impact Statement



Figure 1-6

1.2 INTRODUCTION

The subject project involves four parcels of real property on the North Shore of O‘ahu mauka of Pūpūkea Beach Park and Sharks Cove. Hanapohaku LLC is the owner in fee of three of the four adjoining parcels totaling 2.72 acres and located directly north of the Foodland grocery store on the corner of Kamehameha Highway and Pūpūkea Road. The fourth parcel covered by the project is the 1.84-acre parcel on which the Foodland grocery store is located (the “Foodland parcel”), which is owned by The Sullivan Family Limited Partnership and the Maurice and Joanna Sullivan Family Foundation (collectively the “Sullivan Entities”). The Foodland store was built in 1980, and is approximately 21,650 square feet in size. The property has been used for commercial purposes for more than a century.

The subject project contemplates only minimal alterations to the Foodland parcel – i.e., closure of the driveway from Kamehameha Highway in favor access through a common egress / ingress point on Kamehameha Highway for all four parcels, limited parking lot improvements, and related landscaping improvements. None of the Sullivan Entities or Foodland Super Market, Limited is involved in the subject project as it relates to the three Hanapohaku LLC parcels; and none of the Sullivan Entities or Foodland Super Market, Limited holds any interest in Hanapohaku LLC. Except as expressly otherwise stated, the “project” refers only to development of the three Hanapohaku LLC parcels.

Hanapohaku acquired its land in 2014 to retain local ownership of an important commercial property to provide goods and services to the Pūpūkea, Waimea, and Kawaihoa communities, consistent with County and State long-range plans. The *North Shore Sustainable Communities Plan* (SCP) has designated the four parcels as the Rural Community Commercial Center for the region (*Figure 1-4*). The combined area of the Hanapohaku and Foodland parcels is 4.56 acres, and is zoned B-1 Neighborhood Business District (*Figure 1-5*).

The parcels fall within the City and County of Honolulu’s designated Special Management Area (SMA). Proposed development within the SMA requires a Special Management Area Use Permit, subject to an assessment by the agency in accordance with the procedural steps set forth in Hawai‘i Revised Statutes as amended (HRS) Chapter 343 (Environmental Impact Statements). This document was prepared as required under Revised Ordinances of Honolulu Chapter 25 and in accordance with HRS Chapter 343 and the implementing Hawai‘i Administrative Rules (HAR), Chapter 11-200 (Environmental Impact Statement Rules).

1.3 PROPOSED ACTION

The project will develop a Rural Community Commercial Center to expand the mix of goods and services available to residents of the Pūpūkea, Waimea and Kawaihoa communities and the region’s visitors. The owners are committed to pursuing Hawai‘i-based businesses as tenants of the center. This commitment underlies the owners’ objectives to support local businesses that complement and strengthen commerce on the North Shore, while preserving its identity as a rural community. The types of businesses and services may include urgent medical care services, credit union, professional services, surf shop and action sports, fitness studio, child care, health food market/deli, mobile food establishments and restaurant. Business and employment opportunities for area residents will provide additional jobs within the community and avoid long commutes to job centers in urban areas of O‘ahu.

The Foodland parcel is tied to the project through a 1996 development agreement that provides for cooperation between the owners of the four parcels to achieve mutual benefits of an integrated neighborhood shopping center. The Environmental Impact Statement (EIS) and SMA Use Permit processes evaluate the properties as a single project, though only minor improvements are anticipated on the Foodland parcel, such as a parking lot improvements and landscaping.

Building design will be consistent with the country character of the North Shore. One- to two-story buildings will be set back from the highway with parking sited behind to create an open, park-like space along Kamehameha Highway. The small-scale clustered buildings linked by meandering walkways and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will create pedestrian connectivity across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. Mobile food establishments can utilize the hardscaped area adjacent to the central green and provide a variety of culinary options. Vehicle access will be restricted from the hardscape during some periods to allow for pedestrian-friendly community gatherings and cultural events, such as art shows, farmers' markets, and music and dance performances.

Infrastructure to support the new facilities will include driveways, parking shaded by solar panel canopies, storm water runoff controls, water supply, and wastewater management. The planned floor area of the facilities will be approximately 27,000 SF of leasable area (30,000 SF gross floor area). The modest development plan utilizes approximately 25 percent of the floor area ratio (FAR) allowed for this property under the City Land Use Ordinance. With one- and two-story buildings, this toned-down land use approach reflects the sensitivity to scale and context as a Rural Community Commercial Center. The conceptual development plan creates a natural flow in an appropriately-scaled built environment, which maximizes open views, public space, and landscaping consistent with the rural nature of the broader community (*Figure 2-3*).

The plan for this commercial property integrates a variety of sustainable design elements. Through careful siting, the design utilizes low impact development (LID) storm water management techniques and engineering to conserve water and use landscaping to filter pollutants (petroleum from cars, sediment, trash) from storm water runoff. The project will include renewable energy generation, promote multi-modal transportation and recycling, and will utilize sustainable building materials.

1.4 SIGNIFICANT BENEFICIAL AND ADVERSE IMPACTS AND PROPOSED MITIGATION MEASURES

1.4.1 Beneficial Impacts

Drainage

Storm water runoff from the site will be reduced with the installation of post-construction low impact development (LID) controls, such as bioswales, rain gardens, sand filters, permeable paving material and subsurface detention chambers. Even with a net increase of impermeable surfaces, LID controls will retain storm water on-site and biofilter any not retained, in compliance with new stringent Water Quality Control rules. Both the volume and flow rate of storm water will be reduced. For more frequent, small storm events with rainfall amounts of up to four inches, all of the runoff would be retained in the detention storage system and eventually percolate back to groundwater (*Refer to Section 3.16.2 Probable Impacts and Mitigation Measures: Infrastructure; Post-Construction Drainage*).

The process of percolation and the subsequent lateral transport to ultimate discharge will significantly reduce nitrogen and phosphorus concentrations by denitrification and absorption processes. Overall, the rural center's drainage system will have a significant environmental benefit in comparison to the present use .

Land Use

The rural center project site is zoned B-1 Neighborhood Business District. The site is specifically and uniquely identified in the North Shore SCP as the designated location for a small cluster of commercial and service businesses to meet the needs of the surrounding residential communities.

The project proposes modest development of approximately 25 percent of the floor area ratio (FAR) allowed under City land use ordinance for the three Hanapohaku LLC parcels. This development proposal reflects sensitivity to scale and context in keeping with the SCP definition of a Rural Community Commercial Center; associated infrastructure is likewise reduced as it supports a smaller development (*Section 3.10.2 Probable Impacts and Mitigation Measures: Land Use*).

Demographic and Economic

The proposed project will create the following financial benefits to employment, spending, and County real property tax. Construction employment is estimated at 45 full-time equivalent positions for site work, infrastructure, carpentry, and landscape. Long-term employment is estimated at 86 full time jobs. Construction spending, including tenant improvements, is projected at \$17.8 million.

With stabilized revenues, the project's projected State Income Tax is estimated at \$2.2 million annually. The estimated State of Hawai'i General Excise Tax is \$103,664 per year. The current annual City and County of Honolulu Real Property Tax is approximately \$36,000; with completion and occupancy of the rural center, the County real property taxes will increase to approximately \$187,500 per year. (Refer to *Section 3.11.2 Probable Impacts and Mitigation Measures: Demographic and Economic Conditions*).

1.4.2 Adverse Impacts

Disposal of treated wastewater effluent will slightly increase the groundwater concentrations of nitrogen and phosphorus. The impact of the increased nutrients in groundwater will not be realized until the groundwater reaches the marine environment. The additional 4.3 percent nitrogen and additional 7 percent phosphorus would likely be undetectable in the marine environment at distances from the shoreline where marine communities occur (Refer to *Section 3.7.1 Marine Environment: Probable Impacts and Mitigation Measures*).

An additional 1,322 net new daily vehicle trips are projected from the development of the rural center. During midday and evening peak hours, a total of 65 net new trips (29 inbound to the center and 36 outbound from the center) are anticipated; Saturday midday peak hours total 98 (51 inbound and 47 outbound). The impact of the increased traffic related to the project at the intersection of Kamehameha Highway and Pūpūkea Road would continue at level of service (LOS) A during both peak hours of traffic, with LOS B during Saturday peak hour traffic. The potential delay for a vehicle under LOS B conditions would be an additional 1.7 seconds over the near-term baseline conditions.

DOT and the City's Traffic Review Branch define a significant intersection impact when operation of an intersection changes from LOS D or better to LOS E or F. The rural center construction will not significantly impact traffic in the region.

1.4.3 Proposed Mitigation Measures

Improvements to Kamehameha Highway are proposed as part of the project. These include reducing the total number of access points into the rural center by consolidating the ingress/egress to the site to one point off Kamehameha Highway and to allow no access via Pāhoe Road. A center two-way left-turn lane will be created on Kamehameha Highway to provide a refuge area for traffic turning left into and out of the rural center. A curb and sidewalk will be installed along the property's makai edge to narrow the existing shoulder width on Kamehameha Highway and eliminating space for illegal parking along the highway fronting the parcels. The number of parking stalls created for the rural center fulfill the requirements of the City and County of Honolulu Land Use Ordinance (LUO), and most stalls will be sited behind the rural center. (Refer to *Section 3.13.1 Probable Impacts and Mitigation Measures: Traffic*).

1.4.4 Unresolved Issues

Kamehameha Highway Improvements and Regional Traffic Solutions. Although the Proposed Action does not generate significant traffic impacts, there are traffic congestion problems on Kamehameha Highway along the North Shore. The State DOT is currently conducting a study of establishing a bypass road for the section of highway near Laniākea Beach, about three miles from the site toward Hale'iwa. Traffic is particularly bad along this stretch of highway, as well as Waimea Bay, the Foodland Pūpūkea area, and along the popular surfing beaches of 'Ehukai Beach and Sunset Beach. Traffic volumes continue to grow due to the ambient island-wide traffic growth and increasing visitor attention to the North Shore's towns, beaches and mountain trails. Regional traffic mitigation solutions have been posed, such as establishing beach shuttles with organized public parking at lands in Hale'iwa and Turtle Bay. The timing for implementing such traffic management solutions is undetermined.

1.5 SUMMARY OF COMPATIBILITY WITH LAND USE POLICIES AND PLANS

The project is compatible with and supportive of State of Hawai'i and City and County of Honolulu land use policies, plans, and controls related to the natural and social environment. The project is fully consistent with the State Urban Land Use District, County Land Use Ordinance for Commercial zoning, and the establishment of a Rural Community Commercial Center under the North Shore Sustainable Communities Plan. Refer to *Chapter 4* for a complete evaluation of the consistency of the project with government plans and policies.

1.6 ALTERNATIVES CONSIDERED TO THE PROPOSED ACTION

Alternatives to the project are evaluated in Chapter 5. For this EIS alternatives analysis, three alternatives to the Proposed Project are evaluated:

- No-Action Alternative
- Commercial Shopping Center Alternative
- Alternative Development Timetable (Deferral)

The following is a summary evaluation of the range of alternatives considered.

1.6.1 No-Action Alternative

The No-Action Alternative is the baseline against which all other alternatives are measured. Under this scenario, the existing subject properties would remain as described under “existing conditions” in Chapter 3. The existing commercial uses on the property and site improvements required in the SMA Minor Permit approved in August 2017 (2017/SMA-21), would continue operations on the Hanapohaku parcels indefinitely. These include the tenant uses by five mobile food establishments (food trucks), and businesses operating from the four existing commercial buildings.

The No-Action Alternative would dismiss the future development of the proposed action for the Rural Community Commercial Center designed to be consistent with the principles of the North Shore Sustainable Communities Plan. There would be no further development actions on the property for either temporary uses, new permanent structures or supporting infrastructure.

1.6.2 Commercial Shopping Center

The Commercial Shopping Center Alternative would propose development of the three parcels (2.7 acres) at shopping center scale, as allowed per the B-1 Neighborhood Business zoning district. The existing B-1 zoning would allow for 1.0 FAR (Floor Area Ratio), which would equate to commercial buildings with over 100,000 SF floor area. The calculated maximum commercial floor area for this property under existing B-1 zoning would be 117,443 SF. A proposed 2004 project for a shopping center project of 75,000 SF was strongly opposed by the community.

Thus this EIS considers a smaller shopping center alternative of approximately 46,000 SF commercial floor area. Such a center would include a range of food and beverage, retail, and service businesses. The larger Hanapohaku properties could easily support an FAR denser than the existing commercial floor area of the Foodland store at .294 FAR. With 46,000 SF floor area and 117,443 SF property, this alternative proposes an FAR of 0.392, which is approximately 40 percent of the allowable LUO density. To serve the Shopping Center alternative, there would need to be access driveways connecting off both Kamehameha Highway and Pāhoehoe Road, with partial basement parking.

1.6.3 Alternative Development Timetable (Deferral)

This alternative considers the deferral of the project to a later date. The NS Sustainable Communities Plan did not specify timing for development of a Rural Commercial Community Center. However, the land has been zoned for commercial use since the 1970s. Over time, the demand for commercial goods and services by the residents of Sunset Beach/Pūpūkea community and its visitors has grown substantially. A delay or deferral of the project development would not immediately meet the objectives and criteria for the creation of a rural center for local businesses and community gathering.

The Sunset Beach/Pūpūkea community has expressed that some existing commercial operations at the property are less desirable, such as the disorganized commercial activities, multiple tents and seating areas, nighttime lighting and noise, unauthorized parking along the highway, haphazard vehicle ingress/egress, and non-focused pedestrian access. With the City’s approval of SMA/2017-21 there is authorization to continue with a conditional use of the property, with very specific actions required of the owners to manage activities to minimize effects to neighbors, the community and the environment. Importantly, it remains the stated purpose of the owners to diligently plan towards the

long-term objective of creating the Rural Community Commercial Center, as they seek to achieve the common objectives of the community and government planning policy for future use of this property.

Potential impacts would essentially be similar to those described for the No-Action Alternative.

1.7 SUMMARY OF PUBLIC BENEFITS

The Pūpūkea Rural Community Commercial Center will create a new community gathering place that will complete the area as envisioned in the long-range vision for the Pūpūkea/Sunset Beach community. The rural center will provide goods and services to local residents and visitors that would otherwise require long drives to urban centers on O‘ahu.

The rural center will create significant new employment for the North Shore, with 45 construction-related jobs in the short-term, and up to 86 full-time positions anticipated with the completed project. In addition, there will be significant additional State and City/County government revenues generated by the project.

1.8 LISTING OF REQUIRED GOVERNMENT PERMITS AND APPROVALS

Table 1-1 identifies the major State and County land use permits and approvals that are anticipated to be required for the project, including site, building, construction, and infrastructure approvals.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

**Table 1-1
Required Reviews and Permits**

Land Use Permits and Reviews	Agency	Status
HRS Chapter 6E Historic Preservation Review	DLNR/SHPD	Complete. SHPD accepted AA August 22, 2017 (<i>Appendix E</i>)
EIS Acceptability Determination	Department of Planning and Permitting (DPP) (Accepting Authority)	
SMA Major	DPP (City Council is Approving Authority)	
Conditional Use Permit – Joint Development Agreement Three Hanapohaku parcels	DPP	2017/CUP-37 approved October 2017 by DPP for 3 Hanapohaku lots.
Site Development Building Permits	Agency	Status
Grading/Grubbing Permit	DPP	
Board of Water Supply Approval	DPP	
DPP-DTS Approval	DPP	
Building Permits	DPP	
Other Approvals	Agency	Status
NPDES Storm water – Construction	Hawai'i State Department of Health (HDOH)	
Wastewater System	HDOH	
Highways Review Driveway consolidation; re-striping; crosswalk	Hawai'i State Department of Transportation - Highways (HDOT-HI)	

2.0

PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1	History of Property	2-1
2.2	Existing Conditions	2-3
2.3	Purpose and Need for the Rural Center.....	2-4
2.4	Proposed Action	2-6
2.5	Project Schedule and Costs	2-16

This chapter provides the history and existing uses of the property. The Purpose and Need, and the guiding concepts and themes for design of the rural center are documented. An overview of the planned improvements is provided.

Hanapohaku LLC is the owner in fee of 2.72 acres on three adjoining parcels recorded as Tax Map Key (TMK) (1) 5-9-011:068, 069, 070 in the ahupua'a of Pūpūkea in Hale'iwa, O'ahu, Hawai'i. The B-1 Neighborhood Business District-zoned parcels total 4.56 acres in combination with the adjacent 1.82-acre Foodland parcel (TMK (1) 5-9-011:016). The parcels are mauka of Pūpūkea Beach Park and Sharks Cove. Hanapohaku acquired its land in 2014 to retain local ownership of an important commercial property to provide goods and services to the Pūpūkea, Waimea, and Kawailoa communities, consistent with long-range plans.

2.1 HISTORY OF PROPERTY

Pūpūkea is an area rich in pre- and post-European contact history. With a traditional economy based largely on fishing and marine exploitation, the coastline was an important resource for the people that lived there. A dearth of fresh water meant wetland agriculture was not widely practiced, and dryland farming focusing on 'uala (sweet potato) cultivation factored largely into traditional lifeways. The historic period brought about widespread changes to the Pūpūkea landscape. Crops such as avocado and pineapple were farmed, and large tracts of land supported housing developments. The OR&L railroad ran just makai of the project area, transporting sugarcane from the North Shore plantations. The Niimi store was a hub of activity at the project site in the early 20th century.

The property consists of four adjoining commercial zoned properties with a combined total area of 4.56 acres. This property has been used for commercial purposes for more than a century, where the Niimi family owned this land at the corner of Pūpūkea Road and Kamehameha Highway. The wood-framed Niimi General Store was constructed in 1903, and for seven decades provided a small sales outlet for goods and services to the surrounding community and visitors to the North Shore. The store included a Post Office, and introduced a fast food/take-out food enterprise in 1977. Commercial use of the property was expanded in 1958 with construction of a real estate office and a dentist office.

With the conversion of the Comprehensive Zoning Code (CZC) to the Land Use Ordinance (LUO) in 1976, the land was zoned as B-1 Neighborhood Business District. The adjoining land was designated B-1 Neighborhood Business District in a 1978 zone change. A Unilateral Agreement was issued with the 1978 zone change, with a condition requiring the completion of improvements to Kamehameha Highway at Pāhoe Road with commercial development of the parcels.



Figure 2-1 Photographs of the former Niimi General Store (ca. 1978)

In the late 1970's, the Niimi General Store and the underlying commercial parcel at the corner of Kamehameha Highway and Pūpūkea Road were sold to the Maurice Sullivan family, owners of the Sullivan Family of Companies and Foodland supermarkets across the State. This site was redeveloped into a Foodland Supermarket with construction of a single-story CMU building in 1980, thus introducing a modern grocery store to directly serve the Pūpūkea-Sunset Beach community. A portion of the supermarket was converted to include a coffee shop now operating as The Coffee Bean & Tea Leaf. The grocery store was improved in 1997 to expand the fresh produce and deli sections. The operational floor area of the supermarket is approximately 21,650 square feet (SF).

The *North Shore Sustainable Community Plan* (DPP, 2011) offers the following perspective of the region's history and context in the island of O'ahu:

The North Shore's Native Hawaiian heritage, cultural diversity, and plantation past are reflected in its small rural communities, and its agricultural landscapes and open space resources. For many, the North Shore is a place for rest and recreation that offers opportunities to enjoy the country atmosphere, numerous white sand beaches, and mountain areas. As Honolulu and its suburban areas continue to grow and become increasingly urbanized, it has become more important to maintain the North Shore as an essential haven and respite from the urbanized areas of O'ahu.

These attributes are what draw millions of visitors to the area each year, bringing much needed tourism revenue to help support the local economy. Since the closing of the Waiialua Sugar Plantation in 1996, the region has sought to revitalize itself into a sustainable community where commerce, tourism, and agriculture can flourish while upholding the community's commitment to "Keep the Country, Country."

2.2 EXISTING CONDITIONS

The rural community commercial center site consists of four contiguous commercial-zoned properties with a combined total area of 4.56 acres. Three contiguous parcels with a combined area of 2.72 acres will be redeveloped, with a new connection to the developed 1.84-acre Foodland parcel adjacent to the south. The properties are bounded by Country zoned one-acre lots with homes to the north and east. The property is zoned B-1 Neighborhood Business District.

The 1.84-acre corner parcel at Kamehameha Highway and Pūpūkea Road contains a Foodland grocery store. Owned by the Sullivan Entities, this parcel is associated with the project because of a development agreement established among the four parcels in 1996 to achieve the mutual benefits of an integrated neighborhood shopping center without obstructing walls or fences between parcels. The Sullivan Entities do not own any interest in the three other parcels or in Hanapohaku. Only minimal alterations to the Foodland parcel, i.e., a common egress / ingress point from Kamehameha Highway, limited parking lot improvements, and related landscaping are contemplated as part of the project.

The existing commercial use of the Hanapohaku LLC property consists of small, locally owned businesses operated by families that reside primarily on the North Shore. The project site currently houses a small surfboard retail and rental establishment (North Shore Surf Shop) and a beachwear/swimwear store (Seamaids), a real estate office, a commissary (servicing one food truck) with office, and five mobile food establishments (food trucks). Supporting uses currently on the property include food truck seating areas, portable toilets, portable hand-washing station, parking areas, trash dumpsters, fences, water lines, electrical lines and landscape. Drainage controls have been added to manage storm water runoff.

The commercial operations on the property are entitled under Special Management Area (SMA) Use Permits, including an SMA - Minor in 2017 (2017/SMA-21). Hanapohaku is to comply with specific terms and conditions to clear past use violations. Current compliance actions include settlement of fines and obtaining site development and building permits. The existing uses will be completely removed for development for the Rural Community Commercial Center.

2.3 PURPOSE AND NEED FOR THE RURAL CENTER

The vision, themes and concept for the project are derived from the guidance of the *North Shore Sustainable Communities Plan (SCP)* (DPP 2011), joining with the owner’s desire to create a unique gathering place for the community. The 2011 SCP process was the culmination of several years of intensive work involving a community and stakeholders working group joined with the City and County of Honolulu Department of Planning and Permitting (DPP) and its planning consultants. Within this effort, there were many significant discussions of the 20-year planning horizon and growth management for this rural section of O’ahu. The plan identified very limited locations for infill development, and elaborated on areas to be maintained as defined residential communities, and areas dedicated to business and commercial services.

The SCP emphasizes the objectives and policies for the creation of a Rural Community Commercial Center, consistent with the business zoning, at this location.

The area between the existing Foodland market and the adjacent commercially zoned properties between Pūpūkea Road and Pāhoehoe Road is designated as a Rural Community Commercial Center.

The 4.56 acres of land with existing B-1 Neighborhood Business District zoning was the community’s clear choice to consolidate the future of existing and new commercial uses in the Sunset Beach-Pūpūkea region. Further, the SCP establishes policies and guidelines for future development of the Rural Community Commercial Center, as delineated in Section 3.6.3 of the SCP and summarized below.

 <p>NORTH SHORE SUSTAINABLE COMMUNITIES PLAN</p> <p>City and County of Honolulu • Department of Planning and Permitting May 2011</p>	<p>3.6.3 Rural Community Commercial Center Summary of Policies and Guidelines</p> <ul style="list-style-type: none"> • Range of Goods & Services to Meet the Needs of Surrounding Residential Communities • Center attracts Visitors & Residents from Outside the Immediate Community • Commercial Establishments may Include: Grocery Stores, Sundries Stores, Restaurants, and Other Services and Shops Catering to Residents and Visitors • Smaller in Scale than typical “Country Town” • One-Story and Two-Story Building Heights • Clustered Commercial Uses vs. Spread along Highway • Reflect Rural Character & Compatible with Adjoining Area • Safe & Convenient Transportation and Access • Pedestrian & Bicycle Friendly: Crosswalks, Pathways, Bike Racks • Parking behind Buildings and Landscaping
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Figure 2-2 North Shore Sustainable Communities Plan Rural Communities Center Policies

Major Themes and Planning Principles

Working with the planning team and with input from the community, Hanapohaku LLC has developed a vision for its property. Several over-arching Major Themes guide the planning principles:

1. Community Gathering Place
2. Environmental Sensitivity
3. Local Businesses Thrive
4. Culture and Sustainability

Community Gathering Place

Residents of the Sunset Beach-Pūpūkea community regularly shop at the Foodland market, which is a major locally-owned grocery store. Foodland is a touchstone location for most local residents and provides an opportunity to interact with neighbors, families and visitors to fulfill daily supply needs within this busy beach community. The supplies currently available to the surrounding community will be supplemented with the buildout of the Rural Community Commercial Center. The addition of services not currently available will complement this important community hub, and enhance daily life with interactions and a greater variety of goods and services to support living in Sunset Beach-Pūpūkea.

Environmental Sensitivity

Core to the essence of the Rural Community Commercial Center is protection of the environment, which is a widely held community value for residents of the North Shore. With close proximity to the Pūpūkea Marine Life Conservation District (MLCD), redevelopment of the property must integrate environmental protections in the planning, design and operation. The project's plan incorporates numerous measures to minimize environmental impacts including soil stabilization, water and energy conservation, storm water runoff management, minimization of waste and recycling, water-efficient native plants and protection of water quality. Sensitivity to the human environment is also core to the planning principles, with respect for neighbors and minimization of noise and traffic, and maintenance of views and sight lines.

Local Businesses Thrive

The Rural Community Commercial Center creates a place where local businesses can conduct operations to serve the Sunset Beach-Pūpūkea community and its visitors. By intent, the SCP and County zoning controls restrict business locations in this rural area of the island. The rural center will support local businesses from the North Shore and Hawai'i, emphasizing the value the landowner places on benefits to the community and fostering a home-grown sense of entrepreneurship. Business and employment opportunities for area residents will provide additional jobs within the community and avoid long commutes to job centers in urban areas of O'ahu.

Culture and Sustainability

The Pūpūkea region has a rich cultural history. The project design incorporates physical elements to honor the past and present culture through integration of native plants, creating a gathering space suitable for sharing hula and music and to just "talk story" among community members. Physical design will pay homage to natural elements of stone, and colorful country-style storefronts. Principles of sustainability are integrated in the project's scale, environmental sensitivity, landscaping and facilities' design and operations including water conservation, native plant use, and on-site electricity generation from solar photovoltaic panels.

2.4 PROPOSED ACTION

The project will develop a Rural Community Commercial Center with an overall focus on sustainable principles, consistent with the design guidelines of the North Shore Sustainable Communities Plan. The rural center will expand the services and goods available to residents of the Pūpūkea, Waimea and Kawaihoa communities and the region's visitors, and add services not otherwise available in the vicinity. Infrastructure to support the new facilities will include driveways, parking shaded by solar panel canopies, storm water runoff controls, water supply, and wastewater. The planned floor area of the facilities will be approximately 27,000 SF of leasable area (30,000 SF gross floor area).

Building design will be consistent with the country character of the North Shore. One- to two-story buildings will be set back from the highway with parking sited behind to create an open, park-like space along Kamehameha Highway. Total on-site parking will accommodate 126 vehicles, which is more than required under the City LUO. The small-scale clustered buildings linked by meandering walkways and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will create pedestrian connectivity across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. Vehicle access can periodically be blocked from the hardscaped area adjacent to the central green to allow for periodic pedestrian-friendly community gatherings and cultural events, such as art shows, farmers' markets, mobile food trucks, and music and dance performances.

The design layout works in concert with the gentle slope of the land, providing respectful setbacks between buildings and the neighboring homes, and creates an open landscaped park-like setting along the highway. Through agreement with the Pāhoehoe Road residents, access to the site will be limited to Kamehameha Highway. *Figure 2-3* presents the conceptual site master plan.

The site design intentionally minimizes earthwork, and emphasizes the assets of views in creating a gathering place for the community while accessing goods and services. Following guidelines from the North Shore SCP for the Rural Community Commercial Center, the plan places the parking area behind the buildings to maintain a more rural street front. Buildings are one- to two-story in keeping with the region, which maximizes the site's open space. The plan creates a functional linkage with the Pūpūkea Foodland to improve pedestrian connectivity and to optimize vehicle circulation.

Importantly, the modest development plan utilizes approximately 25 percent of the floor area ratio (FAR) allowed under City land use ordinance for this property. This toned-down approach reflects the sensitivity to scale and context as a Rural Community Commercial Center. Greater building density on this site would result in larger buildings, additional burdens to infrastructure, and a loss of country character. As shown in *Figure 2-3*, the conceptual development plan creates a natural flow in an appropriately-scaled built environment, which maximizes open views, public space, and landscaping consistent with the rural nature of the broader community.



Figure 2-3 Conceptual Site Plan

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PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Local Hawai'i-Based Commercial Tenants

The owners, Hanapohaku LLC, are committed to pursuing Hawai'i-based businesses as tenants of the center. This commitment underlies the objectives of the owners to support local businesses that complement and strengthen commerce on the North Shore, while preserving its identity as a rural community. The types of businesses will provide goods and services complementary to the existing Foodland grocery store on the adjacent property, and may include:

- Urgent Care – small scale medical service clinic for non-emergency needs
- Pharmacy & Health Products – small scale pharmacy, health products, organic products
- Bank – small scale bank branch, financial services
- Business Center – copy services, business supply, package shipping/delivery, private post office
- Professional Services – dentistry, chiropractic, psychiatry, legal, accounting, etc.
- Real Estate Office – continue/expand an existing, on-site business
- Surf Shop, Beach Apparel & Action Sports Retail – continue/expand existing, on-site business
- Other Retail - art gallery, cultural arts, music and jewelry
- Yoga & Fitness Studio – multipurpose studio, with potential for dance, hula, music
- Child Care Center - day care center for families
- Community Organization – office space for local community/environmental organization
- Quick Service Food – mobile food trucks offering different food types, affordable pricing
- Health Food Market/Deli – dry goods and grab-and-go food
- Restaurant – Full service restaurant with bar, with both indoor and outdoor lanai seating

Table 2-1 identifies the floor areas of suitable tenant spaces at the Rural Community Commercial Center.

Table 2-1 Development Program

	Net Leasable Floor Area (SF)
North Building	
Level 2 – Restaurant	3,860
Level 1 – Retail Tenants - Shops, Art Gallery, Yoga	4,939
Subtotal	8,799
Mauka Building	
Level 2 – Urgent Care Medical Clinic, Pharmacy, Offices e.g. Bank, Professional	8,160
Level 1 – Retail Tenants – Clothing, Market	8,160
Subtotal	16,320
Pavilion Building	
Level 1 - Surf Shop/Action Sports	1,953
Total Net Leasable Area	27,072
	Parking Spaces
	126

Architectural Style

The design of the Rural Community Commercial Center will be consistent with the surrounding North Shore country setting. Residents of the North Shore are purposeful in their life choices, as they are not seeking the busy hustle of urban living. They place high value upon the North Shore's slower pace of life, with large sections of open space, winding two-lane roads, large Country lots, active agricultural lands, a clean ocean and wide beaches, and the endless trails of the mauka watershed lands. The rural center must be truly reflective of this lifestyle and values.

The planned uses of the rural center are clustered into two main commercial buildings - one building on the north side aligned mauka to makai, and the other building at the center of the parcel extending parallel to the grade and highway. To preserve the greatest amount of open space on this property, commercial uses will be integrated within the one- to two-story buildings. Design heights will be well within the 40-foot height limit, with the central building nestled into the landscape to provide easy access to both building levels. The second-floor lanai of the north building will provide shade along the walkway below. A single-story 25-foot maximum height stand-alone retail building of approximately 2,000 SF will be located near the entrance to the property, setback from the highway.

Architectural design for the buildings seeks to reflect the character of surrounding beach homes that recall classic plantation-style architecture. Wide, shaded lanai invite people in, and plantation-style awnings will provide shade to key windows. A conceptual elevation view from Kamehameha Highway is provided in *Figure 2-4*.

The perspective view highlights the open community gathering place located at the center of the property on the makai side. The two main buildings frame this green space, with business entrances tied together by a continuous walkway. A ground level perspective is shown in *Figure 2-5*.

Open Space and Landscaping

The open community gathering place is anchored by three dominant themes: the geologic and natural elements that shape the region; Hawaiian settlement and stewardship of resources; and the cultural expansion that formed 20th Century commerce. The permeable paving material on the lower parking area includes a design to tie the landscaped areas to the buildings (*Figure 2-3*).

There will be open space areas and landscaping throughout the project site. Landscaping will be provided consistent with LUO requirements, with additional planting along the mauka boundary between the neighboring residential property. Extensive landscaping will be provided along the boundary with Pāhoehoe Road and will use low-growing plants near the highway intersection to allow a clear line of sight from vehicles departing Pāhoehoe Road. Along the Kamehameha Highway frontage, the buildings and parking area are set back about 60 feet from the highway to create a large open green space and gathering place, with meandering bicycle/pedestrian pathways in an active, park-like setting. The accent plantings established along the front and sides of the buildings will complement the country style setting. Potential locations for mobile food trucks are shown in *Figure 2-6*.

Sustainable Design Elements

The development plan for this commercial property integrates a variety of sustainable design elements. Through careful siting, the design utilizes low impact development (LID) storm water management techniques and engineering to conserve water and use landscaping to filter possible pollutants (petroleum from cars, sediment, trash) from storm water runoff. The project will include renewable energy generation, promote multi-modal transportation and recycling, and will utilize sustainable building materials.



Figure 2-4 Site Plan – Elevation View



Figure 2-5 Ground Level Perspective View at the Central Green

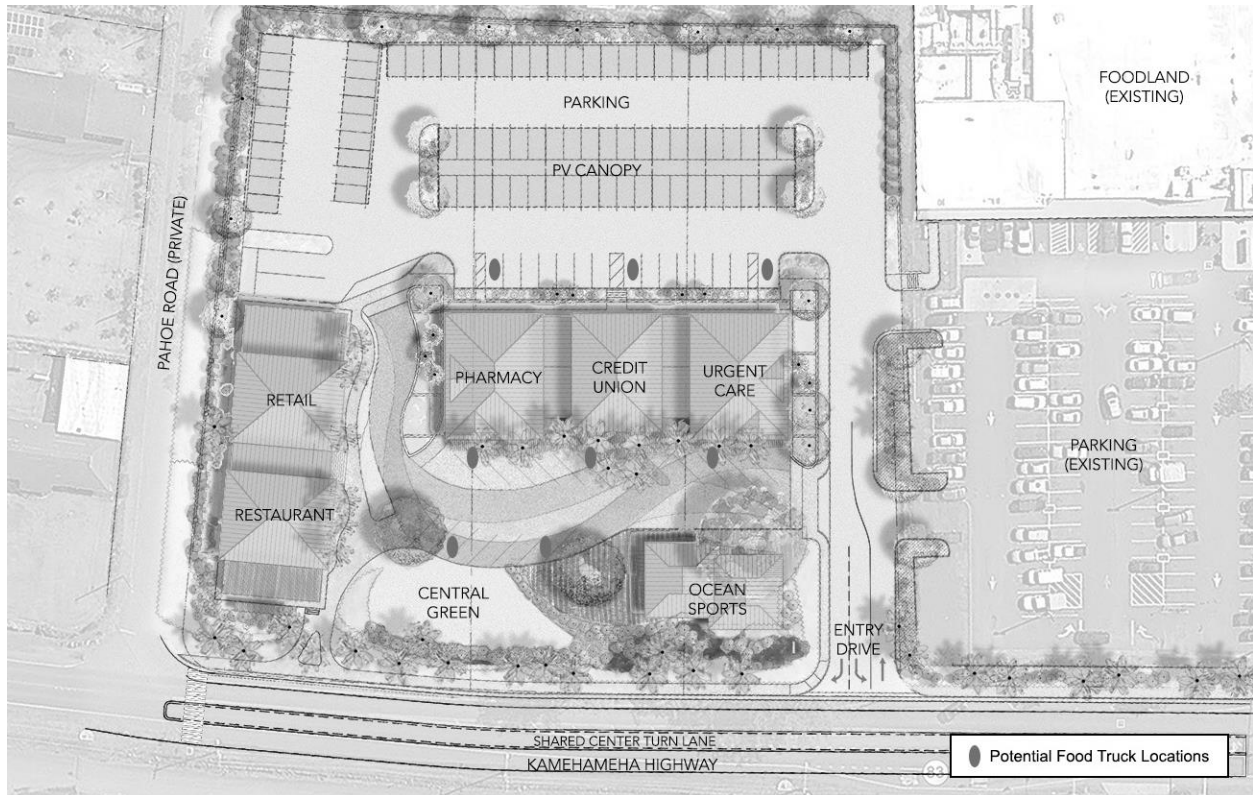


Figure 2-6 Potential Food Truck Locations

2.4.1 Infrastructure Components

Roadways, Vehicular Access, Circulation and Parking

Access will be provided through a combined driveway onto the properties from Kamehameha Highway, with planned closure of the Foodland driveways currently along Kamehameha Highway. The existing driveway connection to Pūpūkea Road will be retained, with nominal improvements to the Foodland parking area. The main circulation driveway extends from the highway to the large parking area in the mauka portion of the property. There will be no access to or from the privately owned Pāhoehoe Road.

Customers to the rural center will be guided to the main entrance via clear signage. The shoulder of Kamehameha Highway will be narrowed by installation of a curb and sidewalk along the property edge, thus eliminating parking along the highway fronting the parcels. Access for pedestrians and cyclists will be incorporated. The new parking areas will include a continuous canopy of photovoltaic panels, providing shade for parked cars and generating solar energy for on-site usage. The number of parking stalls created for the rural center fulfill the requirements of the City LUO.

Highway Restriping for Turning Lane

The project will involve restriping of Kamehameha Highway to create a left turn storage lane and shelter lane at the entrance. The restriped center lane will extend from Pūpūkea Road to Pāhoehoe Road. The right-of-way for Kamehameha Highway has adequate width to accommodate the restriping, with any need for additional paving width provided from the mauka side along the project frontage. The traffic flow associated with the project will not affect traffic flow at the Pūpūkea Road intersection. The traffic impact assessment is addressed in *Section 3.13 Roadways and Circulation* and *Appendix F*.

Pedestrian and Bicycle Circulation

A central theme to the Rural Community Commercial Center is to create a gathering place for the community utilizing principles of sustainability and environmental sensitivity. The property is connected to the community via the Ke Ala Pūpūkea bike path, a linear pedestrian and bicycle route along the makai side of Kamehameha Highway. People come to the Foodland site every day on foot, skateboard, bicycle as well as vehicles. A series of new walkways will be created at the rural center to create a lively bicycle and pedestrian environment, allowing the community gathering place to naturally move between the Foodland property and the offsite bike and pedestrian pathway that winds through the Pūpūkea Beach Park across the highway.

To aid connectivity and improve pedestrian and bicycle safety in the community, a new crosswalk is proposed at Kamehameha Highway at the northern end of the property, near the corner of Pāhoehoe Road. This crossing will provide additional capacity for pedestrian traffic, which is currently limited to the existing highway crosswalk at the intersection of Pūpūkea Road.

Water Supply and Distribution

The project will be served with potable water through the Honolulu Board of Water Supply distribution system and meter at the subject property. An existing 8-inch water main on Kamehameha Highway currently provides water service via an existing 1-inch water meter.

Based on BWS system standards, average daily water consumption for a commercial center the size proposed is approximately 8,160 gallons per day (gpd). Possible maximum daily water demand is calculated as a factor of 1.5; BWS has indicated the existing water system is adequate for the proposed development (*Section 3.16 Infrastructure and Utilities, and Appendix H*).

The project has no requirement for off-site improvements to the BWS system. Plans of the on-site water system improvements are shown in *Chapter 3*. The water system will be designed and constructed to code requirements. The BWS requirements for standard on-site improvements for the water meter, on-site distribution, fire suppression and back flow prevention will be satisfied in coordination with the Honolulu BWS and the Honolulu Fire Department.

Wastewater Collection, Treatment and Disposal

Only one local municipal wastewater collection system exists on the North Shore, and serves a subdivision in Waiialua. Residential and commercial properties on the North Shore collect and treat wastewater using on-site wastewater and disposal systems, which are regulated through the State of Hawai'i Department of Health. Wastewater management is addressed in *Section 3.5 Groundwater, Section 3.16 Infrastructure and Utilities, and Appendix B*.

The project will generate wastewater through the planned commercial tenant uses of retail, office and restaurant operations. The total anticipated net increase in wastewater flow is estimated to be 6,920 gpd. As a comparison, this wastewater flow equates to the wastewater flows generated by 11 to 15 single-family homes (approximately 450 to 600 gpd per home with four occupants). There will be no industrial wastewater generated or discharged by tenants.

Wastewater will be treated on-site through a wastewater treatment works consisting of pre-treatment, an aerobic treatment unit and absorption beds. The overall system operation, including wastewater flow monitoring, treatment system and effluent characteristics, and subsurface disposal system must meet or exceed the requirements of the DOH Wastewater Branch (WWB). DOH WWB

requires regular monitoring and reporting to demonstrate system performance. The specifications for the planned wastewater treatment and disposal system are included in *Appendix H*.

Storm Water Management and Drainage System

Swales constructed of stone and gravel will be installed in key areas of the property to intercept and slow sheet flow, and to direct storm water to rain gardens and prompt infiltration to soils. There is no sub-surface drainage system serving the project site. The future on-site drainage system will collect and manage storm water generated by the impervious surfaces on the property such as building roofs, paved parking lots with photovoltaic-panel canopies. The collection system will consist of bio-swales, pervious pavement, landscaping, gutters and curbs to direct flows to drain inlets, catch basins and trench drains that will allow for infiltration to soils and to detain runoff on site. The collection systems will be based on the Rules Relating to Storm Drainage Standards (January 2000, Department of Planning and Permitting, City and County of Honolulu).

Vegetated swales, rain gardens, and storm drain filtration devices are among the types of treatment that will be utilized to remove car oils, surface debris, and sediment from storm water runoff. Drainage and storm water management at the Foodland property will be improved through consolidation of driveways to the rural center, which will allow the two existing driveways to be transformed to landscaped storm water detention areas. Storm water runoff will no longer flow uncontrolled through the previous driveways onto Kamehameha Highway. Instead, the surface flow runoff will be settled and filtered through landscaped areas. Drainage and storm water management, and Best Management Practices are addressed in *Section 3.6 Surface Water and Drainage* and *Appendix H*.

Electrical Power and Communications

The project site is currently served with electrical power by overhead 12kV distribution lines from HECO. The facilities operations planned at the rural center will have an estimated electrical power demand of 4,000 kilowatt hours per day. Underground electrical conduit will be installed for onsite connections to the buildings, wastewater system and parking lot lighting. Electrical power demand and system elements are addressed in *Section 3.16 Infrastructure* and *Appendix H*.

Outdoor Lighting

Outdoor lighting established for the project will comply with County standards for downlighting achieved through utilization of full-cutoff light fixtures, which blocks light dispersion and glare horizontally to reduce light pollution. Lighting design will minimize light and glare to both neighboring residential areas and migratory seabirds. There is the potential for migratory seabirds to become disoriented and injured when attracted to lights in populated areas where they can possibly collide with power lines or structures. Measures to minimize the potential impacts to seabirds are described in *Section 3.4 Terrestrial Flora and Fauna* and *Appendix A*.

Solid Waste Management

Calculations were made to estimate the quantity of solid waste generated by the rural center. The project uses are anticipated to generate 2 to 3 tons per day of municipal solid waste. A private carting service will collect solid waste from the dumpsters in the trash collection area on a regular schedule, with pick up service estimated at three to four times per week. Solid waste will be transferred to the City waste recycling and disposal facilities, managed by the Department of Environmental Services.

2.5 PROJECT SCHEDULE AND COSTS

Implementation of the project improvements will commence upon issuance of the required City and County of Honolulu and State of Hawaii permits and approvals. The following presents a high-level development timetable reflecting the major phases of permitting and construction.

<u>Permitting and Development Phase</u>	<u>Anticipated Completion</u>
Environmental Impact Statement	Winter 2017
Special Management Area Use Permit - Major	Spring 2018
Design, Construction Plans, Permit Applications	Summer 2018
Approvals of Site Development & Building Permits	Spring 2019
Construction Start	Summer 2019
Construction Completion	Spring 2021
Occupancy	Summer 2021

Projected Construction Costs

Construction costs for this project are estimated at a value of \$18 million. The estimate includes all sitework, utility installation and landscaping, as well as the vertical construction costs such as foundation work, tenant improvements, signage, bonding and insurance. Off-site costs and contingencies are also included in the overall construction cost estimate.

3.0

ENVIRONMENTAL SETTING, PROBABLE IMPACTS, AND RECOMMENDED MITIGATION

3.0 ENVIRONMENTAL SETTING, PROBABLE IMPACTS, AND RECOMMENDED MITIGATION

3.1	Climate and Rainfall.....	3-2
3.2	Geology, Topography, and Soils.....	3-2
3.3	Natural Hazards.....	3-5
3.4	Terrestrial Flora and Fauna.....	3-8
3.5	Groundwater.....	3-11
3.6	Surface Water and Drainage	3-16
3.7	Marine Environment	3-21
3.8	Cultural Resources	3-26
3.9	Archaeological and Historic Resources	3-29
3.10	Land Use	3-30
3.11	Demographic and Economic Conditions	3-31
3.12	Public Services	3-33
3.13	Traffic.....	3-35
3.14	Air Quality.....	3-39
3.15	Noise.....	3-40
3.16	Infrastructure and Utilities.....	3-41
3.17	Visual Environment	3-46
3.18	Summary of Probable Impacts.....	3-52
3.19	Unresolved Issues.....	3-56

This chapter describes the existing environmental conditions and identifies probable impacts of the proposed project. “Environmental conditions” include human and economic conditions as well as natural resources. Strategies to minimize impacts and to mitigate any significant impacts are identified.

3.1 CLIMATE AND RAINFALL

3.1.1 Existing Conditions

Climate in the Pūpūkea area is dictated by predominant trade winds from the east-northeast. Wind speeds average 5 miles per hour (mph) based, on the annual average range from less than 1 mph, to approximately 16 mph. The prevailing trade winds come from the northeast and usually vary between 10 to 20 mph. Trade winds usually occur about 50 percent of the time between January and March, and 90 percent of the time during June and through August. In the winter, strong Kona winds associated with extra-tropical storms that track predominantly eastward from origins in the northwest Pacific.

The average annual rainfall is 45.5 inches, with June typically the driest month with approximately 2.4 inches of rainfall, and January typically the wettest month with 5.8 inches average rainfall.

The average annual temperature at the project site is 74.3°F. Daily temperatures range from a low average daily temperature of 70.8°F in January, to a high average daily temperature of 77.6°F in August (Giambelluca et al., 2014).

3.1.2 Probable Impacts and Mitigation Measures

The rural center will have no short-term or long-term impact on climate conditions. The rural center's buildings have been designed for the climate in Hawai'i and will utilize solar energy to produce electricity to be used on site (see *Section 3.16, Infrastructure and Utilities*).

No minimization or mitigation measures are required.

3.2 GEOLOGY, TOPOGRAPHY, AND SOILS

3.2.1 Existing Conditions

Geology

The geological formation of the Hawaiian archipelago is the result of volcanism. Each island protrusion from the ocean is the summit of a volcanic mountain rising from the ocean floor. The geologic creation results from the Earth's crust, comprised of irregular rigid segments known as plates, moving over a hot spot of upwelling lava. The plate that lies under O'ahu is known as the Pacific plate, which has slowly moved over this span of time towards the northwest. O'ahu was created through several stages of activity emanating from two volcanic domes. Through various stages of eruptions, erosion and land movement, the volcanic forms became what are known today as the Wai'anae and Ko'olau mountain ranges.

The rural center site is located on the Ko'olau mountain range, once a massive shield volcano that shaped the windward coast. Below the Ko'olau range the sandy coastal plain formed during times of higher sea levels. The soils historically supported sugarcane, pasture lands, orchards and truck crops.

Topography

The subject properties have a relatively moderate slope from the mauka side of the property towards Kamehameha Highway, at an average slope of 5 percent. A topographic survey indicates elevation of the site ranges from 29 to 51 feet above Mean Sea Level.

Soils

The subject properties consist of a single soil type, Waialua silty clay (WkB), 3-8 percent slopes (*Figure 3-1*). WkB soils typically occur on alluvial fans. The soil properties are described as moderately well drained with low runoff and low permeability. A geotechnical engineering exploration study conducted in April 2017 identified silty clays and clays extending from the ground surface to depths of 13 to 22 feet below the existing ground surface.

Installation of two water quality monitoring wells on the project site (see *Section 3.5, Groundwater*) provided soil cores that reveal the subsurface soil profile. At the monitoring well site located on the inland side of the site, the upper 18 feet of soil is comprised of silty clay followed by layers of slightly weathered to unweathered basalt lava flow and clinker to the bottom of the 100-foot well. At the monitoring well site constructed nearer the makai side of the parcel, silty clay comprises the upper 16 feet. Between the 16-foot depth to 31-foot depth is coral and coralline sand and gravel, with slightly weathered to unweathered layers of basalt found to the well bottom at 100 feet depth (*Appendix B*).

Several soil erosion controls are currently being implemented to minimize erosion and dust stemming from existing commercial use of the site (see *Section 3.6 Surface Water and Drainage*). Hydro-mulch seeding to vegetate previously cleared areas has been undertaken, and temporary sediment control measures such as filter socks have been installed to protect soils from erosion.

3.2.2 Probable Impacts and Mitigation Measures

Construction of the rural center will involve land disturbing activities that will result in minor soil erosion during removal of vegetation (clearing and grubbing), grading, excavation, and infilling of soil. As the project will disturb more than one acre, both County and State permits are required, which will be obtained following review of detailed construction plans by the relevant agencies.

Project construction will require onsite grading and fill. A grading permit, approved by City and County Department of Planning and Permitting (DPP) and the Hawai'i State Department of Land and Natural Resources, Historic Preservation Division, will be obtained as required for grading activities. Soil will be removed and replaced in key areas to achieve desired site conditions.

Grading is required to provide level building foundations. The central two-story building will be set into the slope to maintain a low profile and to allow access at grade from both the ground and second floor. The access drive will guide vehicles from the highway directly mauka to parking spaces behind the building, in compliance with the guidelines of the North Shore SCP.

Construction activities will alter site topography where needed to establish site infrastructure and buildings for the rural community center. Construction and landscaping treatments will stabilize the finished grade; no significant impacts are anticipated.

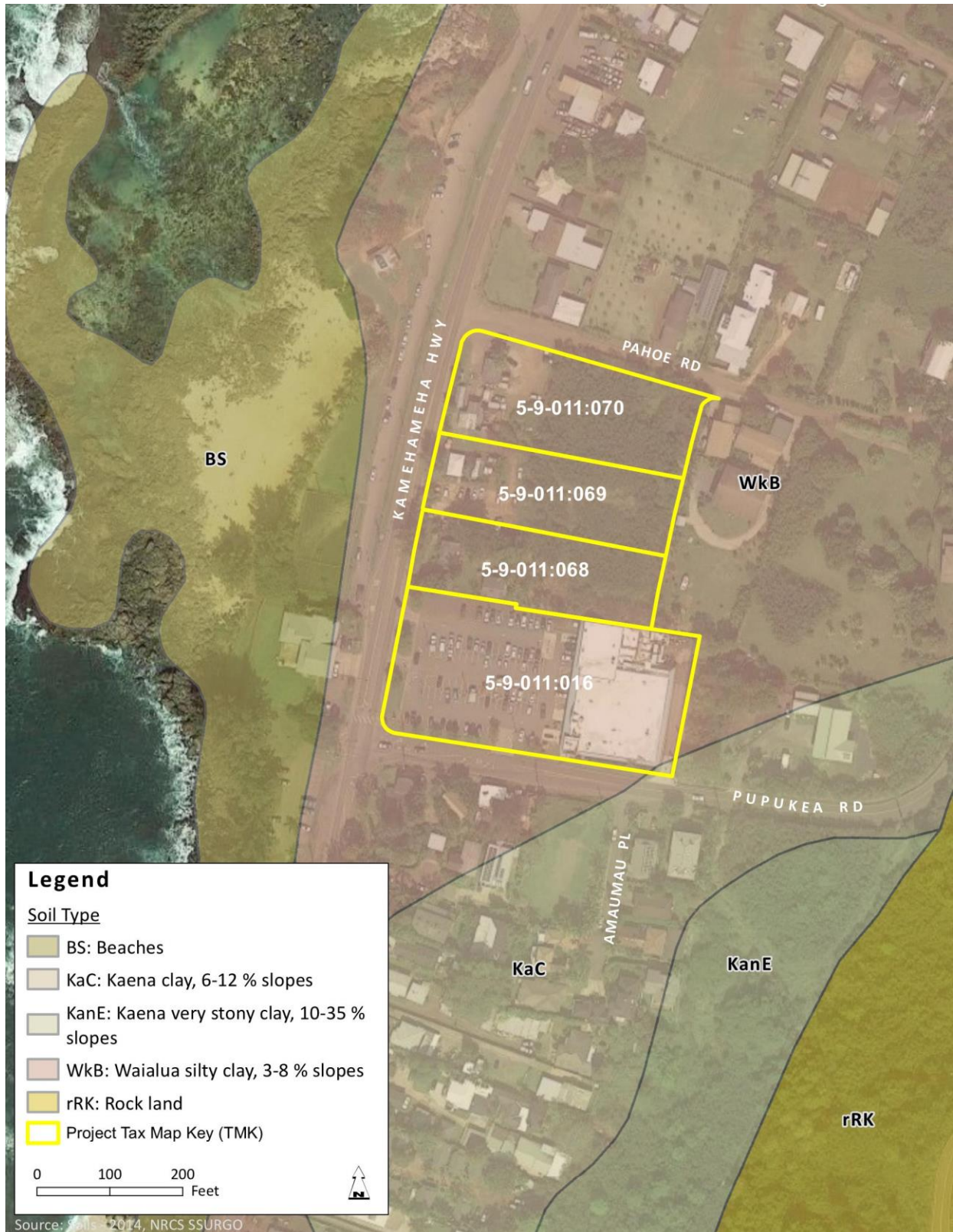


Figure 3-1 Soils Classification Map (U.S. Department of Agriculture Soil Conservation Service)

During construction, soil erosion will be minimized through compliance with the State, County, and Federal regulations. Implementation of Best Management Practices (BMPs) will be required, and will include erosion controls, sediment controls, and good housekeeping practices to prevent and minimize off site discharges (see *Section 3.6 Surface Water and Drainage*). Maintenance of erosion and sediment controls is required during construction activities to ensure BMPs remain effective.

BMPs to reduce and control soil erosion will include use of geotextile fabric to cover temporarily bare soil where appropriate, and to apply hydraulic mulch to cover areas until permanent soil cover and landscaping is established. Another method that could be used to prevent and control runoff is directing storm water that may flow onto or through the project area into an earth dike or stabilized watercourse. Minimum design standards for materials to be used are specified in State Department of Health (DOH) Hawai'i Administrative Rules §20-3 Relating to Water Quality.

Additional BMPs will be used to intercept, slow or detain storm water, which traps sediment and allows settling and filtering of runoff. Such methods include use of filter socks to protect storm drain inlets, or creating sediment barriers made of gravel bags, sandbags, fiber rolls or compost filter socks. The entrance to the rural center will be stabilized with gravel to reduce transfer of mud and sediment from construction vehicles to adjacent paved and public roads, or a tire wash system may be employed. Any materials dropped or tracked to off-site streets or paved areas will be cleaned using dry methods such as sweeping or vacuuming.

Under Hawai'i air pollution rules, visible dust ("fugitive dust") created by construction must be controlled to such an extent that no visible emissions occur beyond the property line (see *Section 3.14 Air Quality*). Impacts from soil disturbance will be minimized through application of the methods described, and will be of short-term duration during construction. Foodland's operations at the Foodland parcel will not be affected by construction of the project.

With the rural center in place there will be drainage controls, site improvements and landscape plantings which will stabilize the soils on the property. No long-term significant adverse impacts to geology, topography or soils will occur from the rural center. With mitigation, long-term improvements to surface runoff water quality are anticipated (refer to *Section 3.6*).

3.3 NATURAL HAZARDS

3.3.1 Existing Conditions

Hurricanes and Tropical Storms

Hurricanes and tropical storms are giant whirlwinds in which air moves around a center of low pressure, reaching maximum velocity in a circular band. Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 39-73 mph. Hurricanes are intense tropical weather systems with well-defined circulation and maximum sustained winds of 74 mph.

In the Northern Hemisphere, a hurricane's circulation includes low pressure and counter-clockwise inflow at the surface, and high pressure and clockwise outflow at upper levels. The overall diameter of the hurricane circulation is typically between 300 and 600 miles. A hurricane or tropical storm may create hazardous conditions from high winds, torrential rainfall, coastal and inland flooding and

erosion, high surf, and storm surge, which may damage or destroy property and/or threaten lives. The general season for these storms is between the months of June to December.

Hurricanes are considered relatively rare events in the Hawaiian Islands. Records show that strong wind storms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawai'i: Nina (1957), Dot (1959), Iwa (1982), Estelle (1986), and Iniki (1992). Most recently in 2014, Hurricane Iselle made landfall in the southeastern part of Hawai'i Island, damaging homes, roadways, and utility lines affecting thousands of people.

Earthquakes

The majority of earthquakes in Hawai'i are directly related to volcanic activity on the Island of Hawai'i. Per the 2006 International Building Code (IBC) Seismic Design Map, the project area could experience seismic activity between .60 and .70 of the earth's gravitational acceleration (g-force). The project area generally is at a low risk from potential earthquake damage.

The last significant earthquake to hit Hawai'i occurred in 2006, when a magnitude 6.7 struck Hawai'i Island. The earthquake was felt by and affected neighboring islands, including O'ahu, leaving many regions of the island without running water and power for the entire day.

Flooding

The project area lies within Flood Zone X as designated on the National Flood Insurance Rate Maps. Per FEMA documentation, this zone represents an area outside of the 0.2 percent annual chance floodplain (*Figure 3-2*). There is minimal to no threat of serious riverine or coastal flooding for the project. The lowest ground elevation associated with the project area is approximately 29 feet above MSL which is well above the predicted base flood elevation of 12 feet above MSL.

Tsunami Inundation

Tsunamis are caused by a sudden and typically violent movement of the sea floor that generates a wave or a series of great waves which travel across the ocean until they reach a coast. Sea floor movements may include earthquake faulting, submarine land sliding, or submarine volcanic eruptions. Submarine faulting, often consisting of the vertical movement of a block of oceanic crust, may cause earthquakes.

Tsunamis are characterized by great speeds (up to 590 mph), long wave length (up to 120 miles), long periods between successive crests (ranging from minutes to a few hours), and low height in the open sea. Upon reaching a coastline, a tsunami can become a wall of water reaching heights of 30 feet or more and capable of moving inland several hundred feet.

In Hawai'i, tsunamis have accounted for more lost lives than the total of all other local natural disasters. In the 20th century, an estimated 221 people were killed in Hawai'i by tsunami events. Historically, the south shore of O'ahu, including Waikiki, has been affected only minimally by tsunamis. Known major tsunami events in Hawai'i per the Pacific Disaster Center include the areas of Hilo (1946), North Shore O'ahu (1952), Lā'ie Point (1957), Hilo (1960), and Halapē Beach Park, Hawai'i Island (1975).

According to existing City and County of Honolulu tsunami evacuation maps, the entire area of the rural center is located outside of the Tsunami Evacuation Zone (*Figure 3-2*).

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

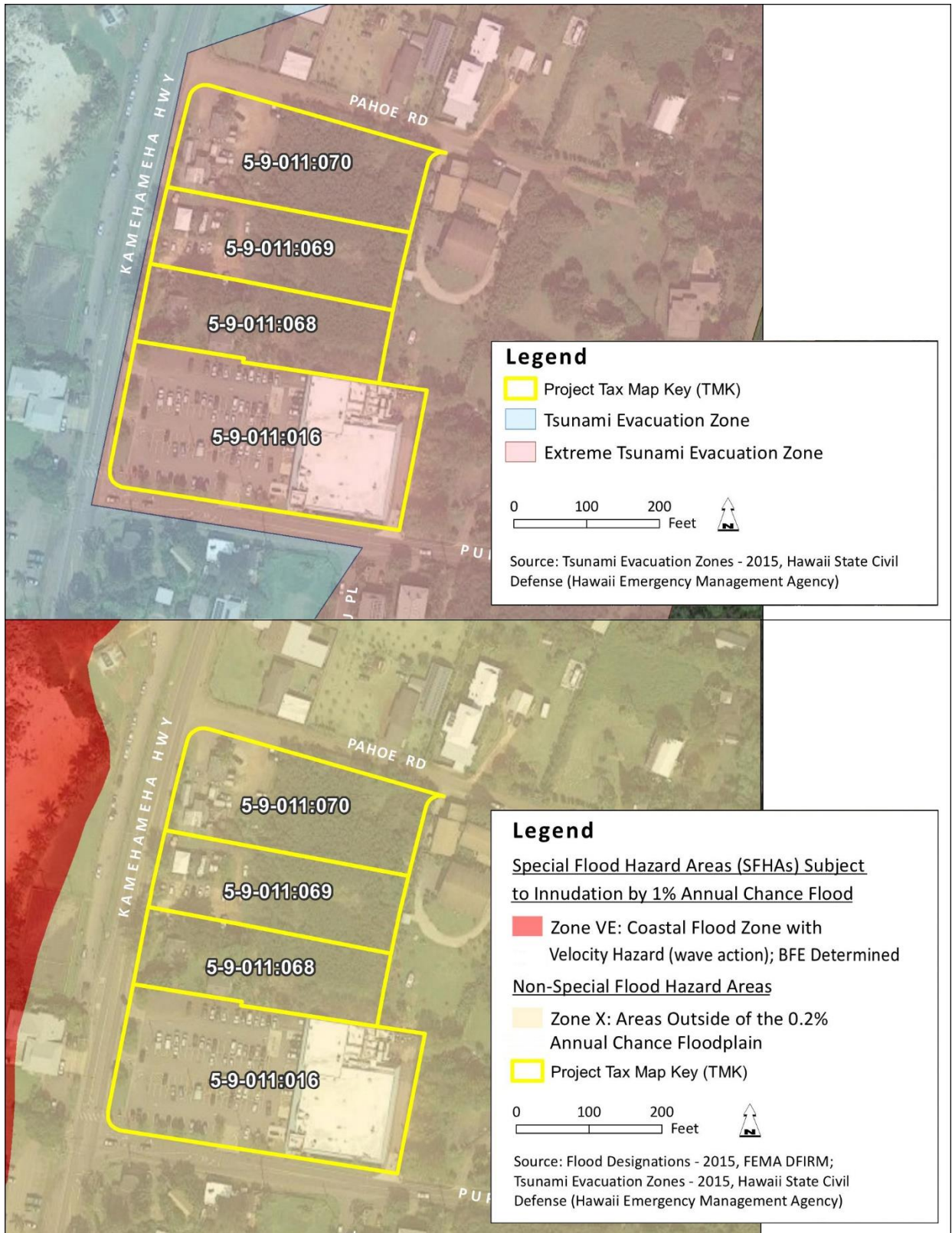


Figure 3-2 Flood and Tsunami Inundation Zones

The City and County of Honolulu has developed an additional tsunami evacuation zone in the extreme event of a very large earthquake and tsunami (Magnitude 9+). The boundaries are based on new seismic and inundation models developed by UH Researchers and the operational needs of First Responders and the Emergency Management Community. The rural center is located within the extreme tsunami evacuation zone (*Figure 3-2*).

3.3.2 Probable Impacts and Mitigation Measures

Hurricanes and Tropical Storms

Similar to other natural hazard events, the City and County of Honolulu has an emergency operations plan for evacuating potentially affected areas. The closest shelter to the rural center is located at Waialua Intermediate and High School.

Earthquakes

The project will cause no short-term or long-term impacts to the frequency or intensity of earthquakes in the vicinity or on the island of O‘ahu.

Flooding

With drainage controls, there will be no long-term effect to drainage or flooding conditions, as discussed in *Section 3.16*.

Tsunami Inundation

In general, all coastal areas of O‘ahu are vulnerable to impacts resulting from a tsunami. The rural center does not fall within the designated tsunami evacuation zone, but does lie within the extreme tsunami evacuation zone (*Figure 3-2*). Evacuation for the extreme tsunami evacuation zone would be announced via traditional emergency communication means including radio, television, email, text messages, etc.

The project will not change the existing tsunami inundation zone. The buildings will be a mix of one- to two-stories in height and will be set back from the lot line, which is shoreline, across the two-lane highway.

3.4 TERRESTRIAL FLORA AND FAUNA

3.4.1 Existing Conditions

The native environment of Hawai‘i has been transformed by centuries of human habitation, beginning with the arrival of the Polynesian voyagers. The first human inhabitants brought subsistence plants aboard sailing canoes (“canoe plants”) to provide food, cordage, fiber and medicines. The lowland, occupied areas were altered with the purposeful and accidental introduction of additional plants, rodents, and insects brought aboard ships of European explorers and traders. Landscape altering agriculture in the Pūpūkea area included ‘uala (sweet potato) cultivation by Hawaiians, followed by post-European contact era crops including avocado and pineapple, and transformation following the demise of large-scale agriculture throughout the North Shore region.

Flora

Biological surveys were conducted by AECOS, Inc. (April 2017) and entailed a pedestrian survey of plants on the property as well as review of previous botanical surveys in the region. Plant species

were identified and recorded as encountered. Numerous plants have been introduced to the site over time for landscaping; no attempt was made to quantify abundances for these ornamental plants. The full report is included in *Appendix A*.

The undeveloped portion of the property is a secondary scrub forest dominated by koa haole (*Leucaena leucocephala*) or Guinea grass (*Megathyrus maximus*). Flora of the project site is comprised of a mix of alien, native, and ornamental species of trees, shrubs, grasses, and forbs, comprising 135 taxa in 56 families. Only nine of the 135 taxa are considered native, common, widely distributed species. The project site contains two species of early Polynesian introductions, 'ili'ai (*Oxalis corniculata*) and kalo (*Calocasia esculenta*). A full species list is included in *Appendix A*. There are no rare or endangered plant species on the site, nor does the site provide any native habitat.

Mammals

The property provides typical urban habitat occupied by mammal species introduced to O'ahu: cats, rodents, and mongoose. A single pet cat (*Felis catus*) was observed on site. While no rodents were recorded during the survey, it is likely that some, if not all, of the four alien Muridae established in Hawai'i (roof rat, brown rat, black rat, and European house mouse), as well as the Small Indian Mongoose (*Herpestes a. auropunctatus*), inhabit the project vicinity. Each of these introduced mammals are deleterious to native ecosystems and native species.

The only native terrestrial mammal in Hawai'i is the endangered Hawaiian hoary bat, or ope'ape'a (*Lasiurus cinereus semotus*). While the 'ope'ape'a has been seen on Hawai'i, Maui, Moloka'i, O'ahu and Kaua'i, it may only live on Hawai'i, Maui, and Kaua'i. A large population might have lived on O'ahu before the early 19th century, but it is based on a single observation of an unknown number of bats (USFWS 2017). This species was not detected during the survey.

Other fauna observed at the site included the Sonoran Carpenter Bee (*Zylocopa sonorina*), the Brown Anole (*Anolis sagrei*), and Green Anole (*Anolis carolinensis*). The current caretaker also reported that Jackson's Chameleons (*Chamaeleo jacksonii xantholophus*) are also present in the area. The Brown Anole, Green Anole, and Jackson's Chameleon are listed as injurious species in the State of Hawai'i.

The limited visual and auditory detection methods used to survey the area for terrestrial vertebrate and mammalian species, and survey results, are contained in *Appendix A*. No mammalian species currently protected or proposed for protection under the federal or State of Hawai'i endangered species programs were detected during the survey.

Avifauna

The birds observed in the project area are non-native, naturalized, urban dwelling birds, which is consistent with what would be expected in a highly disturbed area at this elevation on O'ahu. Of ten species observed on-site during the April 2017 survey, six species are considered injurious species—animals known to be harmful to agriculture, aquaculture, indigenous wildlife or plants, or to constitute a nuisance or health hazard. These birds include: Cattle Egret, Red-vented Bulbul, Red-whiskered Bulbul, Common Myna, Spotted Dove, and Japanese White-eye.

Survey methods and results of the avian count stations are contained in *Appendix A*.

3.4.2 Probable Impacts and Mitigation Measures

Flora

The rural center is not anticipated to result in a significant adverse impact on the site's plant resources, as the site does not contain native plant ecosystems or rare native plants. No plants on the federal Endangered Species list are present on the site, and none have been documented historically. Ornamental trees and shrubs on the property will be relocated off-site during construction, and some of these will be re-planted on site and incorporated into the landscaping.

Landscaping will include new plantings of native and non-native, non-invasive tropical species around the buildings and within the parking area. The plants include, but are not limited to, naupaka kahakai (*Scaevola taccada*), ti (*Cordyline fruticosa*), 'ilima papa (*Sida fallax*), 'akia (*Wikstroemia uva-ursi*), and monstera (*Monstera deliciosa*).

No mitigation measures are proposed for flora on the site. The rural center landscaping will include substantial new plantings of trees, shrubs and ground cover, including native plant species.

Fauna and Avifauna

The project is not anticipated to result in significant adverse impact on the site's fauna. Animals likely to inhabit the site are non-native introduced mammals that are known to be deleterious to native ecosystems and native species, and are adaptable to a range of urban environments.

The following steps will be taken to minimize potential adverse effects to two species that could potentially overfly or utilize the area.

Special care will be taken during construction and when trimming or clearing woody plants taller than 15 feet to minimize any potential adverse effects to the Hawaiian hoary bat (*Lasiurus cinereus semotus*). Between June 1 to September 15, woody vegetation and trees taller than 15 feet will not be disturbed.

No seabirds were detected during the survey, though it is possible that the endemic sub-species of Newell's Shearwater (*Puffinus auricularis newelli*), or 'a'o, over-fly the project site annually between April and the middle of December. 'A'o are not known to breed on O'ahu, though low numbers of birds through to possibly be 'a'o have been recorded flying over parts of O'ahu by ornithological radar. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. The birds may collide with man-made structures and either killed outright or be injured, thus becoming easy prey for feral mammals.

The rural center will include shielded outdoor lights and fixtures in compliance with the State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife outdoor lighting guidelines. Illumination from artificial light be limited within the property boundary, and be directed down to prevent uplighting and glare.

There are no avian or mammalian species listed as state or federally endangered or threatened present on the site. The project is not expected to adversely impact fauna extant in the project vicinity. No federal Critical Habitat exists for any species on or adjacent to the project area. Thus, modification of the site will not affect federally designated species or impact any Critical Habitat.

3.5 GROUNDWATER

Groundwater is vital to the people and culture of Hawai‘i, as well as to nearshore marine life and the economy. Groundwater eventually reaches the ocean, and a popular ocean access point, the City and County Pūpūkea Beach Park, is located across Kamehameha Highway from the rural center site. This recreational area is heavily utilized, and is one of the premier snorkeling and shore-based SCUBA diving areas in the State of Hawai‘i. This section documents existing groundwater conditions, potential water quality effects, and planned measures to minimize adverse effects.

Surface water quality is addressed in *Section 3.6 Surface Water and Drainage*. The marine environment and ocean water quality is discussed in *Section 3.7*. Water demand and the drainage system for the rural center is discussed under *Section 3.16 Infrastructure and Utilities*.

3.5.1 Existing Conditions

The Commission on Water Resource Management (CWRM) within the State Department of Land and Natural Resources is the primary steward of State water resources. CWRM has broad powers and responsibilities to protect and manage Hawai‘i’s water resources and administers the State Water Code (Hawai‘i Revised Statutes Chapter 174C, 2008 amendment) and administrative rules. Other State agencies maintain responsibilities for water quality (Department of Health) and coastal zone management (Department of Business, Economic Development and Tourism).

A study of surface and groundwater resources was conducted by Tom Nance Water Resource Engineering (September 2017), and is included in *Appendix B*. The study examined the groundwater conditions directly beneath the project site, which reflects human use throughout the upslope watershed. The study estimates groundwater inputs to marine waters in the vicinity of the project area, and documents existing groundwater quality. The groundwater quality results can serve as a benchmark against which potential changes can be compared. Simultaneous sampling of marine water was conducted by Marine Research Consultants, Inc. (MRCI) examines the interaction of groundwater and surface water within the nearshore marine waters (*Section 3.7 Marine Environment*).

Groundwater in the immediate project site area occurs as a thin basal lens for at least 1.5 miles inland from the coast. Water levels are on the order of two feet above mean sea level extending to approximately 2,000 feet inland, rising to approximately 3.7 feet above sea level at 6,500 to 7,000 feet from the shoreline. The groundwater is slightly brackish within several thousand feet from the shoreline (*Appendix B*). The most recent groundwater recharge calculation for the aquifer is 50 MGD, equivalent to 5.5 MGD per coastal mile (Engott et al. 2015 in *Appendix B*).

Regulatory and Regional Context

Groundwater units have been established by CWRM to manage groundwater resources. Primarily determined by subsurface conditions, each island is divided into regions that reflect hydrogeological similarities within hydrographic, topographic and historical boundaries. The 4.5-acre Rural Communities Commercial Center site lies within the CWRM-delineated Kawaihoa Aquifer Unit, which encompasses 37.7 square miles including the 9-mile coastal segment from Waialua Bay to Kawela Bay (*Figure 3-3*). The Kawaihoa Aquifer Unit is bounded on the south/southwest by the Anahulu River, on the east/northeast by the ridgeline of the Ko‘olau mountains, and on the east/southeast by what is thought to be the makai limit of the Wahiwawa high level aquifer inland (*Appendix B*).

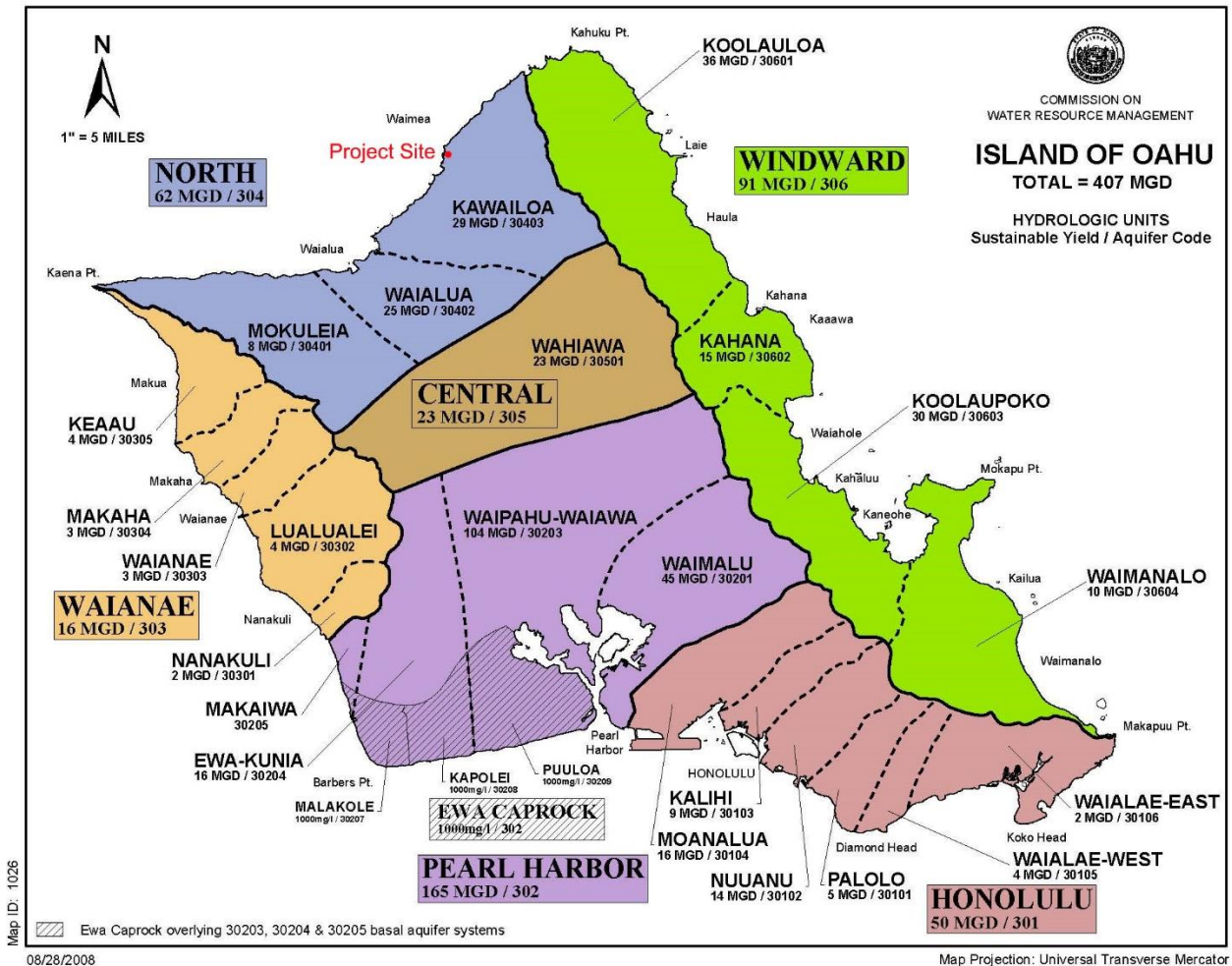


Figure 3-3 O'ahu Groundwater Hydrologic Units

CWRM has adopted 29 million gallons per day (MGD) as the sustainable yield of the Kawaioloa Aquifer, based on rainfall-recharge on the order of 56 MGD. Sugar cane cultivation in previous decades was the largest user of groundwater from the Kawaioloa Aquifer (CWRM 2008). The recorded 12-month moving average for the last decade of use (1986 to 1995) by Waialua Sugar Company was 5.7 MGD. Permits for current groundwater use through all active wells in the area now total 1.541 MGD, though the actual quantity pumped has been far less (*Appendix B*).

Drinking Water

Protection of groundwater is promulgated through Federal and State regulations. The mission of the DOH Safe Drinking Water Branch (SDWB) is to safeguard public health by protecting drinking water sources (surface water and groundwater) from contamination and assure owners and operators of public water systems provide safe drinking water to the community. SDWB administers three major programs: public water systems; underground injection control; and groundwater protection.

Section 3.16, Infrastructure and Utilities, briefly describes the water system to be designed for the rural center, and the required permits and associated regulation. Average water use at the site is estimated at 2,200 gallons per day with the current commercial uses (*Appendix B*).

Groundwater Conditions Beneath the Project Site

Two 100-foot deep monitoring wells were installed on site to sample groundwater conditions directly beneath the project site. Water quality samples both document existing conditions, and provide a baseline for future monitoring. Well site B-1 is located toward the inland end of the site at about 45-foot elevation; well site B-7 is located closer to the makai end at about 37-foot elevation (*Appendix B*).

The subsurface soil profile described in *Section 3.2, Geology, Topography and Soils* identified the approximate groundwater depth, as groundwater resides entirely within the basalt material that underlies surface and subsurface soils. The inland monitoring well site, B-1, revealed slightly weathered to unweathered basalt lava flow and clinker from approximately 18 feet below surface to the bottom of the 100-foot well. At the B-7 site, below silty clay and coral and coralline sand and gravel, slightly weathered to unweathered layers of basalt are found from approximately 31-foot depth to the well bottom at 100 feet depth (*Appendix B*).

Connectivity of groundwater to ocean water examined through measurement of salinity, and of changes in water level compared to predicted ocean tide. Salinity profiles through the water columns within the monitoring wells were recorded on three different dates. For the first 30 feet into groundwater, salinity of both monitoring well sites are slightly brackish and essentially identical. Below that depth, the salinities increase with a very sharp salinity increase in B-7 at about 52 feet into groundwater. Results indicate that ocean saltwater underlies the site at depth (*Appendix B*).

Water levels were recorded in the monitoring wells in January 2017, and were compared to the predicted tide for Waialua Bay. Results show a strong tidal response at both well sites, with amplitudes on the order of one third to one half of the ocean's tidal amplitude. Further, the water level in the mauka (B-1) well is consistently 0.115 ± 0.032 feet higher than the makai (B-7) well. This shows a relatively steep gradient toward the shoreline of 0.00055 feet/foot (about 2.9 feet per mile), which is consistent with a rapid thinning of the basal lens as it nears its shoreline discharge.

Water quality samples were collected from each monitoring well in April and May 2017. Samples were analyzed for nitrogen, phosphorus, silica, and salinity levels to provide a benchmark of existing groundwater quality. Somewhat higher nitrogen levels in the downgradient well (B-7) may reflect input from present use of the site (*Appendix B*). Marine water quality samples were taken on the same day to allow analysis of possible groundwater influence in the nearshore marine environment (discussed in *Section 3.7 Marine Environment*).

On-Site Disposal Systems

Wastewater effluent released to the environment can pose risks to human health and the environment. City sewer systems are limited to a small subdivision in the Waialua area, so nearly all North Shore businesses and residents utilize on-site disposal systems (OSDS). According to a 2009 study of OSDS, Pūpūkea, Sunset Beach has the second highest density of OSDS in O'ahu communities with 123.3 units per square mile (Makiki/Lower Punchbowl/Tantalus has a higher density) and is ranked third on the island for total number of OSDS (following the adjacent region of Ko'olauloa, and the leeward community of 'Ewa).

OSDS range from cesspools, essentially a hole in the ground, to more sophisticated treatment that include aerobic treatment systems. Soil properties can filter pathogens and utilize or bind nutrients thus minimizing wastewater impacts, but the effectiveness varies with the soil type and condition. Hydrogeologic factors that influence the risk to the environment posed by OSDS include depth to the

water table, groundwater recharge, and the volume of groundwater flow. The impact of OSDS impact on the water table is reduced by dilution due to recharge and mixing with un-impacted groundwater (Whittier and El Kadi 2009).

The site lies outside of the Honolulu Board of Water Supply No Pass zone, where installation of waste treatment facilities is allowed. Underground injection of wastewater is also permissible at the site, as it lies within the exempted area under HAR §11-23-05 (c) (*Section 3.16, Infrastructure and Utilities*). There are no existing injection wells on the parcels or on the adjacent Foodland parcel.

An on-site individual wastewater system (IWS) permitted under IWS 54311 is an aerobic treatment unit, one that aerobically decomposes organic matter over time. Aerobic treatment systems provide secondary or higher quality levels of treatment than a cesspool or septic tank. Wastewater effluent from the IWS is discharged into a DOH-approved disposal system. The wastewater flow from the existing on-site aerobic treatment system is estimated at 400 gpd (*Appendix B*).

The existing groundwater quality conditions at the site reflect the inputs from individual wastewater disposal systems serving the Pūpūkea and Sunset Beach community. *Figure 3-4* identifies the existing properties served by individual wastewater systems registered by DOH Wastewater Branch (WWB), located within a 3,000-foot wide mauka-makai corridor extending to the upper reach of the Pūpūkea Highlands subdivision. Over 500 wastewater systems are upgradient of the project site including 279 cesspools, plus 159 aerobic, septic, and soil treatment systems. Using a conservative estimate of 250 gpd of wastewater production per residence, the total wastewater volume being disposed daily through this 3,000-foot wide corridor is more than 100,000 gpd.

Using the average groundwater concentrations of nitrogen and phosphorus identified in the B-7 monitor well (1.24 mg/l for nitrogen and 0.111 mg/l phosphorus; *Appendix B*), the current discharge of nitrogen and phosphorus into the marine environment is estimated to be 8.16 pounds per day and 0.73 pounds per day, respectively. This assumes the groundwater flow from the watershed along the 560-feet of shoreline makai of the project area is 790,000 gpd, applying the Engott discharge rate of 5.5 MGD per coastal mile (*Appendix B*).

Nutrient levels in the groundwater below Pūpūkea and Sunset Beach also reflect contributions from other sources of nutrients released in the watershed, including fertilizer applied for agricultural and landscaping, along with agricultural and domestic animal waste. These nutrient inputs are not readily quantified, yet add significantly to the overall groundwater nutrient loading. The shallow groundwater eventually discharges into the nearshore waters.

3.5.2 Probable Impacts and Mitigation Measures

The project is not anticipated to affect groundwater quantity or quality during the construction phase. Controls and best management practices (BMPs) will be used to comply with all State, County and Federal regulations related to potential erosion or storm water impacts, as described in the following *Section 3.6 Surface Water and Drainage*.

Planning guidance for water use from BWS (see *Section 3.16.2 Infrastructure: Probable Impacts and Mitigation Measures*) identifies an average daily water demand increase of 6,000 gpd. Use of the water for the appropriately zoned, appropriately scaled business district would qualify as “reasonably beneficial” under the State Water Code, and the relatively small increase is well within the hydraulic capacity of the BWS system (*Appendix B*). Over the long-term, the water demand from

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Draft Environmental Impact Statement



Figure 3-4 On-Site Wastewater Disposal Systems in Pūpūkea and Sunset Beach Communities

the rural center is not anticipated to result in an adverse effect to the region's groundwater resources. No new supply source will be required for the project.

The wastewater treatment system design will be approved by DOH WWB. No injection wells are proposed for the project wastewater disposal. The wastewater treatment system selected for the project will utilize secondary treatment processes including aerobic treatment to achieve the desired effluent quality and minimize potential impacts to groundwater. The project wastewater system is described in *Section 3.16 Infrastructure and Utilities*.

Estimated wastewater production at the site is estimated to increase by approximately 6,920 gpd (*Appendix B*). The existing wastewater system servicing the site will be removed and replaced with another aerobic treatment system sized for the increased demand. Nutrient removal projected from the new aerobic treatment system and subsequent percolation through the absorption beds and underlying soil vadose zone are conservatively estimated at 80 percent for nitrogen and 90 percent for phosphorus. This results in a residual concentration of 6.0 mg/l for nitrogen, and 0.90 mg/l for phosphorus from the treatment system.

The potential effect to shallow groundwater would be from added nutrients from the projected increase of 6,920 gpd wastewater from the rural center. The estimated increase in nitrogen could be 0.35 pounds per day, and the estimated increase in phosphorus could be 0.051 pounds per day, in addition to the existing nutrient to the marine environment from the entire watershed. The existing nutrient load from the watershed that discharges along the 560-feet of shoreline makai of the project area is estimated as 8.16 pounds per day of nitrogen and 0.73 pounds per day of phosphorus. The incremental increase in nutrient contributions calculated at 4 percent (nitrogen) and 7 percent (phosphorus) (*Appendix B*).

3.6 SURFACE WATER AND DRAINAGE

The Hawai'i State Water Code defines surface water as consisting of both contained surface water and diffused surface water. Contained surface water exists upon the surface of the earth in naturally or artificially created water bodies such as streams, man-made watercourses, lakes, reservoirs, and coastal waters. Surface water occurs in areas that, due to topographic slope, contribute to surface water drainage systems that typically manifest as streams or rivers. These drainage areas are confined by topographic divides and are generally referred to as watersheds.

This section presents the existing conditions and probable project impacts related to surface runoff and drainage system design to manage storm water for the rural community commercial center. Characterization of the nearshore marine environment and possible impacts from the project is discussed further in *Section 3.7, Marine Environment*.

Surface Water

The proposed project lies more than 200 feet across Kamehameha Highway from Pūpūkea Beach Park and Sharks Cove. There are no streams or wetlands on the site itself or adjacent areas, and the AECOS flora/fauna survey confirmed there are no federal jurisdictional waters located on the subject property. For this project site, the surface water is synonymous with storm water runoff, and discussed under Drainage.

Drainage

Storm water runoff is part of the natural hydrologic process. Human activities on land, such as urbanization and agriculture, can alter natural drainage patterns. Runoff from urban and agricultural areas can introduce sediments, nutrients, pathogens, and toxic chemicals to storm water runoff. Federal, State and County regulations require that receiving waters be protected from pollutants associated with land disturbance, surface hardening and land use activities using implementation and maintenance of BMPs. Pollutants of concern include sediment, nutrients, trash, pathogens, pesticides, oil, grease, hazardous and toxic waste, metals and organic compounds.

3.6.1 Existing Conditions

The parcel elevation descends slightly from 51 to 29 feet above mean sea level (mauka to makai) at approximately 5 percent slope. Storm water on the uppermost section of the parcels will collect across either vegetated or unvegetated areas and travel downslope across asphalt concrete pavement and a variety of vegetated and unvegetated area. Swales constructed of stone and gravel have been installed in key areas to intercept and slow sheet flow, and to direct storm water to rain gardens and prompt infiltration to soils. Storm water not captured travels offsite to the nearest drain inlet south of the project along Kamehameha Highway. The storm drain system is owned and maintained by the State of Hawai'i Department of Transportation, Highways Division (DOT-HI).

Storm water runoff from the parking lot enters the drain inlet and passes under Kamehameha Highway in a 24-inch pipe and outlets to the Pacific Ocean. Offsite and to the south, additional catch basins collect storm water runoff from Pūpūkea Road and the Pūpūkea Gardens subdivision. This County-owned system conveys storm water under and along Kamehameha Highway, where it ultimately discharges to the ocean.

State Water Pollution Control rules (HAR §11-55) require a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for construction. For discharge of storm water that ultimately could reach sensitive water bodies e.g. designated Class AA marine or Class 1 inland State waters, or those restricted under the State's "No Discharge" policies, an individual NPDES permit is required. Erosion control measures, as described in *Section 3.2, Geology, Topography and Soils*, and a site-specific construction best management practices (BMP) plan, required by DOH Clean Water Branch (CWB), are initial steps to reduce possible impacts.

Recently enacted Water Quality Rules to reduce the pollution associated with storm water runoff (HAR §20-3) specify new development and redevelopment projects include low impact development (LID) site design strategies, source control BMPs, and post-construction treatment control BMPs. For projects including restaurants and parking lots with 20 or more stalls, and 5,000 square feet or more impervious area (defined as "Priority B1" projects), the rules require: retain as much of the storm water volume on-site by infiltration, evapotranspiration or harvest/reuse as feasible using appropriate LID retention post-construction treatment control BMPs, and biofilter the remaining portion that is not retained on-site with appropriate post-construction treatment controls as much as feasible.

3.6.2 Probable Impacts and Mitigation Measures

The project will increase impermeable surfaces on the site through the addition of rooftops, photovoltaic canopies and impermeable pavement. The system for collection and routing of storm

water runoff for the project is described in *Section 3.16 Infrastructure and Utilities*, and consist of drains, gutters, and subsurface detention chambers. The planning and design process for the project has focused on eliminating or reducing the amount of storm water runoff that may require treatment prior to leaving the site (“source control”), as well as identifying options to treat remaining storm water before discharge to off-site storm drain system (“treatment control”).

Short-term construction impacts will be managed and minimized using BMPs and will meet or exceed the NPDES construction storm water permit requirements and building permit conditions. BMPs to minimize soil erosion are described in *Section 3.2.2, Probable Impacts: Geology, Topography and Soils*. Additional protections for surface water runoff during the construction phase include material management, waste management, vehicle and equipment management, general site practices, and good housekeeping practices. Specific methods to be used for the rural community commercial center site will be detailed in a Storm Water Pollution Protection Plan (SWPPP) or Site-Specific BMP Plan, and reviewed as part of the construction permit process by DOH and the City and County of Honolulu DPP.

Materials management during construction will apply to both delivery and storage of materials on site. Areas will be designated for different materials, with earth berms or containment measures used as needed to prevent storm water run-on. Use and storage of materials that may be hazardous (e.g. solvents, paints, binders) will be according to label directions, regulations, and best practices. Stockpiled construction materials (e.g. soil, aggregate) will be covered to protect material from rain; bagged materials will be on pallets and covered. Silt fence, fiber filtration tubes or other appropriate protection will be used as needed. Construction waste and debris will be separated to allow reuse or recycled offsite where possible, and any potentially hazardous materials will be disposed of properly. Portable toilets on site during construction will be maintained in good working order by a licensed service provider, and regular waste collection scheduled by a licensed transporter.

Spill prevention and control plans and cleanup materials will be readily available during the construction phase. Dust control will be conducted as described in *Section 3.2.2 Probable Impacts: Geology, Topography and Soils* and *Section 3.14.2, Probable Impacts: Air Quality*.

No significant adverse short-term impacts to surface waters are anticipated during the construction phase. Potential impacts will be minimized and mitigated to the maximum extent practicable by implementation and management of BMPs. Site conditions will be monitored as required by the NPDES permit. Controls and checks will be in place to ensure compliance with permit requirements.

Long-term management of storm water will comply with the recently enacted City and County Water Quality Rules. Methods include installation of LID post-construction treatment controls to retain as much storm water on the site through infiltration as feasible, and to filter and treat storm water released off site to the maximum extent practicable, as further described in the following section. A Storm Water Quality Report for the project will be submitted with the construction plans to be approved by the City. The report must be prepared by a Certified Water Pollution Plan Preparer licensed in the State of Hawai‘i, and will clearly set forth the means and methods for permanent BMPs to be installed for long-term storm water quality protection and include a maintenance plan. Maintenance records for permanent BMPs must be maintained for a minimum of five years and are to be made available to the City’s Department of Facility Maintenance (DFM) upon request. Additionally, BMPs are subject to inspection by DFM annually.

The Water Quality Rules (HAR §20-3) require source controls for a variety of areas within a development; controls applicable to the rural community commercial center apply to landscaped areas, automatic irrigation systems, storm drain inlets, outdoor trash storage and parking areas. Automatic irrigation will be programmed to deliver a calibrated amount of water to ensure minimal runoff. The trash storage area will be paved with impervious materials and located away from storm drains; the storage area will be designed to prevent storm water run-on to the area. Trash containers will be covered to prevent rainfall from entering. The parking area will be paved to direct runoff towards rain gardens, vegetated and landscaped areas. Landscaped areas provide for biofiltration of storm water runoff (see following).

Permanent BMP controls are those LID features to be installed on the site and include bioswales, rain gardens, planter boxes, sand filters, and permeable paving material. Collectively referred to as biofilters, vegetated swales, filter strips, and engineered biofiltration devices such as planter boxes are used to both slow and spread the runoff to direct it over vegetation where sediments and particulates can be filtered and degraded through biological activities within soil. Biofiltration also allows storm water to infiltrate, that is to soak into the ground, thus reducing the quantity. Permeable pavement will be used for the transient use/parking area mauka of the central green, which will reduce and dissipate sheet flow and allow infiltration of storm water (*Figure 3-5*).

Swales to be incorporated into the site include tiered, vegetated areas on sloped areas, and grassed areas, including the central green and landscaping along the makai edge of the parcels. Sand filters will take the form of decorative rock areas makai of the ocean sports building, and will speed infiltration of storm water into the ground and detention chambers.

Subsurface detention chambers at the makai edge of the property will retain storm water on site and allow sediment to settle before discharge to the existing drainage system along Kamehameha Highway (*Figure 3.5*). The existing storm drain system along Kamehameha Highway will continue to accommodate the storm water discharge from the site, as the discharge from the rural center's system will be at a quantity and flow rate equal to or less than the existing flow (see *Section 3.16.2 Probable Impacts and Mitigation Measures: Infrastructure; Post-Construction Drainage*).

The enhancements and additions to the drainage system will reduce surface water volume from the subject parcels. The installation of LID BMPs, including subsurface storm water detention on the three parcels will substantially reduce the suspended and bedload sediment that is currently carried into the marine environments by surface runoff. The detention storage will also reduce both the volume and flow rate of storm water from the parcels. For more frequent, small storm events with rainfall amounts of up to four inches, all of the runoff would be retained in the detention storage system and eventually percolate back to groundwater (see *Section 3.16.2 Probable Impacts and Mitigation Measures: Infrastructure; Post-Construction Drainage*). This process of percolation and the subsequent lateral transport to ultimate discharge will significantly reduce nitrogen and phosphorus concentrations by denitrification and absorption processes. Overall, the rural center's drainage system will have a significant environmental benefit in comparison the present use of the subject parcels (*Appendix B*).

No significant long-term adverse impacts to surface waters are anticipated from the project. New stringent regulations by the City and County of Honolulu will be adhered to, and sediments and pollutants from storm water will be removed through the on-site permanent BMPs.

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Draft Environmental Impact Statement



Figure 3-5 Low Impact Development Features for Storm Water Control

3.7 MARINE ENVIRONMENT

3.7.1 Existing Conditions

Water Quality

The DOH Clean Water Branch is the primary State agency that enforces the federal Clean Water Act (CWA), which was enacted to ensure the nation's waters are "fishable and swimmable." Among its duties, the CWB monitors inland and marine waters for bacteria, nutrients, and biogeochemical parameters (including chlorophyll *a*, total suspended solids (TSS), and turbidity) for comparison to numeric water quality criteria established for various water bodies within the State (e.g. inland fresh waters, marine coastal, embayment). Hawai'i Administrative Rules (HAR) Chapter §11-54 Water Quality Standards documents numeric criteria for different waterbodies dependent on designated use.

In compliance with the federal BEACH Act, CWB monitors marine waters used for recreation. The water quality criteria for all recreational waters in the State is based on the indicator bacteria *Enterococcus*, and is expressed in colony forming units (CFU) or as a most probably number (MPN) per 100 milliliters (mL) dependent on the analytical method used. The *Enterococcus* threshold as defined in the 2014 revision of HAR §11-54-8 shall not exceed a geometric mean of 35 CFU per 100 mL over any 30-day period. In addition, a Statistical Threshold Value (STV) of 130 CFU or MPN per 100 mL may not be exceeded by more than ten percent of samples taken within the same 30-day period (DOH CWB 2017a). This level is consistent with the federal threshold, and is determined to protect the public from exposure to harmful levels of pathogens while participating in water-contact activities. If there is an exceedance in the level of enterococci above the specified threshold, the CWB notifies the public of these exceedances and provides specific actions that they should take to protect their health.

Due to limited resources, CWB is unable to monitor all beaches in the state. Beaches are ranked by priority level, or "tiers" based on the frequency of use, accessibility, available facilities such as showers and restrooms, and sources such as lifeguards to determine daily beach user counts. Tier 1 beaches are considered "core" beaches and are ranked as such because of their economic and social importance to the state. Tier 1 beaches are heavily used and may be threatened by some type of pollution. These beaches are given the highest monitoring priority. Tier 2 beaches are less heavily used than Tier 1 beaches. Tier 2 beaches are not currently monitored on a routine basis due to resource constraints, though infrequent monitoring may occur as resources permit (DOH CWB 2017a).

Pūpūkea Sharks Cove is not identified as a Tier 1 or Tier 2 beach by CWB, and is not routinely monitored. However, a total of twelve samples are recorded in the CWB Water Quality Data between March 2006 and May 2009. The collection point is south of Pūpūkea Beach Park near Kalua-Māua (Three Tables), and shows no exceedance of enterococci. Data on water chemistry (nutrients) has not been recorded at the site by CWB, though some biogeochemical factors are documented with the bacteriological data.

To provide a comprehensive and accurate depiction of the marine conditions down-gradient of the project site at Pūpūkea Beach Park/Sharks Cove, a marine survey was conducted for this EIS. Water quality constituents evaluated focused on the specific nutrient and biogeochemical elements in HAR §11-54-6 Water Quality Standards for open coastal waters: total nitrogen (TN); nitrate + nitrite

nitrogen ($\text{NO}_3 + \text{NO}_2$, hereafter referred to as NO_3^-); ammonium nitrogen (NH_4^+); total phosphorus (TP); Chlorophyll a (Chl *a*); and turbidity, temperature, pH and salinity. Orthophosphate phosphorus (PO_4^{3-}) and silica (Si) were also reported as these parameters are sensitive indicators of biological activity and the degree of groundwater mixing. The five sampling transects are shown in *Figure 3-6*. Transect 5, located to the southern end of the area serves as a control that should be beyond the influence of the project area.

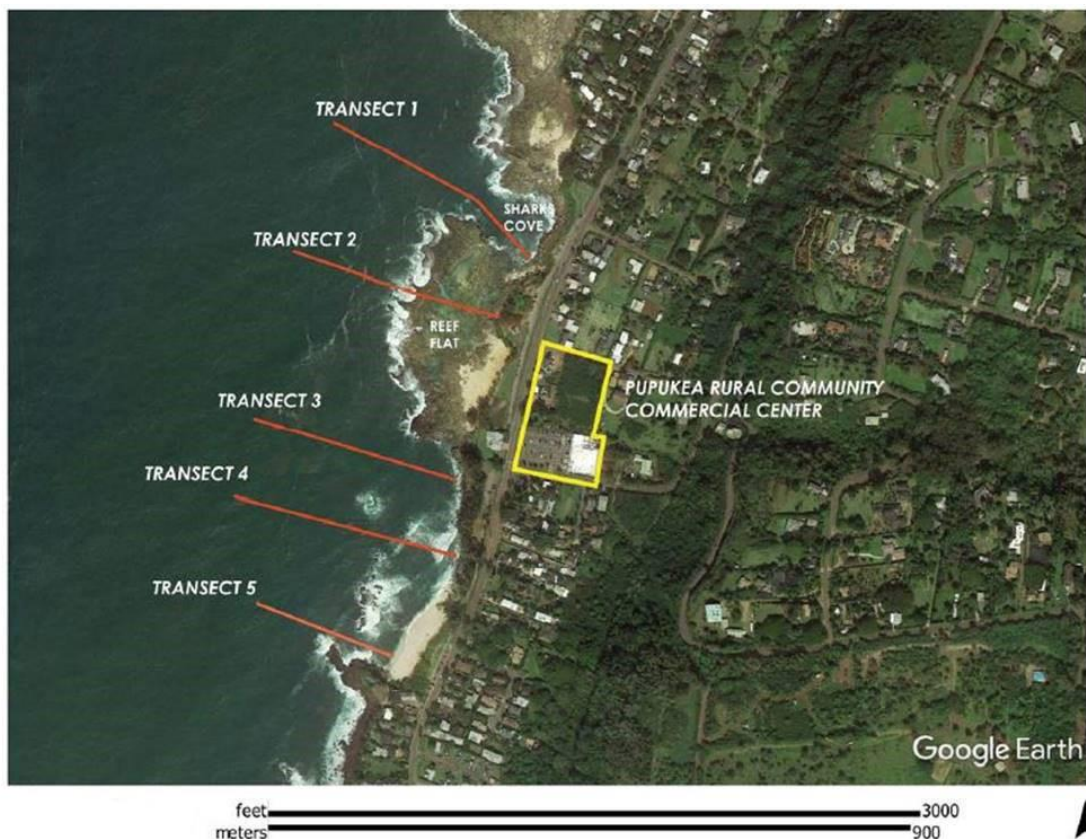


Figure 3-6 Marine Water Quality Sampling Transects

Results of the water chemistry samples collected along the transects indicate the greatest peak in nutrients and lowest salinity of shoreline samples occurred at Transects 1 and 2 located at Sharks Cove. The pattern of increasing salinity and decreasing nutrient concentrations with distance from shore result from concentrated input of groundwater to the ocean at or near the shoreline throughout the region across Kamehameha Highway from the proposed site. No rainfall or surface drainage was occurring during the sampling. Groundwater is lower in salinity, and typically contains high concentrations of silica (Si), nitrate + nitrite nitrogen (NO_3^-) and orthophosphate phosphorus (PO_4^{3-}), which percolate to the ocean at the shoreline. This results in a nearshore mixing zone, and can result in steep horizontal gradients of increasing salinity and decreasing nutrients with distance from shore.

As identified in *Section 3.5.1 Groundwater*, nitrogen and phosphorus discharges into the marine environment from the mauka watershed are estimated at 8.16 and 0.73 pounds daily, respectively.

The total groundwater flow along the 560-foot shoreline makai of the project area is estimated at 790,000 gpd (*Appendix B*). With dispersion, the flow potentially affects a 760-foot span of coastline.

The open coastal waters offshore of Pūpūkea Beach Park and in the Pūpūkea MLCD are categorized as Class AA under State Water Quality Standards under in HAR §11-54-6(b). The objective of Class AA waters is to remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alternation of water quality from any human-caused source or actions. The coastal waters beyond the MLCD are considered Class A marine waters, which are to be protected for recreational purposes and aesthetic enjoyment. Other uses are permitted as long as they are compatible with protection and propagation of marine biota and recreation.

The water chemistry results can provide a baseline against which future water quality can be measured. A summary of the initial sampling is shown in *Table 3-1* and the complete table is contained in *Appendix C*. It should be understood these samples represent a single monitoring event. Comparison of the results to the HAR criteria for the more stringent “wet” criteria within the open coastal water shows exceedance of NO_3^- and NH_4^+ along transects 1 and 2 within 100 meters from shore (*Figure 3-6*). It is important to note these samples were taken from waters confined by, or on, the reef flat in the vicinity, which are not truly “open coastal waters,” that is, beyond the influence of land. Total nitrogen within two feet of the shoreline along of Transect 2 was also exceeded; chlorophyll *a* within 1 foot of the shore for both Transect 1 and 2 exceeded the HAR standard. Beyond the reef flat, none of the constituents exceed the more conservative “wet” criteria standard. Additional detail regarding water quality is included in *Appendix C*.

Marine Managed Areas

Established in 1983, the Pūpūkea Marine Life Conservation District (MLCD) was added to State of Hawai‘i MLCD network. MLCDs are intended to conserve and replenish marine resources, and to allow fish and other aquatic life protected areas in which to grow and reproduce. MLCDs allow only limited fishing and gathering; some MLCDs restrict consumptive uses entirely. HAR §13-34, Pūpūkea Marine Life Conservation District, O‘ahu, defines the prohibited and permitted activities for Pūpūkea MLCD. In Waimea Bay, limited fishing with hook and line, and capture of akule with legal nets during specific months, are allowed. Collection of a limited amount of specific types of seaweed (limu) by hand harvesting, leaving the holdfast and roots in place, is allowed throughout the MCLD. No hook and line fishing is allowed in the Pūpūkea (Sharks Cove) and Kalua-Māua (Three Tables) areas. Collection of sand, coral, sea shells, opihi or other marine life or eggs is prohibited.

Pūpūkea MLCD lies within the boundaries of the Hawaiian Islands Humpback Whale National Marine Sanctuary, which stretches from Pua‘ena Point westward around the coast. The Sanctuary was created by Congress in 1992 to protect humpback whales and their habitat in Hawai‘i, and includes some of the shallow (less than 600 feet) waters surrounding the main Hawaiian Islands.

Nearshore Marine Environment

Biotic community structure of the marine environment was qualitatively assessed as part of the marine survey for this EIS. Reconnaissance swims were conducted along each of the survey from the shoreline to a water depth of approximately 40 feet (*Figure 3-6*). Notes were made regarding the physical structure and marine species abundance, and photographs were taken of typical features of all habitats to provide a descriptive representation of the area fronting the project site (*Appendix C*).

**Table 3-1 Water Quality Results from
Five Marine Transects as Sampled by MRCI in May 2017**

Samples at the Shoreline

Transect No.	Forms of Nitrogen (µM)				Forms of Phosphorus (µM)			Silica (µM)	Salinity (PPT)
	NO ₃	NH ₄	TON	TN	PO ₄	TOP	TP		
1	8.11	1.32	13.68	23.11	0.14	0.32	0.46	83.9	30.24
2	16.29	2.57	11.13	29.99	0.41	0.24	0.65	157	27.38
3	1.44	0.25	7.79	9.48	0.18	0.18	0.36	53.6	32.76
4	0.60	0.39	5.48	6.47	0.16	0.19	0.35	25.9	33.81
5	0.32	0.29	8.61	9.22	0.13	0.20	0.33	11.0	34.34

Samples Offshore (at the Surface)

Transect No.	Forms of Nitrogen (µM)				Forms of Phosphorus (µM)			Silica (µM)	Salinity (PPT)
	NO ₃	NH ₄	TON	TN	PO ₄	TOP	TP		
1	0.55	0.53	7.36	8.44	0.14	0.19	0.33	13.9	34.59
2	0.28	0.33	7.56	8.17	0.12	0.18	0.30	5.55	34.67
3	0.10	0.43	5.87	6.40	0.12	0.23	0.35	8.00	34.67
4	BDL	0.24	5.26	5.50	0.10	0.23	0.33	3.69	34.74
5	0.09	0.53	5.81	6.43	0.13	0.23	0.36	5.67	34.68
Median	0.10	0.43	5.87	6.43	0.12	0.23	0.33	5.67	34.67

- Notes:
1. Samples taken by Marine Research Consultants on May 17, 2107.
 2. Water quality analysis by Marine Analytical Specialists.
 3. Results in micro-molar (µM) can be converted to milligrams per liter (MG/L) by multiplying by the atomic weight and dividing by 1000.

As with all reef communities in Hawaii, biotic composition, particularly in terms of coral assemblages are primarily determined by physical forces (primarily wave energy) that impact the area. As the Pūpūkea area is mostly an open coastal area directly exposed to long-period north and northwest swells during the winter months, the response to these forces is clearly reflected in physical composition and coral community structure. As reef building corals are of primary interest, most of the following discussion focuses on the structure of reef coral communities.

The physical and biotic composition found along transects 1, 3, 4 and 5 are similar. Three distinct biotopes are found (areas of uniform environmental conditions that provide a living place for a specific assemblage of plants and animals). The inner region, extending from the inner shoreline of Sharks Cove to a distance of approximately 165 feet (50 m) offshore, is composed primarily of large boulders interspersed with rubble and sand channels. As this shallow area is regularly impacted by large waves during the winter, attached and unattached organisms are rare. The only stony coral observed on the nearshore boulders was *Pocillopora meandrina*, a “pioneering species” that can colonize areas that are too physically harsh for most other species. The only other common benthic

species seen was the soft octocoral *Sarcothelia edmondsoni*, which occurs as flat, purple patches on the upper surfaces of boulders.

A second zone identified along Transect 1 is the solid limestone (calcium carbonate) bench with erosional features that create a unique region of the highest rugosity (vertical relief) on the reef. Corals are relative scarce, with *Pocillopora meandrina* the primary occupant, along with small flat encrustations of *Porites* spp. and *Montipora* spp. The third zone occurs approximately 330 feet (100 m) from shore, where a sharp boundary in the form of a vertical scarp between the high rugosity zone and the outer reef platform occurs. The outer reef platform, which is also formed from an eroded fossil reef, consists of a relatively flat bench without the erosional features of the high rugosity zone. As with the inner biotope zones, coral colonization of the reef platform is restricted to hemispherical branching colonies of *Pocillopora meandrina*, and small colonies of corals that have flat encrusting or sturdy lobate growth forms (primarily *Porites*, *Montipora*, *Leptastrea* and *Pavona*). Appendix C contains photographs of all coral species observed during the marine survey conducted for this EIS.

Transect 2 differs in overall structure from the rest of the survey area in that it encompasses an area of shallow tidepools interspersed throughout a boulder covered raised platform. The raised platform is within the intertidal zone, so the size of the tide pools varies as a function of tide. Biotic colonization of the floor of the tidepools is limited with little coral cover, likely due to extreme temperature and exposure to the atmosphere at low tidal stands. At the seaward boundary of the tidepools, small encrusting corals occur on the vertical surface. The sea urchin *Echinometra matheai*, which bores into limestone surfaces, occurs abundantly on the walls of the tidepools. On the seaward side of the tidepools, the structure of the marine habitats is similar to the outer reef platform. No extensive benthic alga growth or seagrass were observed in any of the survey areas. Observations of reef fish revealed several large schools of *Kuhlia sandvicensis* ('āhole) and mixed *Acanthurids* in the nearshore zones. On the outer reef zones, reef fish were not overly abundant.

In summary, the benthic communities across the highway from the proposed Pūpūkea Rural Community Commercial Center have developed primarily in response to the physical forces associated with seasonal large surf. The exception is within the network of tidepools adjacent to Sharks Cove, where biotic composition is limited by high temperature from solar heating, and exposure to the atmosphere during low tides. Between these extreme physical stresses, all biotic communities within the area can be viewed as limited by physical control compared to other areas in the Hawaiian Islands (Appendix C).

3.7.2 Probable Impacts and Mitigation Measures

Water Quality

Table 3-1 and analyses contained in Appendix C indicate that the concentrations of total nitrogen (TN) in groundwater at the point of discharge along the shoreline range from a peak of 30 μM at Transect 2 to a low of 6.5 μM at Transect 4. The corresponding concentrations of total phosphorus (TP) are 0.66 μM at Transect 2 and 0.35 μM at Transects 4 and 5. Increasing the concentration of TN at the shoreline by 4.3 percent from existing conditions would result in a maximum value of about 31.3 μM and a minimum of 6.8 μM . Correspondingly, an increase in TP of 7.0 percent from the project would result in maximum and minimum values at the shoreline of 0.71 μM and 0.37 μM , respectively. These small changes peak at about 1.3 μM for TN and 0.05 μM for TP, and are likely within the natural variability of the groundwater discharge at the shoreline, and do not represent a significant change in the composition of such discharge (Appendix C).

Further, the concentrations of all nutrients drop from the peak values at the shoreline to essentially constant open coastal ocean values across the rest of the reef tract. These steep declines are the result of rapid mixing and dilution of the relatively small amount of groundwater discharging at the shoreline with large volumes of coastal ocean water. The small increases in groundwater nutrient concentrations attributable to the project would be mixed to background ocean levels in a narrow zone near the shoreline that is essentially devoid of benthic biota owing to other physical factors, primarily wave energy, which occurs regularly throughout the area.

No short-term or long-term impacts to marine water quality are anticipated from the project. The projected increase in nutrients from groundwater would likely be undetectable in the marine environment at distances from the shoreline where marine communities occur. As described in *Section 3.5, Groundwater*, nutrient input to the nearshore waters likely originate from the extensive network of existing on-site disposal systems upgradient from the project site. The minor inputs from the proposed project's wastewater treatment system will not be significant.

Nearshore Marine Environment

No short- or long-term impacts to the nearshore marine environment are anticipated from the project for the reasons described above. Strict on-site controls to reduce sediment and pollutants and protect surface waters and the downgradient marine waters are described in *Section 3.6, Surface Water and Drainage*.

3.8 CULTURAL RESOURCES

Consideration of a proposed project's effects on cultural practices and resources is part of the State environmental review, and seeks to assess traditional cultural practices as well as resources of the project area within the ahupua'a. Keala Pono Archaeological Consulting conducted background research and an ethnographic survey consisting of interviews with three community members knowledgeable about the area. Consultation with community members provided information about cultural significance of the parcels and of Pūpūkea as a whole. Full transcripts of the interviews can be found in the June 2017 Cultural Impact Assessment (CIA) contained in Appendix D.

The island of O'ahu is divided into six moku o loko (traditional land districts): Kona, Ko'olaupoko, Ko'olauloa, Waialua, Wai'anae, and 'Ewa. These moku are subdivided into smaller traditional land tracts called ahupua'a, wherein the composition and qualitative yield of mauka (upland) and makai (coastal) resources vary. The ahupua'a of Pūpūkea is located in the moku of Ko'olauloa (*Figure 3-7*).

3.8.1 Existing Conditions

Place Names and Mo'olelo

The traditional place name for Pūpūkea translates to "white shell." However, Pūpūkea has taken on other nicknames for its beaches such as Sharks Cove. Several mo'olelo pertaining to Pūpūkea include accounts of the goddess Hi'iaka and her encounter with a fisherman named Pilia'ama of Pūpūkea, reports of significant stones (one of which was what remained of a man enamored by an ali'i woman, and the other which represents a woman who was a great fisher), and the history of Pu'u o Mahuka Heiau.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

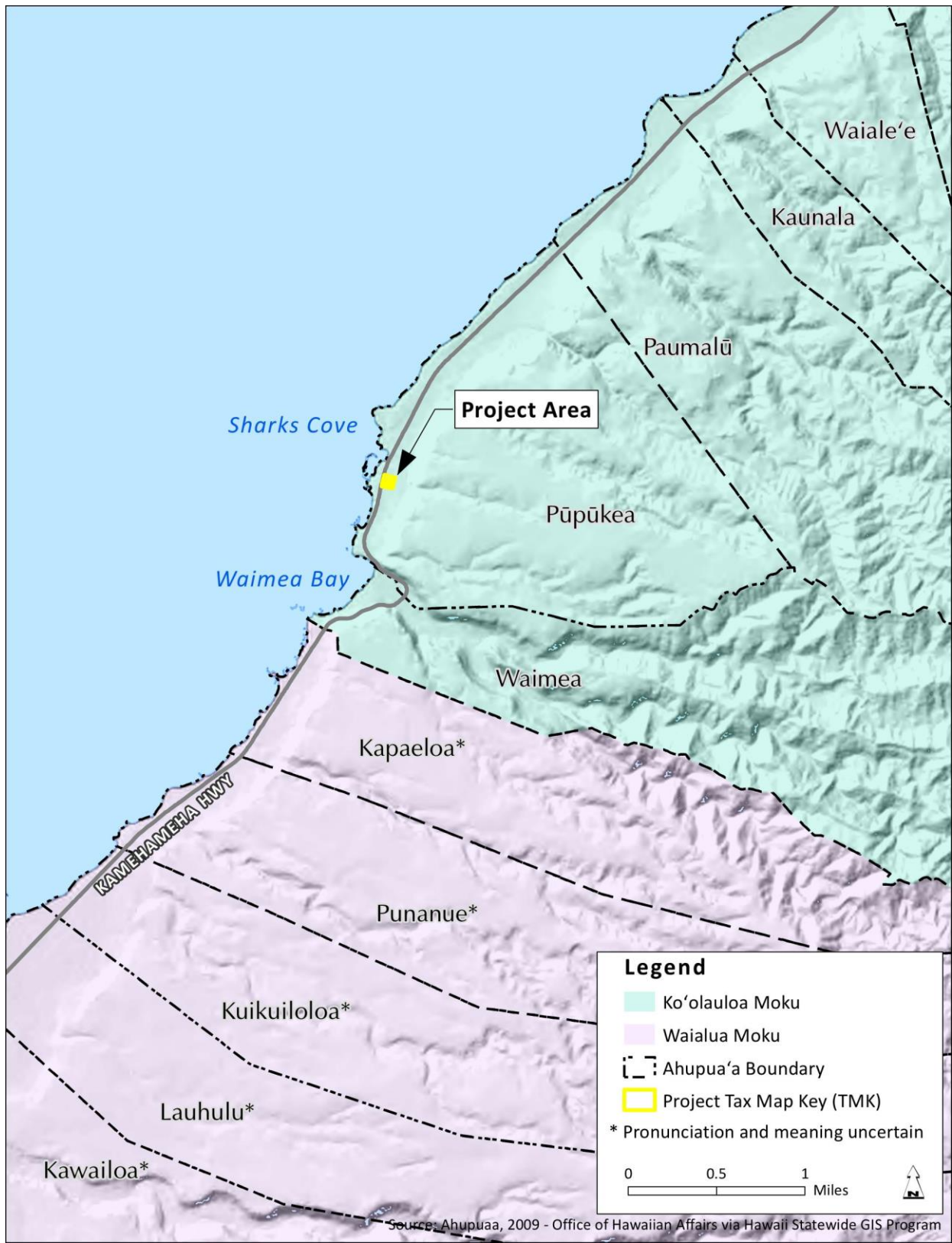


Figure 3-7 Historical Moku and Ahupua'a Boundary Map

Pre-Contact Land Use and Historic Period Development

Pūpūkea was most likely a historical fishing area, which supported coastal resources and dryland agriculture. The first Western account mentioning Pūpūkea was written by Captain Charles Clerke and James King, who sailed around the north shore of O‘ahu in 1779. Both accounts note the verdant qualities of expansive countryside with rivers running through the deep valleys. In 1792, George Vancouver’s ship anchored off the coast of Waimea. When three men ventured inland in Waimea Valley, they were beaten to death by tattooed men and possibly taken to Pu‘u o Mahuka Heiau.

Post European contact, the project area and the greater ahupua‘a of Pūpūkea underwent rapid transformation with modern agriculture and residential development. With the introduction of the Organic Act in 1845, the traditional land tenure system underwent major transformations leading the Māhele system. This new system privatized lands in Hawai‘i, and required Hawaiians, commoners, and royalty to submit claims to their lands.

In 1846, land titles known as Crown Lands were distributed to the crown (Hawaiian government) and the ali‘i. In 1850, a second Māhele allowed commoners and others who could prove their residency, to claim their lands. Historical maps and information indicate that there were no Land Commission Awards (LCAs) made within the project area or within the immediate vicinity of the project.

1900- the Mid 1900s

With the railroad as the main focus of economic activity on O‘ahu in the early 1900s, farming in Pūpūkea became profitable, with crops being transported on the rail to central markets across O‘ahu. Avocado crops were particularly lucrative, with approximately 400 acres of avocado trees in Pūpūkea planted and owned by Frederick Haley, Sr in the early 1900s. After the land was sold, pineapple became the next profitable crop of the area, with pineapple plantations in Pūpūkea being founded as early as 1919.

Community Consultation, Ethnographic Interviews

No existing cultural resources or practices were identified for the parcels themselves by the community member knowledgeable with the area. Salt collecting and limu gathering were mentioned for the coastal region across the highway from the project area. One of the themes in the ethnographic interviews includes the recent history of Pūpūkea with mention of Niimi Store, built in the project area in the early 1900s, and its role as a central store for the North Shore. Other themes included the natural environment and the previous existence of fresh water streams in Pūpūkea and the coral-algaenous structures of the coast.

Several potential concerns were expressed by the interviewees related to the rural center include these points: giving back to the community; properly caring for wastewater and solid waste streams to prevent pollution; traffic congestion and parking provisions at the site; informing the public about the details of the plan including square footage and the types of businesses; and informing the public about the road improvements for the area.

Some of the interviewees made recommendations of potential measures to mitigate potential effects of the rural center. The recommendation include: provide Hawaiian and local residents with first chance for jobs at the center; involve the community through dialogue before businesses are chosen for the rural center; improve the parking plan; foster a greater Hawaiian sense of place and presence; acknowledge the piko families of the area; and to be respectful of the native Hawaiian language, and encourage its use in a correct manner.

3.8.2 Probable Impacts and Mitigation Measures

Chapter 3 of this EIS describes the measures to be incorporated to minimize effects to the environment. The rural center will not impact cultural resources or traditional practices in the region. Design elements to be incorporated into the rural center include integration of native plants. A central green will become a community gathering place, and a venue for hula, music and “talk story.”

3.9 ARCHAEOLOGICAL AND HISTORIC RESOURCES

The rural center is subject to a historic preservation review by the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) under HRS Chapter 6E and HAR Chapter §13-284. Keala Pono Archaeological Consulting, LLC (Keala Pono) conducted an Archaeological Inventory Survey (May 2017), which is included as *Appendix E*.

3.9.1 Existing Conditions

Previous Archaeology

Several significant archaeological studies have been conducted in the Pūpūkea region. The closest archaeological findings of significance are located over a mile to the north of the project site. Details of the archaeological studies conducted over the past decades are contained in *Appendix E*.

Methods and Summary of Findings

To examine the project site, a pedestrian transect survey was conducted (October 2016) over 100 percent of the three parcels. Eleven test trenches approved by SHPD were also excavated at the project site. Profiles were drawn and photographed, and sediments were described using Munsell soil color charts and a sediment texture flowchart.

The pedestrian survey yielded no findings. The entire project area has been disturbed by previous activity, such as bulldozing and paving. Subsurface testing did not identify any subsurface cultural deposits or features. Stratigraphy consisted of colluvial deposit, sometimes with fill layers or modern pavements above.

No archaeological features were found in the survey. The “negative findings” the AIS resulted in an Archaeological Assessment (AA) report. SHPD issued a letter (August 2017) to acknowledge the AIS acceptance in accordance with HAR §13-276-5. SHPD further concurred that no further archaeological work was required.

3.9.2 Probable Impacts and Mitigation Measures

The development of the rural center is not anticipated to affect archaeological resources. There is the potential that cultural material or human remains may be inadvertently discovered during construction activities. If human burial remains are discovered during construction activities, all work in the vicinity of the remains will cease immediately and SHPD will be contacted.

3.10 LAND USE

3.10.1 Existing Conditions

The property consists of three adjacent parcels, designated as TMK (1) 5-9-011:068, 069, and 070, that adjoin the Foodland parcel, TMK (1) 5-9-011:016. The four commercially-zoned parcels total 4.56 acres zoned B-1 Neighborhood Business District. The North Shore SCP guidelines for a Rural Community Commercial Center limits the center to “existing zoned areas between Pūpūkea Road and Pāhoe Road that currently serve the commercial needs of residents and visitors.” Additional land use policies and guidelines documented in the North Shore SCP for a rural center are shown in *Figure 2.2* (Chapter 2) and Chapter 4.

Three agreements related to property use have been recorded for the parcels: a 1978 Unilateral Agreement, a 1996 Development Agreement, and a 2017 Conditional Use Permit for Joint Development (for the three Hanapohaku parcels).

In 1978, a zone change (File number 77/Z-25) from R-6 Residential District to B-1 Neighborhood Business District was approved by the Honolulu City Council in Ordinance 78-76 and incorporated the Unilateral Agreement and conditions for development. Conditions include: 1) the design is “country-like” in style, emphasizing the wooden low-rise Hale‘iwa character; 2) installation of improvements on Pāhoe Road and the intersection of Pāhoe Road and Kamehameha Highway; and 3) the contribution of a pro-rata share of the cost of improving Kamehameha Highway.

Three structures on the property were constructed in the 1950s, prior to the establishment of the Shoreline Management ordinance. These structures are considered “legal conforming” structures, exempt from SMA ordinance. Two building of less than 575 SF each were constructed in 2001 and 2002, entitled under SMA-Minor permits (2001 SMA-14 and 2009/SMA-54).

The second agreement, recorded in 1996 at the Bureau of Conveyances (Document no. 96-170366, Dec. 2), is a Development Agreement between the owners of three parcels to document to cooperate with each other to achieve mutual benefits of an integrated neighborhood shopping center. While the agreement allows each party to make improvements to its land without obligation to the others, it documents cooperating among parties to provide adequate ingress and egress between the properties without obstructing wall or chain link fence at the time of development.

A third agreement is for issuance of a Conditional Use Permit in compliance with the provisions of City and County of Honolulu Land Use Ordinance (LUO) Section 21-5.380, relating to joint development of two or more adjacent lots. This section of the LUO provides for owners of adjacent lots to apply for a Conditional Use Permit (CUP) if joint development would result in more efficient use of land.

An expansion of site uses on the Hanapohaku parcels beginning in 2014 occurred in violation of building, grading and SMA requirements. The violations are being corrected, and existing operations on the Hanapohaku parcels are permitted under an Special Management Area (SMA) Use Permit – Minor (2017/SMA-21). Hanapohaku is to comply with specific terms and conditions to clear past use violations. Current compliance actions include settlement of fines and obtaining site development and building permits. The existing uses will be completely removed for development of the rural center.

Currently, access to the site does not utilize a Pāhoehoe Road entry or exit. The owners have committed to the Pāhoehoe Road residents that access to the site will continue to be limited to Kamehameha Highway. Therefore, the Unilateral Agreement highway improvements at Pāhoehoe Road does not apply to the property use.

3.10.2 Probable Impacts and Mitigation Measures

The City and County Land Use Ordinance (LUO) for B-1 Neighborhood Business District zoning allows for a maximum density floor area ratio (FAR) of 1.0 and a maximum height of 40 feet for these parcels. Applying the FAR of 1.0 to the three Hanapohaku-owned parcels allows for development of a maximum floor area of 118,443 square feet. Ordinance 11-3 incorporated the North Shore SCP as a vision for future development to serve as a policy guide for more detailed zoning maps and regulations. Section 24-8.4(b) of the ordinance states “Subdivision and zoning ordinances applicable to the North Shore Sustainable Communities Plan area enacted prior to the effective date of this ordinance shall continue to regulate the use of land within demarcated zones of the North Shore Sustainable Communities Plan area until such time as the subdivision and zoning ordinances may be amended to be consistent with the North Shore SCP.” Zoning in the area has not been amended, so the current FAR applies. However, Hanapohaku LLC is committed to a lower density “country scale” development that fits with the North Shore community and its needs.

The rural center is in keeping with the North Shore SCP. The project will occupy the area designated in the North Shore SCP for a rural community commercial retail center and is consistent with the policy of “infill.” The development plan is aligned with the goals of the North Shore SCP related to desired density, with a total floor area using only 25 percent of that allowed by the existing zoning ordinance.

3.11 DEMOGRAPHIC AND ECONOMIC CONDITIONS

O‘ahu is the third largest island of Hawai‘i’s main islands with a land area of 597 square miles. With a population of approximately 953,207, O‘ahu is the most populated island, accounting for about 70 percent of the State’s population (U.S. Census Bureau, 2010).

3.11.1 Existing Conditions

Residential Demographic and Economic Conditions

The North Shore has steadily grown from a population of 9,200 in 1970, to 18,400 in 2000 (DPP 2011). Per the 2010 U.S. Census Data, the North Shore Census Tracts 99.02 (Hale‘iwa), 99.04 (Waialua/Mokuleia), and 101 (Waimea/Pūpūkea/Kahuku) reported a total population of 17,607. The North Shore SCP estimates 19,517 persons will be living in the region by the year 2035, as projected by the City and County of Honolulu DPP.

The 2010 population of the North Shore was slightly younger than Hawai‘i’s median age (38.6), with median ages of 37, 37.5, and 35.9, respectively. Approximately 55 percent of the population is younger than 40 years old. Ethnically, the population of the North Shore primarily consists of White (34.6 percent), Asian (27.4 percent), and Native Hawaiian and other Pacific Islander (10 percent).

According to 2014 American Community Survey (ACS) data, the median household incomes for each of the Census tracts 99.02, 99.04, and 101 were \$25,518, \$30,509, and \$32,849, respectively. The

North Shore tracts estimate from 2014 ACS data show an average of approximately 6.9 percent of all families living below the poverty level. Data from the US Environmental Protection Agency's Environmental Justice Screening Tool (EJSCREEN) indicates that the low-income population for Pūpūkea within the Hawai'i EPA Region is approximately 12 percent, as compared to the State average of 26 percent.

The State Department of Business, Economic Development and Tourism (DBEDT) evaluated movement of workers between areas on O'ahu on a typical workday in its *Commuter Adjusted Daytime Population on Oahu* Statistics Brief (DBEDT 2014). Results reflect the change between the number of jobs and the numbers of workers in an area. Areas with a high percentage of workers living and working in the same place would have less out-commuters. The study was adjusted to focus on people 16 years and over employed full- or part-time, so did not account for students, shoppers or tourists. The data account for the resident population, commuters driving into the North Shore for work, and commuters driving out of the North Shore for work in other regions of the island. *Table 3-2* shows the commuter flow and daytime population.

Table 3-2 North Shore Commuter Flow and Daytime Population

Daytime population change due to commuting (% of resident population)	Commuter Adjusted Daytime Population	Resident Population	Percent Workers living and working in the same place
Hale'iwa: (2.6%)	3,916	3,817	25%
Waialua: (-32.5%)	2,494	3,697	7.3%
Pūpūkea: (-34.4%)	3,425	5,224	21.9%
Kahuku: (-7.5%)	2,335	2,524	23.2%

Visitor Demographic and Economic Conditions

The *North Shore Sustainable Communities Plan* contains a synopsis of a survey conducted by the State of Hawai'i Department of Economic Development and Tourism related to visitors to the North Shore during two periods: the Winter of 2003 and Summer of 2005. The survey indicated 51 percent of all visitors to O'ahu visited the North Shore, which translates to an estimated average of 7,000 visitors per day, or 2.4 million tourists per year. The effect is economically positive, but the influx of tourists has stressed the community infrastructure, notably beach and park facilities and restroom, and increased traffic over the past decades.

Existing Commercial Businesses

The property has a long history of commercial use, as described in Chapter 2, *Section 2.1 History of Property*. The current tenants at the site are small, locally owned and operated by families that primarily reside on the North Shore.

3.11.2 Probable Impacts and Mitigation Measures

The rural center will lease space to local businesses from the North Shore and Hawai'i. The landowners recognize the community benefit from local entrepreneurship that is reflected in the current tenants. The surf shop owner has indicated an intent to remain at the center as are the operators of popular food trucks. Waialua Federal Credit Union has committed to adding its second North Shore location at the rural community commercial center. The FCU members live, work, attend

school or worship in the area from Ka'ena Point to Crawford's Home near Kahuku. Additional anticipated tenants include an urgent medical care clinic and pharmacy.

Development of the rural center will create financial benefits in terms of construction employment and spending, and County real property tax. Construction spending, including tenant improvements, is projected at \$17.8 million. Construction employment is estimated at 45 full-time equivalent positions for site work, infrastructure, carpentry, and landscape. The annual City and County of Honolulu Real Property taxes currently paid are approximately \$36,000. With completion and occupancy of the rural center, the County real property taxes will increase to approximately \$148,600 per year.

Long-term employment is estimated at 86 full time jobs. With stabilized revenues, the projected State Income Taxes are estimated at \$2.2 million annually. The estimated State of Hawai'i General Excise Tax is approximately \$103,664 per year.

The tenant businesses will provide goods and services to residents, which would otherwise require vehicle trips to commercial centers in Hale'iwa or Central O'ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai'i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O'ahu.

The project will not impact the region's residential demographic – that is, the population or mix of residents.

3.12 PUBLIC SERVICES

3.12.1 Existing Conditions

Police Protection

The Pūpūkea region is under the protection of the City and County of Honolulu Police Department (HPD). The area is part of HPD District 2, which extends from the North Shore (Sunset Beach) to Central O'ahu (Mililani).

Fire Protection

First response for medical and fire emergencies at the project site and the surrounding area is provided by the City and County of Honolulu Fire Department (HFD).

The Pūpūkea region is in the 5th Battalion area designated by HFD. The region is served by two fire stations:

- The Sunset Beach Fire Station is located across the street from the project site, along Kamehameha Highway.
- The Waialua Fire Station is located 6.1 miles south on Hale'iwa Road, between Pa'ala'a Road and Kaiaka Street.

The Kahuku Fire Station, associated with the HFD 3rd Battalion, is located 9.4 miles north on Kamehameha Highway, between Pu'uluana Street and Enos Road.

HFD works with the City and County of Honolulu Emergency Medical Services and the City and County of Honolulu Emergency Medical Dispatch in providing first response to emergencies.

Medical and Hospital Services

The closest family physician office is located at Ka'ena Kai Clinic in Hale'iwa, approximately 5.6 miles away. The clinic's hours of operation are limited to Monday through Friday between the hours of 9 a.m. and 5 p.m., with walk-in hour Saturdays 10 a.m. to 4 p.m.

The closest medical center with 24-hour availability is the emergency room of Kahuku Medical Center, located 9.1 miles north east of the project site. The medical center offers comprehensive medical services including a primary care clinic, emergency services, lab and imaging services, a pharmacy, rehabilitation services, and inpatient care.

The next closest medical center is Wahiawa General Hospital, located approximately 14.7 miles from the project site. The hospital currently includes 53 beds for its acute facility and 107 beds in its long-term care facility.

Schools

The Pūpūkea community is part of the State Department of Education's Kahuku Complex Area. The public schools closest to the Pūpūkea Rural Community Commercial Center include: Sunset Beach Elementary (1.3 miles north), Waialua Elementary (7.8 miles south), Waialua High and Intermediate (8.7 miles south), Kahuku Elementary (9.2 miles north), Lā'ie Elementary (11.7 miles north), and Kahuku High and Intermediate (13.6 miles north).

Libraries

The state public libraries closest to the Pūpūkea Rural Community Commercial Center include the Waialua Public Library (8.2 miles south) and the Kahuku Public Library (13.7 miles north).

Public Parks and Shoreline

Public parks provide open space and a natural outdoor environment for both residents of Hawai'i and tourists to enjoy. The following City and County of Honolulu public parks are located near the project area: Pūpūkea Beach Park, Waimea Bay Beach Park, 'Ehukai Beach Park, Sunset Beach Neighborhood Park, Pipeline Skatepark, Sunset Beach Park, Sunset Beach Recreation Center. Pu'u o Mahuka Heiau State Historic Site is the only State managed park near the project.

3.12.2 Probable Impacts and Mitigation Measures

Police Protection

The rural center is not anticipated to impact police protection services for the area. No mitigation measures are proposed.

Fire Protection

The Pūpūkea Rural Community Commercial Center is not anticipated to impact fire protection services for the area. Coordination with the Board of Water Supply and the HFD will be ongoing to ensure the provision of a water supply that is capable of supply required fire flow for fire protection needs. No additional mitigation measures are proposed.

Medical and Hospital Services

The rural center will include leasing space for an urgent care facility. The nearest walk-in clinic in Hale'iwa, approximately 5.6 miles away, provides limited walk-in hours. The closest 24/7 medical facility is 9.1 miles north in Kahuku, and 14.7 miles to the southeast in Wahiawa.

The rural center will help to improve overall medical access and health outcomes for North Shore residents and visitors with general family medicine and emergency medical needs.

Schools

No adverse impacts to local schools are anticipated from the rural center. No mitigation measures are proposed.

Libraries

The rural center is not anticipated to pose adverse impacts to local libraries. No mitigation measures are proposed.

Public Parks and Shoreline

The rural center is not anticipated to pose adverse impacts to nearby State parks or City and County of Honolulu parks.

3.13 TRAFFIC

3.13.1 Existing Conditions

Vehicle Circulation

The project area is served by two roadways, Kamehameha Highway (Highway 83) and Pūpūkea Road. Kamehameha Highway, located makai of the project area, is operated and maintained by the State of Hawai'i Department of Transportation (HDOT). It is a two-lane highway and extends across O'ahu beginning at the Nimitz Highway junction near Daniel K. Inouye International Airport, circles the island, and terminates at the Pali/Kalaniana'ole intersection in Kāne'ohe. The posted speed limit is 35 miles per hour (mph) in the study area.

Pūpūkea Road provides access between Kamehameha Highway and the mauka-residential neighborhoods, as well as direct access to the existing Foodland grocery store via an existing driveway. The posted speed limit on this street is 25 mph, and the intersection at Kamehameha Highway is controlled by a traffic signal with separate turn lanes.

Field Observations

Observations along Pūpūkea Road showed traffic to be generally free-flowing during all peak hours. Queues of fewer than five cars were observed makai-bound at the signalized Kamehameha Highway intersection. Deliveries via truck to Foodland are through the loading dock on the mauka side of the store. Approximately 40 to 60 deliveries are made daily Monday through Saturday, with the peak period occurring between 10 a.m. and 12 noon. Monday, Wednesday and Friday are the busiest delivery days. Both large trucks and smaller two-axle trucks made deliveries. Some trucks require multiple maneuvers in and out of the driveway, which can temporarily block Pūpūkea Road and cause intermittent delays.

Peak hour intersection capacity analysis was performed for the Kamehameha Highway/Pūpūkea Road intersection. Traffic analyses are typically conducted to describe the existing conditions (traffic volume, multi-modal users, whether controls exist at intersections e.g. traffic lights or stop signs). Traffic is also projected based on the future conditions without the project (“baseline conditions”), that is, considering regional growth and/or traffic anticipated from known pending developments near the project site. Finally, the anticipated number of vehicle trips resulting from the proposed project is analyzed.

Table 3-3 shows the results of the existing intersection operations analysis. Traffic counts were conducted during the weekday mid-day and evening peak periods in November 2016, during the Hale’iwa surf competition and when local schools were in session.

Table 3-3 Existing Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Delay	Level of Service (LOS)
Kamehameha Highway & Pūpūkea Road	Signal	MID	7.3	A*
		PM	6.9	A*
		SAT	8.4	A*

* During select peak times of the year, drivers do experience temporary delays approaching and traveling through this intersection. However, the overall operations during typical conditions meet or exceed the State of Hawai’i DOT and City & County of Honolulu’s minimum desirable operating level of LOS D.

Level of Service (LOS) is used to assign quality levels of traffic based on performance measures and describe the flow of traffic. Six levels are defined, ranging from LOS A representing the least congested operating conditions to LOS F representing the most congested operating conditions. LOS E is considered the “at capacity” operation. The City DPP and State DOT consider LOS D the minimum desired operating standard.

Transit Facilities and Services

TheBus is the main public transportation service for the island of O’ahu. Route 55 and Route 88A are the two regular service bus routes that pass by the project site along Kamehameha Highway. In the westbound direction, Route 55 starts in Ala Moana, and travels through Kāne’ohe and along Kamehameha Highway where it passes immediately adjacent to the project site and continues south to Hale’iwa. Complementary eastbound service is also provided in the reverse direction. Route 88A (North Shore Express) starts in Aiea and travels northwest through the project site, and around the northern and eastern perimeter of O’ahu terminating in downtown Honolulu. The northbound bus stop adjacent to the project is located immediately north of the outbound Foodland driveway. The southbound bus stop is located directly across the highway, and includes a turnout lane which allows southbound vehicles to pass the bus while it is stopped to load and unload passengers.

Bicycle Facilities and Activity

There are no separate bicycle paths provided within the immediate vicinity of the project site. However, southbound bicyclists can use the parking lane located on the mauka side of the highway located north of the Sunset Beach Fire Station. This lane serves as a defacto extension of the Ke Ala Pūpūkea Bike Path that ends just north of Puula Road, and it allows cyclists to travel separately from vehicles on the highway.

Peak counts for bicyclists were conducted during the same time as traffic counts. The number of bicyclists at the Kamehameha Highway/Pūpūkea Road intersection ranged from two to 14 during weekday midday and evening peak hours, respectively. The Saturday midday count was 12 bicyclists.

Pedestrian Facilities and Activity

No existing pedestrian sidewalks are provided on Kamehameha Highway in the immediate vicinity of the project site. Crosswalks are provided across three of the four legs of the signalized Kamehameha Highway/Pūpūkea Road intersection, with no crosswalk provided across the south leg of the highway.

Pedestrian counts during peak periods showed that the highest volumes occurred during the Saturday midday peak hour with 48 people crossing at the Kamehameha Highway/Pūpūkea Road intersection. Weekday counts were lower with nine and 12 pedestrians crossing during the weekday mid-day and evening peak hours, respectively.

3.13.2 Probable Impacts and Mitigation Measures

Access to the rural center and Foodland will be through a combined driveway from Kamehameha Highway located approximately 210 feet north of Pūpūkea Road. The entry will be clearly marked with signage. Two additional changes are proposed to improve traffic flow along Kamehameha Highway in the access area: closure of the existing Foodland driveways on Kamehameha Highway to reduce the total number of access points; and creation of a center two-way left-turn lane to provide a refuge area for traffic turning left into and out of the rural center. The existing driveway connection to Pūpūkea Road will be retained, and only minimal improvements to the Foodland parking area are needed.

The main circulation driveway will enter from the highway and allow entry to Foodland, or route rural center users to a parking area mauka of, and behind, the central building. There will be no pedestrian or vehicular access to or from the privately owned Pāhoe Road. A curb and sidewalk will be installed along the project's makai edge and will narrow the existing shoulder width on Kamehameha Highway and eliminating space for illegal parking along the highway fronting the parcels. The City and County Land Use Ordinance requires one off-street parking stall per 400 square feet of commerce and business space; applying this to the proposed 30,000 square-foot center results in a requirement for 75 spaces. The project anticipates providing approximately 126 parking spaces; most stalls will be sited behind the rural center. Part of the parking area will be shaded by a canopy of photovoltaic panels installed to generate solar energy for on-site usage. An electric vehicle charging station for at least two electric vehicles will be installed.

The northbound bus stop adjacent to the site will need to be relocated with construction of the proposed consolidated site driveway. There are two possible locations along Kamehameha Highway fronting the rural center for the northbound bus stop. One location is closer to the existing crosswalks at the intersection of Pūpūkea Road and the highway; the other is north of the proposed consolidated access driveway. The TIAR (*Appendix F*) recommends the location near Pūpūkea Road and Kamehameha Highway near the existing traffic signal, as the controlled crossing point would provide for gaps in traffic and would clearly delineate rights-of-way for all users. The final location will be determined in consultation with HDOT and the City Department of Transportation Services.

Estimates of increased vehicle trips include two calculations. One is a growth factor anticipated without the project ("near term baseline"), and the second is an estimate of vehicle trips to the rural

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

center using rates published by the Institute of Transportation Engineers for specialty retail centers. The near-term baseline conditions were calculated using a conservative one-percent annual growth factor. The impact of one-percent increased traffic would not change the LOS, however, an additional potential delay traveling through the Kamehameha Highway / Pūpūkea Road intersection could be up to eight-tenths of a second (0.8) more (from Saturday peak hour delay of 8.4 seconds currently, to a possible delay per vehicle of 9.2 seconds). See *Tables 3.3 and 3.4*, and *Appendix F*.

Estimates for new vehicle trips on the highway and Pūpūkea Road with development of the project site total 1,322 net new daily vehicle trips. During midday and evening peak hours, a total of 65 net new trips (29 inbound to the center and 36 outbound from the center) are anticipated; Saturday midday peak hours total 98 (51 inbound and 47 outbound). “Pass-by” trips are than added; these represent vehicles already on the highway that decide to turn into and out of the site. Daily trips at midday and evening peak hours, including new vehicles and pass-by trips, then total 93, with 140 vehicle trips on Saturday midday peak hours.

The impact of the increased traffic related to the project at the intersection of Kamehameha Highway and Pūpūkea Road would continue at LOS A during both peak hours of traffic, with LOS B during Saturday peak hour traffic. The potential delay for a vehicle under LOS B conditions would be an additional 1.7 seconds over the near-term baseline conditions (*Table 3-4*).

Table 3-4 Near-Term (2021) Baseline Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Near Term Baseline		Near Term Plus Project		Delay Change
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
Kamehameha Hwy/ Pūpūkea Rd	Signal	MID	8.1	A	9.6	A	1.5
		PM	7.6	A	9.2	A	1.6
		SAT	9.2	A	10.9	B	1.7
Kamehameha Hwy/ Project Driveway/ Foodland Driveway	Side-street Stop control	MID	Driveway does not exist under this scenario		24.1	C	24.1
		PM			23.5	C	23.5
		SAT			30.1	D	30.1

Traffic at the intersection of Kamehameha Highway / Project Driveway with the completed project is anticipated to operate at an acceptable LOS D or better under both peak hours of traffic.

DOT and the City’s Traffic Review Branch define a significant intersection impact when operation of an intersection changes from LOS D or better to LOS E or F. The LOS for the signalized Kamehameha Highway/ Pūpūkea Road intersection could change from A to B under the peak Saturday hour scenario with the rural center. The existing roadway and the added roadway capacity from the center two-way left-turn lane will accommodate additional vehicle trips to the rural center without substantially increasing delays for existing users on Kamehameha Highway. The existing traffic signal will help to provide gaps in traffic on the highway for vehicles turning into and out of the new site driveway, and will continue to provide a control for Pūpūkea Road neighborhood traffic. The rural center construction will not significantly impact traffic in the region.

During peak winter surf season and the active summer period on the North Shore, intermittent congestion is expected to continue to occur with or without the rural center.

3.14 AIR QUALITY

3.14.1 Existing Conditions

The U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NOX), ozone (O₃), particulate matter smaller than 10 microns (PM₁₀), particulate matter smaller than 2.5 microns (PM_{2.5}), sulfur oxides (SOX), and lead. The DOH Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than the NAAQS. DOH CAB regularly samples ambient air quality at monitoring stations throughout the State and annually publishes this information.

The DOH CAB has 14 monitoring stations on the islands of O‘ahu, Kaua‘i, Maui, and Hawai‘i, with six monitoring stations on O‘ahu. The Air Monitoring Station nearest the Pūpūkea Rural Community Commercial Center is located in Pearl City. Present air quality in the project area is mostly affected by air pollutants from motor vehicles due to the proximity to Kamehameha Highway. Natural sources of air pollution emissions that could affect the project area at times but cannot be quantified very accurately include plants (aero-allergens), wind-blown dust, and potentially, distant volcanoes on the Hawai‘i Island.

3.14.2 Probable Impacts and Mitigation Measures

Temporary impacts to air quality from construction will include fugitive dust, construction equipment exhaust and asphalt paving emissions. Construction activities such as excavation, grading, and transport of soil on and off-site is regulated under DOH Clean Air Branch (CAB) through HAR §11-60.1, Fugitive Dust. The Rules state, in part, that “no person shall cause or permit visible dust to become airborne without taking reasonable precautions;” and “no person shall cause or permit the discharge of visible fugitive dust beyond the property lot line . . .”

Short-term construction impacts to air quality will be temporary and not contribute to exceedance of any federal or state ambient air quality standards.

Reasonable precautions to control fugitive dust are determined on a case-by-case basis and will be documented in a dust control plan. Site topography, soil conditions, meteorological conditions, site activities and equipment used, and any materials processed are considered. The construction contractor assesses activities and conditions daily to make adjustments to prevent fugitive dust from becoming airborne and crossing the property line.

On-site mobile and stationary construction equipment emit air pollutants in engine exhaust. The largest emission sources are usually from diesel-powered equipment. Engine exhaust emissions from construction vehicles can be minimized through the proper operation and maintenance of equipment.

BMPs to minimize fugitive dust and minimize equipment emissions include dust screen or wind barriers around the construction site; use of water or dust suppressants on roads and material stockpiles; cover moving, open-bodied trucks transporting dusty materials; and implementing the dust control plan approved for the project.

The rural center is not anticipated to generate significant or long-term emissions that would cause or contribute to an appreciable effect to local or regional air quality. The rural center will not generate emissions of the seven major air pollutants regulated by the EPA or the State Clean Air Branch. No fugitive dust will be generated by operation or use of the retail center or its tenants. No long-term impacts to air quality will occur from the rural center.

No mitigation is required, as no long-term impacts to air quality are anticipated.

3.15 NOISE

A study of current and projected noise conditions was conducted by Y. Ebisu & Associates in July 2017 and is included in *Appendix G*.

3.15.1 Existing Conditions

Traffic noise measurements were recorded at three locations around the project site: 50 feet from the centerline of Kamehameha Highway north of Pāhoe Road; 100 feet from the centerline of Kamehameha Highway north of Pāhoe Road; and 50 feet from the centerline of Pūpūkea Road behind Foodland market. Analyses was performed to provide the predicted noise levels using the U.S. Federal Highway Administration Traffic Noise Model, Version 2.5.

The Base Year and Future Year (2021) Average Hourly Sound Level (Leq(h)) of traffic noise levels for the project area were calculated at distances of 50, 75, and 100 feet from the centerline of Kamehameha Highway and Pūpūkea Road. Per the State DOT, Highways Division Highway Noise Policy and Abatement Guidelines, applicable noise mitigation thresholds for traffic noise are 66 Leq(h) and 71 Leq(h) for residential and commercial areas, respectively.

Distances to the 66 Leq(h) noise contour for unobstructed line-of sight conditions ranged from 36 to 44 feet from the centerline of Kamehameha Highway during the Base Year. Applicable distances to the 71 Leq(h) noise contour for unobstructed line-of sight conditions ranged from 20 to 24 feet from the centerline of Kamehameha Highway during the Base Year.

3.15.2 Probable Impacts and Mitigation Measures

In 2021, without the rural center, traffic noise levels are predicted to increase by 0.2 to 0.3 Leq(h) along Kamehameha Highway and by 0.3 to 0.4 Leq(h) along Pūpūkea Road. These increases will not be perceptible, and are well within the accuracy limits of the noise level predictions. By 2021 with the rural center, a maximum additional increase in traffic noise levels along Kamehameha Highway of 0.2 Leq(h) is predicted to occur due to project traffic during Saturday peak hour. Along Pūpūkea Road, larger increases of 0.3 to 0.4 Leq(h) are anticipated from Non-Project traffic, and even larger increases of 0.9 to 1.1 Leq(h) are anticipated from project traffic. By 2021, with or without the rural center, the total number of existing residences along Kamehameha Highway within the 66 Leq(h)

will increase from one to two. No existing residences along Pūpūkea Road should be within the 66 Leq(h) traffic noise contour by 2021, with or without the rural center.

During the construction phase, the rural center will adhere to State DOH property line noise limits of 60 dBA from fixed machinery (such as air conditioning and refrigeration equipment) during the daytime and nighttime periods, respectively as required by HAR §11-46, Community Noise Control. Adherence to these limits should minimize risks of adverse noise impacts at nearby residences. Construction will also adhere to the State DOH permit procedures and curfew periods to minimize risks of adverse noise impacts at nearby residences. Excessive noise from construction equipment is permitted during weekdays from 7:00 am to 6:00 pm (excluding holidays), and from 9:00 am to 6:00 pm on Saturdays.

Long-term operational noise will be minimized through design of the buildings and vegetation screening on the north and east sides of the project. To minimize noise from people transiting the parking lot to the rural center buildings, vegetation screening will be installed along the perimeter of the property line adjacent to Pāhoe Road. Noise generated from the restaurant will be minimized by the building design, which will utilize solid exterior walls on the Pāhoe Road side and provide enclosed interior air-conditioned space. The exterior of the restaurant will be acoustically designed to reduce exterior noise levels to 45 dBA or less at the closest residence. Daytime and nighttime noise limits of the State DOH will be strictly enforced at the property.

To minimize potential noise from delivery trucks, such as that of back-up alarms, deliveries to the commercial establishments during nighttime or early morning hours will be avoided.

3.16 INFRASTRUCTURE AND UTILITIES

G70 prepared a Preliminary Engineering Report (PER) for the project in September 2017. The PER is included as *Appendix H*. The following summarizes the existing and proposed conditions contained in the PER.

3.16.1 Existing Conditions

Wastewater

Exception for one subdivision in Waialua, there is no municipal wastewater collection system serving the North Shore. The City and County of Honolulu has no plans to construct a new regional system for the North Shore within the near future. Wastewater treatment for residences, stores, schools and parks on the North Shore consist of on-site treatment and disposal systems.

The existing IWS located on the project site's southern parcel (TMK 5-9-011:068) was permitted by DOH WWB. In April of 2016, the owner voluntarily upgraded the existing IWS to an aerobic treatment unit which provides secondary treatment and services the real estate building, commissary II and the office. Current wastewater flow is conservatively estimated to be 400 gpd (*Appendix B*).

Water

Potable water in the general region is provided by the Honolulu Board of Water Supply (BWS). Per record drawings there is an existing 8-inch water main located along Kamehameha Highway and another existing 8-inch water line located along Pāhoe Road. The existing water main and meter (#02403605) currently provides water service to Parcel 068 via an existing water lateral and a 1-inch water meter.

Drainage

The project site has a relatively moderate slope averaging 5 percent from the mauka side of the property towards Kamehameha Highway. Based on a topographic survey, elevations at the site range from 29 to 51 feet above Mean Sea Level.

Currently, there are no existing on-site drainage facilities and no defined natural drainageways. Due to the lack of a storm water collection system, storm runoff in the area generally flows across the properties and continues offsite. The nearest drain inlet is located south of the project site along Kamehameha Highway. The drain connects to a 24-inch pipe and outlets to the Pūpūkea Beach Park makai of the fire station. The drainage system along Kamehameha Highway is owned and maintained by the State of Hawai'i, Department of Transportation, Highways Division. In addition, there are a series of catch basins at the intersection of Pūpūkea Road/Kamehameha Highway, which outlets to the Pūpūkea Beach Park further south near Three Tables Beach. The drainage facilities at the intersection are owned and maintained by the City and County of Honolulu.

Electrical Power

Existing overhead Hawaiian Electric Company power lines extend along the makai right-of-way along Kamehameha Highway. Current electrical demand for the existing buildings and mobile food establishments is estimated at 4,500 kWh per month.

Solid Waste

Solid waste on O'ahu is divided into two categories - municipal solid waste, and construction and demolition material. Municipal solid waste on O'ahu goes to the waste-to-energy "H-POWER" plant in Campbell Industrial Park, whether collected by the City's refuse trucks or collected by private service providers. Mandatory recycling is enforced through a variety of City ordinances. The requirement varies by the type and size of the commercial entity.

Currently on the site, heavy-duty plastic lidded cans and separate rectangular containers for recyclables are provided on-site for trash collection from customers. Covered commercial dumpster bins for trash and recyclables are provided per zoning code for the commercial tenants, and are managed on a regular schedule by a contracted, qualified service provider.

3.16.2 Probable Impacts and Mitigation Measures

Wastewater

As there is no municipal sewer collection system for the North Shore, the existing onsite wastewater system will be replaced with a treatment and disposal system suitable to the anticipated tenant mix and leasable area, per DOH regulation. The site lies outside of the Honolulu Board of Water Supply No Pass zone, and installation of waste treatment facilities is allowed.

Under the DOH Underground Injection Control (UIC) program, injection of wastewater is another method of disposal that could be permitted. HAR §11-23-05 (c) states "*In areas where the UIC line is defined by a roadway, a setback of one lot or one hundred fifty feet, whichever is less, from the mauka property line of that roadway may be considered to be within the exempted area.*" However, no injection of wastewater or other liquids is planned for the project.

Wastewater design flow for the rural center was based on guidance from the DOH Appendix D, HAR §11-62 (Wastewater Systems). System design includes accessible bathrooms for patrons and employees of the retail, office, and restaurant operations, as well as capacity for transient demand

such as employees and customers of mobile food establishments. The design flow is estimated to be 10,533 gpd based on projected uses (*Appendix H*). There will be no industrial wastewater generated or discharged by tenants. Note that the system design size is conservative to ensure adequate capacity; the estimated wastewater flow is anticipated to be less (*Section 3.6*).

The on-site wastewater treatment system will consist of pre-treatment, an aerobic treatment unit (ATU) and absorption beds. Pre-treatment removes fats, oils and greases and consists of a grease interceptor that utilizes settling chambers and baffled pipe connections that will be installed at the restaurant. A septic tank will be used as a pre-loader to remove solids, reduce Biochemical Oxygen Demand (BOD) levels, and separate total suspended solids (TSS) from the waste stream prior to secondary treatment in the aerobic unit. Anaerobic bacteria will break down solids in the tank, though periodical removal by a septic pumper may be required. The aerobic treatment applied to the wastewater adds another level of treatment to improve effluent quality. ATUs use mechanical components to oxidize organic material, decrease TSS and reduce pathogens.

The absorption bed area will be sized at double the design flow, to provide for full redundancy of the effluent disposal capacity. Granular material will replace soil around the beds to provide the most effective final treatment. The beds will be located under the parking lot area to maintain accessibility by maintenance vehicles. Overall, the planned wastewater system will provide a high level of treatment, which will minimize the amounts of nutrients filtering through the subsurface soils profile.

DOH WWB requires regular monitoring and reporting to demonstrate system performance. In the case of infrequent special events with larger gatherings, the increased wastewater load would be supported with portable toilets and hand-washing stations. Mobile food trucks may be among the tenant mix periodically using the central gathering space. While in practice the number may be much lower, the wastewater and parking capacity are sized to support up to eight mobile food trucks, their patrons, and employees. The food trucks will be fully mobile and compliant with DOH and DPP regulations. The trucks will not be connected to, nor utilize, the on-site wastewater system. Per current DOH rules, food trucks are required to have liquid wastes removed at an approved waste servicing area or by a licensed commercial pumping contractor. A summary of the planned wastewater treatment and disposal system is included in *Appendix H*.

Water

The water system will serve 25 or more individuals at least 60 days per year, and will therefore be considered a public water system under DOH regulations. The design and operation of the system will comply with Hawai'i Administrative Rules Title 11, Chapter 20 *Rules Related to Public Water Systems*.

Based on high level planning guidelines for commercial zoning, the BWS Water System Standards (2002) utilize an average daily demand consumption of 3,000 gallons per acre for commercial developments. A factor of 1.5 is applied to the average daily demand to obtain the maximum daily demand. The rural center is anticipated to have an average daily demand of 8,160 gallons, and a maximum daily demand of 12,240 gallons (*Appendix H*). BWS has confirmed that the existing water system is adequate to accommodate the currently proposed rural center design.

No new source of potable water will be required to service the rural center.

Drinking Water

The rural center will likely utilize the existing BWS water meter to provide domestic water service to the property. Based on the American Water Works Association (AWWA) standards, the existing 1-inch domestic water meter has a maximum capacity of 50 gallons per minute (gpm) and a continuous capacity of 25 gpm. There will be no impact to public drinking water availability or to drinking water quality from the rural center.

Fire Protection

BWS stated that offsite fire protection is adequate to accommodate the rural center. Improvements to offsite fire protection is therefore not proposed. A fire sprinkler system will be included in the new commercial buildings.

Landscape Irrigation

Irrigation for the rural center landscaping will be designed and operated to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the irrigation system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the potable water supply.

Design of the water system will comply with HAR § 11-21 *Cross-Connection and Backflow Control*, and will undergo design review by the BWS.

Drainage

Construction Drainage

Storm water runoff will be carefully managed during the construction phase. Erosion control BMPs will comply with the State, County, and Federal regulations during all phases of construction. Details of permits required and controls to be put into place are detailed in *Section 3.6.2 Probable Impacts: Surface Water and Drainage*.

Post-Construction Drainage

In compliance with the current City Water Quality Rules, Low Impact Development (LID) post-construction treatment controls will be installed to detain storm water on the site through infiltration, and to filter and treat storm water released off site to the maximum extent practicable. Storm water runoff from the project will be collected through gutters, drain inlets, catch basins, trench drains, and pervious pavement, with a goal of slowing and infiltrating water back into the ground while removing sediment and pollutants (*Section 3.6.2 Probable Impacts and Mitigation Measures: Surface Water and Drainage*). A sub-surface detention chamber will be installed along the makai section of the property along Kamehameha Highway. On-site improvements will both reduce the velocity and volume of runoff compared to existing conditions.

As described in *Section 3.6 Surface Water and Drainage*, the more frequent storm events totaling up to four inches will be 100 percent detained within the sub-surface chamber, and slowly percolate to groundwater. *Table 3-5* shows the reduction in volume over the 24-hour period for various recurrence interval storms. Note the more frequent, smaller storm event of less than four inches will be entirely contained within the detention chamber and infiltration of the storm water will result in no net release off-site.

Peak runoff calculations for the 10-year 1-hour recurrence interval under proposed site conditions project a total flow of 18.39 cubic feet per second (cfs). This is an increase of 8.97 cfs over existing

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

conditions (Table 6, Appendix H). Based on the Rules Relating to Storm Drainage Standards dated January 2017 by the City and County DPP, sizing for the sub-surface infiltration chamber has been calculated to capture the 10-year, 1-hour recurrence storm with a maximum capacity of 26,600 cubic feet. Storm water that may leave the site will be slowed to the pre-project flow rate, with sediment and pollutants removed to the maximum extent practicable. Discharge to the off-site DOT drainage system will be at a flow rate equal to the pre-development condition (Appendix H).

Table 3-5 Comparative Runoff Volumes for Pre- and Post-Development of the Three Hanapohaku Parcels for 24-Hour Storms of Varying Recurrence Intervals

Recurrence Interval (Years)	24-Hour Rainfall (Inches)	Present Use		Proposed Development				Reduction of Runoff Volume (Cubic Feet)
		Amount of Runoff				Detained Onsite (Cubic Feet)	Net Release (Cubic Feet)	
		Inches	Cubic Feet	Inches	Cubic Feet			
1	3.46	1.750	17,279	2.232	22,038	22,038	0	17,279
2	4.81	2.910	28,732	3.489	34,449	26,600	7,849	20,883
5	6.65	4.586	45,310	5.254	51,876	26,600	25,276	20,034
10	8.07	5.926	58,511	6.637	65,531	26,600	38,931	19,580
25	10.0	7.776	76,777	8.531	84,232	26,600	57,632	19,145
50	11.5	9.229	91,123	10.011	98,845	26,600	72,245	18,878

- Notes:**
- Storm rainfall amounts from NOAA Atlas 14.
 - The area of the three Hanapohaku parcels is 2.72 acres.
 - Runoff calculated by the SCS Curve Number (CN) method. CN value for the present land use is 82. CN for the proposed development is 88.
 - Storm water detention to be provided is 26,200 cubic feet.

Electrical Power

Electrical power lines will be placed underground at the rural center. Electrical demand for the restaurant and rural center is estimated at 4,000 kilowatt hours per day. The project will offset its power request from Hawaiian Electric Company through generation of electricity for on-site use of photovoltaic (PV) panels. The panels will be installed both on rooftops and as a canopy to reduce solar radiation on the parking area and provide shade to cars parked below. The PV system will produce approximately 526,000 kilowatt hours annually, approximately one-third of anticipated electrical demand, to offset demand from the electrical grid.

Solid Waste

For the short-term construction period, non-combustible construction and demolition (C&D) debris will be reduced to the extent practicable through re-use and recycling services. The remainder will be handled by the building contractor and deposited to the one privately-owned C&D landfill on O’ahu. Materials management during construction is discussed in *Section 3.6 Surface Water and Drainage*.

Under long-term operations, solid waste will be generated by commercial tenant at the Pūpūkea Rural Community Center. Waste generation rates vary by the type of commercial use: commercial retail; office; restaurant; medical clinic; and fast food/mobile food trucks. Detailed solid waste

generation statistics for Hawai'i commercial uses are unavailable. Therefore, waste generation rates developed by CalRecycle (www.CalRecycle.ca.gov) were applied to estimate solid waste production at the center to range from 296 to 345 pounds per day, without accounting for recycling. This is equivalent to 54 to 63 tons per year.

The Pūpūkea rural center will implement significant waste reduction measures through on-site recycling in compliance with City ordinances and as mandated by the landowner. O'ahu recycling rates are above the national average of 35 percent. Applying this conservative recycling rate to the municipal solid waste estimate for the rural center would reduce the range to between 192 to 224 pounds per day. This is equivalent to 35 to 41 tons per year. Recycled materials collected at the site will be transferred to commercial recycling centers. Lease terms for mobile food trucks operating at the rural center will require take-away food containers to be non-polystyrene.

Commercial-grade trash receptacles will be provided at key locations throughout the site for use by the rural center's customers. Appropriate collection bins to allow tenants to meet recycling requirements will be provided in a consolidated location on site. As described in *Section 3.6 Surface Water and Drainage*, in keeping with the State Water Quality Rules, the consolidated storage area for collection bins will be paved, and designed to prevent storm water run-on. Collection bins will be covered to prevent rainwater from entering.

3.17 VISUAL ENVIRONMENT

3.17.1 Existing Conditions

Views of the subject properties from the highway and surrounding area observes the three single-story commercial structures and five mobile food establishments and seating areas, with large iron wood trees along the highway. The view of the surrounding area consists of several single-family homes along Pāhoehoe Road and the Foodland grocery store and parking lot. For most, the site appears as a disorganized commercial setting, and offers significant opportunities for visual improvement.

Views at the existing project site, as of January 2017, are shown in *Figures 3-8 and 3-9A-F*.

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Figure 3-8 View Study Photo Key

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Figure 3-9A View from Kamehameha Highway looking south with subject property to the east.



Figure 3-9B View of Pāhoehoe Road looking makai towards Kamehameha Highway and Pūpūkea Beach Park.



Figure 3-9C View from Pūpūkea Beach Park; looking mauka towards Kamehameha Highway and the subject properties.



Figure 3-9D View from the Project Site looking makai towards Kamehameha Highway and Pūpūkea Beach Park.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement



Figure 3-9E View from Kamehameha Highway looking mauka at the property entry.



Figure 3-9F View from Kamehameha Highway looking north, with property to the east.

Scenic Resources and Scenic Views

Within the objectives of the City and County of Honolulu's LUO, there is an emphasis placed upon maintaining and protecting scenic views as a part of open space preservation goals in the North Shore Sustainable Communities Plan. The following are listed Section 3.1.2.7 Scenic Resources and Scenic Views of the North Shore SCP, as significant scenic views in the area of the proposed rural center that should be protected and enhanced:

- Views toward the Wai'anae Mountains from Farrington Highway, Kaukonahua Road, Kamehameha Highway, and Weed Junction
- Intermittent makai views from Kamehameha Highway between Kawailoa and Sunset Beach
- Stationary views from beach parks and access areas from Kawailoa to Waiale'e Beach Park
- Mauka views of the Ko'olau Mountains and pali along Kamehameha Highway from Hale'iwa to Waiale'e
- Views from the road pullover above Waimea Bay . . . and from the coral formation at Pūpūkea Beach Park
- Lateral views from Pūpūkea Beach Park
- Panoramic view of the coast from Pūpūkea Heights
- Mauka views from nearshore waters

Guidelines pertaining to scenic resources and scenic views are as follows:

- Conduct planning with attention to preservation of natural open space, protecting coastal and mauka views from public roadways, and conserving important viewsheds.
- Evaluate the impact of land use proposals on the visual quality of the landscape, including viewplane and open space considerations.
- Discourage the use and installation of overhead utility lines and poles. Strong consideration should be given to placing replacement and new transmission lines underground. Underground utility lines will enhance view planes and increase highway safety. Whenever possible, relocate or place underground overhead utilities that significantly obstruct public views. If unavoidable, locate any future overhead utilities on the mauka side of the public coastal highway.

Night Lighting

Exterior lighting is arranged in the seating areas adjacent to the mobile food establishments. Exterior lights are pointed down to the ground, and provide limited illumination of select areas within the existing site.

3.17.2 Probable Impacts and Mitigation Measures

Short-Term Construction Views

There will be views of construction activities at the rural center during the 12-month development period. A construction fence will be erected to contain dust and shield views of the site construction activities, such as excavation and vertical construction.

View Plane and Corridor

The rural center will present an aesthetic improvement to area. The architectural design will be consistent with the country character of the North Shore and reflect classic plantation-style architecture with wide, shaded lanai. One- and two-story buildings will be set back from the highway

with an open, park-like space along Kamehameha Highway. The small-scale clustered buildings will be linked by meandering walkways with a central green landscaped area that will provide a community gathering place for residents and visitors. Views along Kamehameha Highway will be of native and tropical landscaping punctuated by the one-story ocean sports shop and the setback two-story building. Parking area will be located behind the buildings. Views from the beach park will be of the open central green landscaped area along the highway, with a gradation of landscaping up to and framing the buildings. See *Figure 2-4* for an elevation view of the rural center with the existing setting of the Foodland grocery store and coastal pali backdrop.

There will be no nighttime construction, with limited lighting for site security. Temporary lights for night will utilize 100 percent cutoff, fully shielded luminaires that are mounted high enough off the ground to be directed perpendicular to the ground.

Exterior lighting at the rural center will comply with Section 205A-71(b), which requires all outdoor lights to be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures. Wall-mounted lights will be downlights or otherwise shielded, and lights used in open or parking areas will full cutoff or fully shielded.

3.18 SUMMARY OF PROBABLE IMPACTS

The North Shore area in this EIS is synonymous with the planning region defined in the Revised Ordinances of the City and County of Honolulu Chapter 24, Development Plans: the North Shore extends from Ka'ena Point in the west to Waiale'e Gulch near Kawela Bay in the east, with O'ahu's shoreline defining the northern edge and Helemano and the slopes of the Wai'anae and Ko'olau Mountain Ranges to the south. It is an area characterized by unspoiled natural beauty, world-famous surf, and open expanses of agricultural lands set against dramatic mountains. While residential development has replaced areas of former agricultural land, the *North Shore Sustainable Communities Plan* reflects the City's expectation that it will remain a rural area where physical growth and development are managed to prevent an "undesirable spread of development."

3.18.1 Interrelationships and Cumulative Environmental Impacts

Cumulative impacts refer to potential impacts from the rural center construction and operation in combination with other regional uses that may impact resources such as groundwater, marine resources, and/or traffic. This area of the North Shore is not slated for growth, according to the North Shore SCP. With little exception, other lands on the North Shore falls within the State urban or agricultural land use districts, and zoning allows residential or country uses. There are no currently proposed subdivisions, commercial or resort developments for the region. According to the Transportation Impact Analysis Report prepared for this EIS, no transportation infrastructure improvements are planned for the area around the rural center (*Appendix F*). The discussion of cumulative impacts in the following section identify relevant resource uses occurring in the project area to which the project may contribute to impacts.

The *Pūpūkea Beach Park Master Plan – Final* (January 2015) identifies near-term repair, maintenance actions and capital improvements for which the City Departments of Design and Construction (DDC) and Parks and Recreation (DPR) can request funding. Improvements to address issues at the beach park include renovating existing comfort stations, improving bike and pedestrian pathways away

from the highway and parking lot, and resurfacing and marking parking areas. Creation of a viewing platform mauka of Sharks Cove and the “Tidepools” is also included in the Master Plan.

The City and County DPR projects will require a Special Management Area (Major) permit, which in turn requires an environmental assessment. The timeline and funding availability to implement the improvements proposed in the Pūpūkea Beach Master Plan is not known. To date, no capital improvement funds have been designated for the improvements, and it is not possible to include the DPR projects in the cumulative impacts discussion that follows. Assuming all park improvements are conducted according to current Water Quality Standards and permit guidance, in the long term they will improve nearshore water quality by reducing erosion and runoff.

Groundwater

Drinking Water

Foodland current water use has averaged about 2,200 gpd. This use may increase by 15 to 20 percent for proposed landscaping irrigation at the makai end of the parking lot (*Appendix B*).

Projected water use for the overall rural community commercial center site would therefore increase by approximately 6,440 gpd: an additional 6,000 gpd is projected for new uses on the three parcels to be developed (*Section 3.5.2 Groundwater – Probable Impacts and Mitigation Measures*), and up to a 20 percent increase for irrigation by Foodland would equal 440 gpd.

Wastewater

Wastewater flow rates for the rural center are estimated to increase by 6,920 gpd over existing conditions (*Section 3-5*). For perspective, this amount is roughly equivalent to the wastewater flow from 11 to 15 single-family homes (at 450 to 600 gpd). The wastewater flow rate from Foodland is assumed to be *status quo* at 2,000 gpd (*Appendix B*). Nutrient removal projected from the new aerobic treatment system and subsequent percolation through the absorption beds and underlying soil vadose zone are conservatively estimated at 80 percent for nitrogen and 90 percent for phosphorus. The wastewater system absorption bed area will be sized at double the design flow requirement to provide full effluent disposal capacity redundancy (*Section 3.16*). Cumulative impacts related to nutrients entering the marine environment are discussed below.

Surface Water / Drainage

The enhancements and additions to the drainage system will reduce surface water volume from the subject parcels and from a portion of the Foodland parcel. The installation of LID BMPs, including subsurface storm water detention on the three parcels, will substantially reduce the suspended and bedload sediment that is currently carried into the marine environment by surface runoff. Off-site discharges will be at a quantity and flow rate equal to or less than the existing flow.

The State of Hawai‘i DOT-HI system that receives flow from the rural center site also collects sheet flow from a 550-foot section of Kamehameha Highway and areas mauka, and routes it to a drain that discharges at a point north of the Sunset Beach Fire Station. Storm water runoff from the Foodland parking lot will be interrupted by the driveway closures; BMPs to reduce sheet flow and detain storm water from the Foodland parking lot will be designed. Flows above what will be captured by the rain gardens will be collected by the DOT drain. On the south side of the Foodland parking lot, runoff will continue to be collected by inlets to the City and County drainage system on Pūpūkea Road.

In addition to the Foodland parking lot, the City drainage system south of Pūpūkea Road collects sheetflow runoff from the road itself, from the Pūpūkea Gardens subdivision, and from approximately 130 acres mauka. This flow includes all of Hakuola Gulch; runoff is conveyed via pipes to a catch basin at the intersection of Pūpūkea Road and Kamehameha Highway. From the catch basin, the City system crosses under Kamehameha Highway and heads south, ultimately discharging near the City comfort station south of the Sunset Beach Fire Station. The project drainage, remaining at or below existing conditions, is a small portion of the existing drainage from the larger area mauka and south of the rural center.

Marine Environment

The nutrient loading projected to the nearshore marine environment has been approximated to increase total nitrogen (TN) by 4.3 percent, possibly bringing the total input at the shoreline from all upgradient sources to a range of 6.8 μM to a maximum of 31.3 μM TN. Correspondingly, the potential increases of total phosphorus (TP) from the project could result in maximum and minimum values at the shoreline of 0.71 μM and 0.37 μM , respectively. These small changes represent less than 1 μM for TN and 0.2 μM for TP, and are likely within the natural variability of the groundwater discharge at the shoreline.

Traffic

The transportation impact analysis report (TIAR) conducted for the rural community commercial center includes traffic to and from the neighboring Foodland grocery store and documented existing traffic levels representative of summer (August 2016) and winter surf competition / school year traffic volumes (November 2016).

According to the TIAR, no transportation infrastructure improvements are planned in the immediate study area. Therefore, existing lane configuration and traffic controls are expected to remain the same. The TIAR included a conservative one-percent annual growth factor, in addition to providing projected increased vehicle trips anticipated from the construction of the rural center. Under traffic engineering standards, cumulative impacts are significant if the addition of a project exacerbates LOS E or F operations. *Section 3.13 Traffic* summarizes anticipated LOS change from A to B under the peak Saturday hour scenario with the rural center at the signalized Kamehameha Highway/ Pūpūkea Road intersection. This is not a significant long-term or cumulative impact.

3.18.2 Potential Secondary Effects

Secondary effects are defined as those caused by the action (project) later in time or farther removed in distance, but are still reasonable foreseeable. These effects are also referred to as indirect effect or indirect impact. For the construction and operation of the rural community commercial center, community members have expressed concern that offsite impacts, including the nearshore environment across the highway from the site, may occur as a result of the project. This EIS has evaluated offsite impacts in the relevant resource section contained in Chapter 3; these impacts are again summarized here, where applicable.

Section 3.5 Groundwater provides an estimate for potential increased nutrients to groundwater and, ultimately, marine waters from the rural center's use of the site. The potential increase in nitrogen and phosphorus from the proposed wastewater treatment system is estimated to be .35 pounds per day (from the existing 8.16 pounds per day flowing through the watershed), and 0.051 pounds per day of Phosphorus (from the existing 0.73 pounds per day flowing through the watershed). This is an increase of 4.3 and 7.0 percent of nitrogen and phosphorus, respectively. Groundwater discharge

from the watershed and the rural center site affects approximately 760-feet of shoreline across Kamehameha Highway from the rural center. The impact of the nutrient increase is described under *Marine Environment*, below.

Section 3.5 Surface Water and Drainage describes the new City and County of Honolulu storm water runoff rules, enacted for the protection of O'ahu's surface and marine waters. The drainage system to be installed for the rural center will reduce surface water volume and slow flow of any storm water discharged to the State DOT-HI drainage system, resulting in a positive impact.

Section 3.7 Marine Environment discussed potential impacts to marine water quality and the marine environment from the increased nutrient loading (described above). Increasing the concentration of TN at the shoreline by 4.3 percent from existing conditions would result in a maximum value of about 31.3 μM and a minimum of 6.8 μM . Correspondingly, these increases in groundwater nutrients from the project would result in maximum and minimum values of TP at the shoreline of 0.71 μM and 0.37 μM , respectively. These small changes are less than 1 μM for TN and 0.2 μM for TP are likely within the natural variability of the groundwater discharge at the shoreline, and do not represent a significant change in the composition of such discharge. The impact is negligible.

Section 3.13 Traffic evaluates the project's impact on the primary controlled intersection in the area (Kamehameha Highway/ Pūpūkea Road). Results of the evaluation show no significant long-term or cumulative impact to traffic related to the project.

3.18.3 Relationship Between Local Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

Narrowing the range of beneficial uses of the environment

The project site is zoned B-1 Neighborhood Business District. The site is specifically and uniquely identified in the North Shore SCP as the designated location for a small cluster of commercial and service businesses to meet the needs of the surrounding residential communities. Moreover, the project proposes modest development of approximately 25 percent of the floor area ratio (FAR) allowed under City ordinance for this property. This development proposal reflects sensitivity to scale and context in keeping with the SCP definition of a Rural Community Commercial Center; associated infrastructure is likewise reduced as it supports a smaller development.

Long-term risks to health and safety

The rural community commercial center is not anticipated to pose risks to health or safety. The potential increased nutrient output to groundwater will be minimal, and pose no significant impact to the down-gradient marine environment. The Urgent Care clinic will provide a new location for medical care in the Pūpūkea-Sunset Beach communities, adding to medical and urgent care choices on the North Shore.

Foreclosure of Future Options

The project promotes reasonable use of the property, and will not foreclose future options.

Trade-offs among short-term and long-term gains and losses

Impacts from construction will occur over the short-term (during the construction period). Potential negative impacts include some increase in noise and dust, and traffic due to construction vehicles.

Positive short-term economic impacts from construction jobs are anticipated. Long-term gains include an estimated 86 full-time jobs, and access to goods and services residents currently travel outside of the region to obtain. The long-term benefits outweigh the relatively short-term impacts during the construction period.

3.18.4 Irreversible and Irrecoverable Commitments of Resources

The project proposes a small-scale retail center of 30,000 square feet adjacent to an existing grocery store. Construction materials and labor during construction are the primary irreversible and irretrievable resources. The demand for drinking water and electricity are within the capacities of existing utilities, and will be offset by use of efficient fixtures and on-site generation of 560,000 kv/yr photovoltaic electricity. Impacts to groundwater and subsequently to the nearby marine environment are disclosed in this EIS and are determined to not be significant (*Section 3.7*). The irreversible and irretrievable commitment of resources should be weighed against the greater access to goods and services including medical care, and additional job opportunities in the Pūpūkea-Sunset Beach communities that may reduce vehicle trips for some area residents.

3.18.5 Adverse Environmental Effects that Cannot be Avoided

As described in *Section 3.5 Groundwater*, disposal of treated wastewater effluent will slightly increase the groundwater concentrations of nitrogen and phosphorus. While this is an effect from the project that cannot be avoided, the probable impact on water quality and the downgradient marine environment from nutrients would likely be undetectable in the marine environment at distances from the shoreline where marine communities occur (*Section 3.7.1 Marine Environment: Probable Impacts and Mitigation Measures*).

3.19 UNRESOLVED ISSUES

This section provides a discussion of the potential unresolved issues associated with the Proposed Action for the Rural Community Commercial Center.

Kamehameha Highway Improvements and Regional Traffic Solutions. Although the rural center does not generate significant traffic impacts, there are traffic congestion problems on Kamehameha Highway along the North Shore. The State DOT is currently conducting a study of establishing a bypass road for the section of highway near Laniākea Beach, about three miles from the site toward Hale'iwa. Traffic is particularly bad along this stretch of highway, as well as Waimea Bay, the Foodland Pūpūkea area, and along the popular surfing beaches of 'Ehukai Beach and Sunset Beach. Traffic volumes continue to grow due to the ambient island-wide traffic growth and increasing visitor attention to the North Shore's towns, beaches and mountain trails. Regional traffic mitigation solutions have been posed, such as establishing beach shuttles with organized public parking at lands in Hale'iwa and Turtle Bay. The timing for implementing such traffic management solutions is undetermined.

4.0

RELATIONSHIP OF PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS FOR THE AFFECTED AREA

4.0 RELATIONSHIP OF PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS FOR THE AFFECTED AREA

4.1	Federal Controls.....	4-1
4.1.1	Coastal Zone Management Act.....	4-2
4.1.2	Title III of the Americans with Disability Act.....	4-2
4.2	State of Hawai‘i Plans and Controls.....	4-3
4.2.1	Environmental Impact Statements, Hawai‘i Revised Statutes Chapter 343.....	4-3
4.2.2	Hawai‘i State Plan (HRS Chapter 226).....	4-3
4.2.3	Hawai‘i State Plan, Hawai‘i Revised Statutes Chapter 226.....	4-4
4.2.4	Hawai‘i 2050 Sustainability Plan.....	4-26
4.2.5	Hawai‘i State Functional Plans.....	4-29
4.2.6	Coastal Zone Management, Hawai‘i Revised Statutes Chapter 205A.....	4-29
4.2.7	Marine Life Conservation Districts – Pūpūkea (HAR Title 13 Chapter 34).....	4-33
4.2.8	Electric Vehicle Parking and Charging.....	4-34
4.2.9	DLNR Makai Watch Program.....	4-34
4.3	City and County of Honolulu Plans, Policies and Controls.....	4-34
4.3.1	Revised Ordinances of Honolulu Chapter 25, Special Management Area.....	4-34
4.3.2	City and County of Honolulu General Plan.....	4-37
4.3.3	North Shore Sustainable Communities Plan.....	4-52
4.3.4	Coastal View Study.....	4-70

An important consideration in evaluating the potential impacts of a proposed action on the environment is how it may conform or conflict with approved or proposed Federal, State, and County land use plans, policies and controls for the affected area. The relationship of the Pūpūkea Rural Commercial Center to the following land use plans, policies and regulatory controls is assessed in this chapter.

4.1 FEDERAL CONTROLS

This section assesses the relationship of the project with primary and applicable Federal regulatory controls, which include the Coastal Zone Management Act and Title III of the Americans with Disabilities Act.

4.1.1 Coastal Zone Management Act

In 1972, the Federal government enacted the Coastal Zone Management Act (CZMA) to effectively manage, use, protect, and develop coastal areas in the U.S. Key goals of the National CZM program include protecting natural resources, managing development in high hazard areas, giving development priority to coastal dependent uses, providing public access for recreation, and coordinating State and Federal actions. Under the CZMA, States are authorized to work in a unified manner with Federal and local governments to develop programs, policies, evaluation criteria, development standards that lend to the effective protection and prudent use of coastal lands and waters. The enforcement authority for the Federal Coastal Management Program (Public Law 104-150, as amended in 1996) has been delegated to the State of Hawai'i under Hawai'i Revised Statutes (HRS) Chapter 205A, Coastal Zone Management (CZM) Program. The Project's consistency with the State CZM Program is described in *Section 4.2.6*.

In 1990, congress enacted the Coastal Zone Act Reauthorization Amendments (CZARA) by adding a new Section 6217 "Protecting Coastal Waters," which requires that each State with an approved coastal zone management program must develop a Coastal Nonpoint Pollution Control Program (CNPCP) to U.S. Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration (NOAA) for approval. The purpose of the program "shall be to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters, working in close conjunction with other State and local authorities". The Hawai'i CNPCP follows a watershed approach, and activities are coordinated through Hawai'i's Implementation Plan for Polluted Runoff Control with consideration for storm water management.

Discussion: *The Pūpūkea Rural Commercial Community is located within the coastal zone, which is defined by the State of Hawai'i as encompassing the entire state. The project improvements are designed to conform to the goals, policies, and objectives of Hawai'i's CZM Program. A full discussion of the Project's compatibility with the guiding regulation for the State of Hawai'i, HRS 205A, is provided in Section 4.2.6. The Project area is within the Special Management Area (SMA) defined by the City and County of Honolulu and will require approval of an SMA permit (Major Use) by the Honolulu City Council as part of the entitlements necessary for the project to proceed. See Chapter 1, Table 1-1, Required Reviews and Permits.*

4.1.2 Title III of the American Disabilities Act

In 1991, the Federal government enacted the ADA to provide equal accessibility for persons with disabilities. The ADA Title III covers businesses and nonprofit service providers that are public accommodations, privately operated entities, privately operated transportation, and commercial facilities. Public accommodations include private entities that own, lease, lease to, or operate facilities such as restaurants and retail stores. Public accommodations must comply with basic nondiscrimination requirements that prohibit exclusion, segregation, and unequal treatment. Businesses must comply with specific requirements related to architectural standards for new and altered buildings; reasonable

modifications to policies, practices, and procedures; effective communication with people with hearing, vision, or speech disabilities; and other access requirements. Additionally, public accommodations must remove barriers in existing buildings where it is easy to do so without much difficulty or expense, given the public accommodation's resources.

Discussion: *The Project improvements that qualify under Title III as public accommodations will adhere to architectural standards for new and altered buildings to be ADA-accessible.*

4.2 STATE OF HAWAII' PLANS AND CONTROLS

This section assesses the relationship of the proposed project to the State's environmental review process; State Land Use District designations; the Hawai'i State Plan; the Hawai'i 2050 Sustainability Plan; the Coastal Zone law HRS Chapter 205A; and State Functional Plans.

4.2.1 Environmental Impact Statements, Hawai'i Revised Statutes Chapter 343

Under HRS Chapter 343, the State legislature found that the quality of humanity's environment is critical to humanity's well being, that humanity's activities have broad and profound effects upon the interrelations of all components of the environment, and that an environmental review process is necessary to integrate the review of environmental concerns with existing planning processes of the State and counties. This process is to alert decision makers to significant environmental effects which may result from the implementation of certain actions. HRS Chapter 343 states that a process of reviewing environmental effects is desirable because environmental consciousness is enhanced, cooperation and coordination are encouraged, and public participation during the review process benefits all parties involved and society as a whole. As such, the State has established a system of environmental review to ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations.

Discussion: *An EIS is required for this project since the project lies within the Special Management Area (SMA) as defined by the City and County of Honolulu; see Section 4.2.6. This EIS has been prepared in compliance with environmental requirements outlined in HRS Chapter 343 and the implementing Hawai'i Administrative Rules (HAR) Chapter 11-200. The EIS Preparation Notice (EISPN) was published by the Office of Environmental Quality Control in its Environmental Notice on April 23, 2017. Comment letters received during the EISPN review period and corresponding response letters are included in Chapter 6. The list of agencies and individual parties consulted during the preparation of the EIS is also contained in Chapter 6.*

Revised Ordinances of Honolulu (ROH), Section 25-3.3(c)(1) states that any proposed development within the special management area which requires a special management area use permit be subject to an assessment by the agency in accordance with the procedural steps set forth in HRS Chapter 343. See Section 4.3.1 for consistency with the ROH.

4.2.2 Land Use Commission, Hawai'i Revised Statutes Chapter 205

HRS Chapter 205, Land Use Commission, establishes the State Land Use Commission as well as defines the four major land use districts in which all lands in the State of Hawai'i are classified. These districts include the following: Urban, Rural, Agricultural, or Conservation. Standards for determining the boundaries for each district and the allowable uses and activities are defined in statute.

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Discussion: The Pūpūkea Rural Community Commercial Center site is within the State Land Use Urban District. The Urban District generally includes lands characterized by “city-like” concentrations of people, structures and services, and also includes vacant areas for future development. Under HRS 205-2(4): In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county. HRS 205-2(4)(b) states: Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated. The Project’s compliance with the relevant County plans is discussed in Section 4.3. The proposed use of the site is consistent with the Urban District and corresponding State Land Use regulations.

4.2.3 Hawai‘i State Plan, Hawai‘i Revised Statutes Chapter 226

In 1978, the Hawai‘i State Legislature found a need to improve the planning process in the State, to increase the effectiveness of government and private actions, to improve the coordination among different agencies and levels of government, and to provide for the wise use of Hawai‘i’s resources to guide the future development of the State. HRS Chapter 226, Hawai‘i State Planning Act, guides the future long-range development of the State and identifies the goals, objectives, policies, and priorities for the State; provides a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; improves coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities; and establishes a system for plan formulation and program coordination to provide for an integration of all major State and County activities.

Table 4-1 assesses and evaluates how the Pūpūkea Rural Commercial Center supports the Hawai‘i State Plan, as promulgated under HRS Chapter 226. State Plan goals beyond the scope of the project are noted as “N/A.”

Table 4-1 Hawai‘i State Plan, Hawai‘i Revised Statutes, Chapter 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Section 226-4: State Goals.			
In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:			
(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i’s present and future generations	X		
(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.	X		
(3) Physical, social and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.	X		
Discussion: The project supports the goals of the State of Hawai‘i to achieve a strong, viable economy, albeit at a small scale. The rural center will include a range of goods and services to serve the needs of residents and visitors in the Pūpūkea, Waimea, and Kawailoa communities.			
Section 226-5: Objective and Policies for Population.			
(A) It shall be the objective in planning for the State’s population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter;			
(B) To achieve the population objective, it shall be the policy of this State to:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawai‘i’s people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county.			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.			X
(3) Promote increased opportunities for Hawai'i's people to pursue their socioeconomic aspirations throughout the islands.	X		
(4) Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.			X
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among states, provided that such actions do not prevent the reunion of immediate family members.			X
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			X
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.			X
<i>Discussion: The project will not add to Hawai'i's residential population growth. The rural community commercial center will add localized employment opportunities for the Pūpūkea, Waimea, and Kawaihoa communities. The State's research activities on population; federal coordination and assistance for immigrants; and development of land and water resources are not applicable to the project.</i>			
Section 226-6: Objectives and Policies for the Economy in General.			
(A) Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.	X		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	X		
(B) To achieve the general economic objectives, it shall be the policy of this State to:			
(1) Promote and encourage entrepreneurship within Hawaii by residents and nonresidents of the State.	X		
(2) Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			X
(3) Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people.	X		
(4) Transform and maintain Hawai'i as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.			X
(5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawai'i.			X
(6) Seek broader outlets for new or expanded Hawai'i business investments.			X
(7) Expand existing markets and penetrate new markets for Hawai'i's products and services.			X
(8) Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.			X
(9) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.			X
(10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small scale producers, manufacturers, and distributors.	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(11) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			X
(12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawai'i.			X
(13) Foster greater cooperation and coordination between the government and private sectors in developing Hawai'i's employment and economic growth opportunities.			X
(14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			X
(15) Maintain acceptable working conditions and standards for Hawai'i's workers.	X		
(16) Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures.	X		
(17) Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy.	X		
(18) Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy, particularly with respect to emerging industries in science and technology.			X
(19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.	X		
(20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.			X
(21) Foster a business climate in Hawai'i - including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.	X		
<i>Discussion: The project will create space for local businesses to serve the surrounding communities of Pūpūkea, Waimea, and Kawaioloa, and its visitors. The businesses present in the rural center will also provide employment opportunities for residents. Further, Hawai'i's business climate will be served by granting permits to proceed with the project, which will comply with State and City plans and regulations for rural commercial-scale development on the appropriately zoned site.</i>			
Section 226-7 Objectives and Policies for the Economy – Agriculture.			
(A) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawai'i's sugar and pineapple industries.			X
(2) Growth and development of diversified agriculture throughout the State.			X
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.			X
(B) To achieve the agriculture objectives, it shall be the policy of this State to:			
(1) Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy.			X
(2) Encourage agriculture by making best use of natural resources.			X
(3) Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture.			X
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			X
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.			X
(6) Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries.			X
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's food producers and consumers in the State, nation, and world.			X

Draft Environmental Impact Statement

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226		S	N/S	N/A
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(8)	Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			X
(9)	Enhance agricultural growth by providing public incentives and encouraging private initiatives.			X
(10)	Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			X
(11)	Increase the attractiveness and opportunities for an agricultural education and livelihood.			X
(12)	In addition to the State's priority on food, expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			X
(13)	Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency, including the increased purchase and use of Hawaii-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D104.			X
(14)	Promote and assist in the establishment of sound financial programs for diversified agriculture.			X
(15)	Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			X
(16)	Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses.			X
(17)	Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māi'a, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu.			X
(18)	Increase and develop small-scale farms.			X
Discussion: State policies for the economy related to agriculture are not directly applicable to the project.				
Section 226-8 Objective and Policies for the Economy - Visitor Industry.				
(A) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy.				
(B) To achieve the visitor industry objective, it shall be the policy of this State to:				
(1)	Support and assist in the promotion of Hawai'i's visitor attractions and facilities.			X
(2)	Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.			X
(3)	Improve the quality of existing visitor destination areas by utilizing Hawai'i's strengths in science and technology.			X
(4)	Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			X
(5)	Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people.			X
(6)	Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry.			X
(7)	Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.			X
(8)	Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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<i>Discussion:</i> While the project will play a role in supporting residents and visitors to the famed North Shore by providing goods and services within the Pūpūkea-Waimea-Kawailoa communities, the project itself is not promoting growth in the visitor industry. The rural center will include services and shops that cater to the surrounding residential communities as well as visitors and residents from outside the immediate area, in keeping with the guidance of the North Shore Sustainable Communities Plan.			
Section 226-9 Objective and Policies for the Economy - Federal Expenditures.			
(A) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy.			
(B) To achieve the federal expenditures objective, it shall be the policy of this State to:			
(1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment;			X
(2) Promote Hawai'i's supportive role in national defense, in a manner consistent with Hawaii's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaii's economy;			X
(3) Promote the development of federally supported activities in Hawai'i that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment;			X
(4) Increase opportunities for entry and advancement of Hawai'i's people into federal government service;			X
(5) Promote federal use of local commodities, services, and facilities available in Hawai'i;			X
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i; and			X
(7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.			X
<i>Discussion:</i> State policies related to Federal Expenditure are not directly applicable to the project.			
Section 226-10 Objective and Policies for the Economy - Potential Growth Activities.			
(A) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawai'i's economic base.			
(B) To achieve the potential growth activity objective, it shall be the policy of this State to:			
(1) Facilitate investment and employment in economic activities that have the potential to expand and diversify Hawai'i's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors;			X
(2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawaii through the export of services or products or substitution of imported services or products;			X
(3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements;			X
(4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity;			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus;			X
(6) Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people;			X
(7) Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;			X
(8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, and underground resources and solid waste;			X
(9) Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new economic activities into the State;			X
(10) Provide public incentives and encourage private initiative to attract new industries that best support Hawai'i's social, economic, physical, and environmental objectives;			X
(11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			X
(12) Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i;			X
(13) Foster a broader public recognition and understanding of the potential benefits of new, growth-oriented industry in Hawai'i;			X
(14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai'i's social, economic, physical, and environmental objectives;			X
(15) Increase research and development of businesses and services in the telecommunications and information industries;			X
(16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and			X
(17) Recognize and promote health care and health care information technology as growth industries.			X
<i>Discussion:</i> The project will meet the demand for services rather than create new growth. The policies related to federal expenditures for growth activities are not directly applicable to the project.			
Section 226-10.5 Objectives and Policies for the Economy - Information Industry.			
(A) Planning for the State's economy with regard to the telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawaii as a leader in broadband and wireless communications and applications in the Pacific Region.			
(B) To achieve the information industry objective, it shall be the policy of this State to:			
(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawaii and between Hawaii and the world, and make high speed communication available to all residents and businesses in Hawai'i;			X
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth and innovation in Hawai'i's economy;			X
(3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i;			X
(4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawaii, using technology to communicate with their headquarters, offices, or customers located out-of-state;			X

Draft Environmental Impact Statement

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226	S	N/S	N/A
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(5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well- designed information industry;			X
(6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people;			X
(7) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;			X
(8) Foster a recognition of the contribution of the information industry to Hawai'i's economy; and			X
(9) Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.			X
Discussion: State policies related to the economy's information industry are not directly applicable to the project.			
Section 226-11 Objectives and Policies for the Physical Environment - Land-based, Shoreline, and Marine Resources.			
(A) Planning for the State's physical environment with regard to land-based, shoreline and marine resources shall be directed towards achievement of the following objectives:			
(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.	X		
(2) Effective protection of Hawai'i's unique and fragile environmental resources.	X		
(B) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:			
(1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.	X		
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	X		
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	X		
(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.	X		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			X
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.	X		
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			X
(8) Pursue compatible relationships among activities, facilities and natural resources.	X		
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.	X		
Discussion: As discussed in Sections 3.5, 3.6, and 3.7 of this document, the project design and operations will support the objectives and policies for the protection of land-based, shoreline, and marine resources. The project is cognizant of the concerns for wastewater collection, treatment, and disposal. Finding of this EIS show increased storm water retention on the proposed project site, with reduced storm water runoff. Nutrient effects to shallow groundwater from the wastewater system are shown to be minimal, and likely to be within the range of natural variability of groundwater discharge to the nearshore marine waters.			
Section 226-12 Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources.			
(A) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.			
(B) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:			
(1) Promote the preservation and restoration of significant natural and historic resources.	X		
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.	X		

Draft Environmental Impact Statement

Table 4-1 Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226			
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(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	X		
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.	X		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		
Discussion: An Archaeological Assessment and a Cultural Impact Assessment were conducted for the project. No archaeological features were identified. The State Historic Preservation Division reviewed the Archaeological Assessment report and issued a letter acknowledging its acceptance of the report, in accordance with HAR §13-276-5.			
The design of the rural community commercial center will complement the North Shore character and the scenic view planes of the area. The project will meet the height and setback requirements for B-1 Neighborhood Business zoning designation, and will be landscaped with tropical and native plant species.			
Section 226-13 Objectives and Policies for the Physical Environment - Land, Air, and Water Quality.			
(A) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:			
(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.	X		
(2) Greater public awareness and appreciation of Hawai'i's environmental resources.	X		
(B) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:			
(1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.	X		
(2) Promote the proper management of Hawai'i's land and water resources.	X		
(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters.	X		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.	X		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	X		
(6) Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.	X		
(7) Encourage urban developments in close proximity to existing services and facilities.	X		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.	X		
Discussion: A biological assessment, surface and groundwater resources study, and marine water quality assessment were conducted for the project site. No rare, endangered, or threatened species are present on the project site. The rural center will integrate native plant species into the landscape design.			
The EIS contains analyses of short-term and long-term affects on land, water and air resources; no significant impacts are anticipated to the areas natural resources.			
Section 226-14 Objective and Policies for Facility Systems - In General.			
(A) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.			
(B) To achieve the general facility systems objective, it shall be the policy of this State to:			
(1) Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	X		
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.			X
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.			X

Draft Environmental Impact Statement

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(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.	X		
Discussion: <i>The project supports the objectives and policies for facility systems. Off-site and on-site improvements to surrounding facility systems (water, wastewater, roadways, solid waste, power, and telecommunications) will be coordinated with the appropriate State and County agencies or private utility companies.</i>			
226-15 Objectives and Policies for Facility Systems - Solid and Liquid Wastes.			
(A) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	X		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	X		
(B) To achieve solid and liquid waste objectives, it shall be the policy of this State to:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.	X		
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	X		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			X
Discussion: <i>The project's sensitivity to the waste stream from commercial and retail tenants is reflected in its solid waste management and design of its wastewater system. Solid waste and wastewater disposal systems will be efficiently designed to minimize impacts on existing solid and liquid waste facilities.</i>			
226-16 Objective and Policies for Facility Systems - Water.			
(A) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.			
(B) To achieve the facility systems water objective, it shall be the policy of this State to:			
(1) Coordinate development of land use activities with existing and potential water supply.	X		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.			X
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.	X		
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.			X
(5) Support water supply services to areas experiencing critical water problems.			X
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.	X		
Discussion: <i>The Board of Water Supply has determined that its existing water system is adequate to accommodate and supply project demand. Low-flow plumbing fixtures will be utilized.</i>			
226-17 Objectives and Policies for Facility Systems - Transportation.			
(A) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.	X		
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.	X		
(B) To achieve the transportation objectives, it shall be the policy of this State to:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;			X
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;	X		
(4) Provide for improved accessibility to shipping, docking, and storage facilities;	X		
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;	X		
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;	X		
(7) Encourage a variety of carriers to offer increased opportunities and advantages to inter-island movement of people and goods;			X
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			X
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;	X		
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment;	X		
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;	X		
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and	X		
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.	X		
<i>Discussion: As discussed in Section 3.13 of this document, 2021 baseline traffic without the project compared with 2021 traffic with the project shows no significant impacts to traffic. Based on significance criteria provided by HDOT, the project is not anticipated to result in significant impacts to the surrounding roadway network. While the project will add traffic to Kamehameha Highway and to Pūpūkea Road, the existing and new roadway capacity will allow the addition of vehicle trips to these roadways without substantially increasing travel times and delays for existing users of Kamehameha Highway.</i>			
226-18 Objectives and Policies for Facility Systems - Energy.			
(A) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			X
(2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation;			X
(3) Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems;			X
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use, and	X		
(5) Utility models that make the social and financial interests of Hawaii's utility customers a priority.			X
(B) To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable energy services to accommodate demand.			
(C) To further achieve the energy objectives, it shall be the policy of this State to:			
(1) Support research and development as well as promote the use of renewable energy sources;			X
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			X
(4) Promote all cost-effective conservation of power and fuel supplies through measures including: (A) Development of cost-effective demand-side management programs; (B) Education; and (C) Adoption of energy-efficient practices and technologies; (D) Increasing energy efficiency and decreasing energy use in public infrastructure;	X		
(5) Ensure to the extent that new supply-side resources are needed, that the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies;			X
(6) Support research, development, and demonstration and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	X		
(7) Promote alternate fuels and energy efficiency;	X		
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications;	X		
(9) Support actions that reduce, avoid, or sequester Hawai'i's greenhouse gas emissions through agriculture and forestry initiatives;			X
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects;			X
(11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy source; and			X
(12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawaii.			X
Discussion: <i>The rural center supports the State's objectives and policies for facility systems regarding energy. The rear parking area will include photovoltaic panels to generate renewable solar energy for the project.</i>			
226-18.5 Objectives and Policies for Facility Systems - Telecommunications.			
(A) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.			
(B) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.			
(C) To further achieve the telecommunications objective, it shall be the policy of this State to:			
(1) Facilitate research and development of telecommunications systems and resources;			X
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			X
(3) Promote efficient management and use of existing telecommunications systems and services; and	X		
(4) Facilitate the development of education and training of telecommunications personnel.			X
Discussion: <i>These policies apply more directly to government and are beyond the influence of this small project. The objectives and policies for facility systems telecommunications are not applicable to the project.</i>			
226-19 Objectives and Policies for Socio-Cultural Advancement - Housing.			
(A) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			
(1) Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawai'i's population.			
(2) The orderly development of residential areas sensitive to community needs and other land uses.			X
(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.			X
(B) To achieve the housing objectives, it shall be the policy of this State to:			
(1) Effectively accommodate the housing needs of Hawai'i's people.			X
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.			X
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.			X
(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.			X
(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.			X
(6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing.			X
(7) Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.			X
(8) Promote research and development of methods to reduce the cost of housing construction in Hawai'i.			X
Discussion: Residential development, such as new condominiums or conversion, is not proposed in this rural community commercial project. As such, the objectives and policies for housing are not applicable to the project.			
226-20 Objectives and Policies for Socio-Cultural Advancement - Health.			
(A) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.	X		
(2) Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.	X		
(3) Elimination of health disparities by identifying and addressing social determinants of health.			X
(B) To achieve the health objectives, it shall be the policy of this State to:			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			X
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.			X
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			X
(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.			X
(5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.	X		
(6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.			X
(7) Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data.			
<i>Discussion:</i> The project is compliant with Department of Health requirements, though the project in and of itself does not have goals to advance the socio-cultural health referred to in this State policy. Among the tenant mix are plans for an urgent care facility to serve the medical needs of the remote North Shore communities.			
226-21 Objective and Policies for Socio-Cultural Advancement - Education.			
(A) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.			
(B) To achieve the education objective, it shall be the policy of this State to:			
(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.			X
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.			X
(3) Provide appropriate educational opportunities for groups with special needs.			X
(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.	X		
(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.			X
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			X
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.			X
(8) Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.			X
(9) Support research programs and activities that enhance the education programs of the State.			X
<i>Discussion:</i> The project's objectives and policies do not focus on education as outlined in this State policy.			
226-22 Objective and Policies for Socio-Cultural Advancement - Social Services.			
(A) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.			
(B) To achieve the social service objective, it shall be the policy of the State to:			
(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.			X
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.			X
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawai'i's communities.			X
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.			X
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.			X
<i>Discussion:</i> State policies related to Social Services are not directly applicable to the project.			
226-23 Objective and Policies for Socio-Cultural Advancement - Leisure.			
(A) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			
(B) To achieve the leisure objective, it shall be the policy of this State to:			
(1) Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.	X		
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.	X		
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.	X		
(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.	X		
(5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.	X		
(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.	X		
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people.	X		
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.	X		
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts.	X		
(10) Assure adequate access to significant natural and cultural resources in public ownership.			X
<i>Discussion:</i> The rural community commercial center is located in the center of Pūpūkea, and will provide a range of leisure and surf related shops and services. The project also supports cultural and creative arts and plans to incorporate community gathering events into the open space fronting Kamehameha Highway.			
226-24 Objective and Policies for Socio-Cultural Advancement - Individual Rights and Personal Well-Being			
(A) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.			
(B) To achieve the individual rights and personal well-being objective, it shall be the policy of this State to:			
(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.			X
(2) Uphold and protect the national and state constitutional rights of every individual.	X		
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.			X
(4) Ensure equal opportunities for individual participation in society.	X		
<i>Discussion:</i> The rural community commercial center supports the State's objectives and policies for socio-cultural advancement with regards to individual rights and personal well-being. The policies related to providing protection services from criminal acts and assuring access to legal assistance and consumer protection are primarily the State's responsibility, and as such is not applicable to the project.			

Draft Environmental Impact Statement

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	S	N/S	N/A
226-25 Objective and Policies for Socio-Cultural Advancement - Culture.			
(A) Planning for the State's socio- cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.			
(B) To achieve the culture objective, it shall be the policy of this State to:			
(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.	X		
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.	X		
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.	X		
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.	X		
<i>Discussion: The project supports the State's objectives and policies for socio-cultural advancement with regards to culture. The ethnic and cultural heritage of the Pūpūkea, Waimea, and Kawaihoa region was examined in the CIA for this project.</i>			
226-26 Objectives and Policies for Socio-Cultural Advancement - Public Safety.			
(A) Planning for the State's socio- cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			
(1) Assurance of public safety and adequate protection of life and property for all people.	X		
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.	X		
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.	X		
(B) To achieve the public safety objectives, it shall be the policy of this State to:			
(1) Ensure that public safety programs are effective and responsive to community needs.			X
(2) Encourage increased community awareness and participation in public safety programs.			X
(C) To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to:			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			X
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			X
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			X
(D) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:			
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.			X
(2) Enhance the coordination between emergency management programs throughout the State.			X
<i>Discussion: The project will not adversely affect police, fire, or emergency services to the communities of Pūpūkea, Waimea, and Kawaihoa. The policies related to ensuring the provision of public safety and criminal justice programs are the responsibility of the State and City and as such are not applicable to the project.</i>			
226-27 Objectives and Policies for Socio-Cultural Advancement - Government.			
(A) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			
(1) Efficient, effective, and responsive government services at all levels in the State.			X

Draft Environmental Impact Statement

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(2) Fiscal integrity, responsibility, and efficiency in the state government and county governments.			X
(B) To achieve the government objectives, it shall be the policy of this State to:			
(1) Provide for necessary public goods and services not assumed by the private sector.			X
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.			X
(3) Minimize the size of government to that necessary to be effective.			X
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i.			X
(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.			X
(6) Provide for a balanced fiscal budget.			X
(7) Improve the fiscal budgeting and management system of the State.			X
(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.			X
<i>Discussion:</i> Policies related to the operation of government are the responsibility of the State and are not directly applicable to the project.			
Hawai'i State Plan - HRS Ch. 226 - Part III. Priority Guideline			
226-101 Purpose.			
The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
226-102 Overall Direction.			
The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education, principles of sustainability, and climate change adaption.			
226-103 Economic Priority Guidelines.			
(A) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:			
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.			
(a) Encourage investments which:			
(i) Reflect long term commitments to the State;	X		
(ii) Rely on economic linkages within the local economy;	X		
(iii) Diversify the economy;	X		
(iv) Reinvest in the local economy;	X		
(v) Are sensitive to community needs and priorities; and	X		
(vi) Demonstrate a commitment to provide management opportunities to Hawai'i residents.	X		
(b) Encourage investments in innovative activities that have a nexus to the State, such as:			
(i) Present or former residents acting as entrepreneurs or principals;	X		
(ii) Academic support from an institution of higher education in Hawaii;			X
(iii) Investment interest from Hawaii residents;			X
(iv) Resources unique to Hawaii that are required for innovative activity; and			X
(v) Complementary or supportive industries or government programs or projects.			X
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			X
(3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(4) Seek to ensure that state business tax, labor laws, and administrative policies are equitable, rational, and predictable.			X
(5) Streamline the building and development permit and review process, and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where public health, safety and welfare would not be adversely affected.			X
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors.			X
(7) Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States.			X
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			
(a) An industry that can take advantage of Hawai'i's unique location and available physical and human resources.	X		
(b) A clean industry that would have minimal adverse effects on Hawai'i's environment.			X
(c) An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs at all levels of employment.	X		
(d) An industry that would provide reasonable income and steady employment.	X		
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business.			X
(10) Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions:			
(A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.			X
(B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.			X
(C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			X
(D) Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents.	X		
(E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.			X
(F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.			X
(B) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawai'i's residents and visitors.	X		
(2) Encourage the development and maintenance of well- designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			X
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.			X
(4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.	X		
(5) Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.			X
(6) Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.	X		

Draft Environmental Impact Statement

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(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			X
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.	X		
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			X
(C) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			X
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.			X
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			X
(D) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			
(1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.			X
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			X
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			X
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			X
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community.			X
(6) Seek favorable freight rates for Hawai'i's agricultural products from inter-island and overseas transportation operators.			X
(7) Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.			X
(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			X
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			X
(10) Support the continuation of land currently in use for diversified agriculture.			X
(11) Encourage residents and visitors to support Hawaii's farmers by purchasing locally grown food and food products.			X
(E) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.	X		
(2) Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.	X		
(3) Increase the support for research and development of economically feasible alternative water sources.			X
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.			X
(F) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration, and commercialization of renewable energy sources.	X		
(2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.			X
(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.			X
(G) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network that will serve as the catalyst for establishing a viable information industry in Hawai'i.			X
(2) Encourage the development of services such as financial data processing, products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			X
(3) Encourage the development of small businesses in the information field such as software development, the development of new information systems and peripherals, data conversion and data entry services, and home or cottage services such as computer programming, secretarial, and accounting services.			X
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.			X
(5) Encourage research activities, including legal research in the information and telecommunications fields.			X
(6) Support promotional activities to market Hawai'i's information industry services.			X
(7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.			X
Discussion: <i>The project supports the State's economic priority guidelines as it relates to promoting locally owned and operated businesses. The project will also serve visitors to the island, and strongly supports the promotion of the Aloha spirit and law enforcement that will provide safe environments for residents and visitors alike. The design and operations of the rural community commercial center also support the priority guidelines for water and energy use. Photovoltaic panels will be installed in the rear parking lot to provide a renewable energy source for the shops, amounting to approximately 526,000 kWh per year.</i>			
226-104 Population Growth and Land Resources Priority Guidelines.			
(A) Priority guidelines to effect desired statewide growth and distribution:			
(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawai'i's people.			X
(2) Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people.			X
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.			X
(4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			X
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.			X
(6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.			X
(7) Support the development of high technology parks on the neighbor islands.			X
(B) Priority guidelines for regional growth distribution and land resource utilization:			
(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	X		

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.			X
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.			X
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			X
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			X
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.	X		
(7) Pursue rehabilitation of appropriate urban areas.	X		
(8) Support the redevelopment of Kaka'ako into a viable residential, industrial, and commercial community.			X
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	X		
(10) Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.			X
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.	X		
(12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	X		
(13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.	X		
<i>Discussion: The project supports the State's population growth and land resources priority guidelines. The project site is designated as Urban in the State Land Use Ordinance, and is identified as Rural Community Commercial Center lands in the City's North Shore SCP. The rural community commercial center will develop the subject parcels to rehabilitate the existing rural commercial area for goods and services complementary to Foodland grocery store for the residents and visitors to the North Shore. The project design and scale strives to retain the rural characteristics of the North Shore, and is sensitive to preserving existing scenic views as outlined in the City's North Shore Sustainable Communities Plan (NSSCP). The owners of the project, Hanapohaku, are committed to sustaining the environmental health of the Pūpūkea watershed through appropriate LID Best Management Practices and wastewater minimization.</i>			
226-105 Crime and Criminal Justice Priority Guidelines.			
(A) Priority Guidelines in the Area of Crime and Criminal Justice:			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			X
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			X
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			X
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			X
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			X
Discussion: Policies related to public safety are primarily the responsibility of government agencies and are not directly applicable to the project.			
226-106 Affordable Housing Priority Guidelines.			
(A) Priority guidelines for the provision of affordable housing:			
(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.			X
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			X
(3) Improve information and analysis relative to land availability and suitability for housing.			X
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's low- and moderate-income households, gap-group households, and residents with special needs.			X
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner- occupied housing.			X
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.			X
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			X
(8) Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i.			X
Discussion: State policies related to affordable housing are primarily the responsibility of government agencies and are not directly applicable to the project.			
226-107 Quality Education Priority Guidelines.			
(A) Priority guidelines to promote quality education:			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;			X
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;			X
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force;			X
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;			X
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:			X
(a) The electronic exchange of information;			X
(b) Statewide electronic mail;			X
(c) Access to the Internet;			X
Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			X
(6) Pursue the establishment of Hawaii's public and private universities and colleges as research and training centers of the Pacific;			X
(7) Develop resources and programs for early childhood education;			X
(8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			X
(9) Strengthen and expand educational programs and services for students with special needs.			X
Discussion: State policies related to quality education are primarily the responsibility of State agencies and are not directly applicable to the project.			

Draft Environmental Impact Statement

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226-108 Sustainability.			
(A) Priority guidelines to promote sustainability shall include:			
(1) Encourage balanced economic, social, community, and environmental priorities;	X		
(2) Encourage planning that respects and promotes living within the natural resources and limits of the State;	X		
(3) Promote a diversified and dynamic economy;	X		
(4) Encourage respect for the host culture;	X		
(5) Promote decisions based on meeting the needs of the present without compromising the needs of future generations;	X		
(6) Consider the principles of the ahupua'a system; and	X		
(7) Emphasize that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i.	X		
<i>Discussion: Due to project's guiding principles of community, environmental protection, local entrepreneurship, and sustainability and its proximity to Pūpūkea Beach Park, the project strongly supports the State's priority guidelines related to sustainability through a number of its planning and design elements.</i>			
226-109 Climate Change Adaptation Priority Guidelines.			
(A) Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall:			
(1) Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities;	X		
(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;	X		
(3) Invest in continued monitoring and research of Hawaii's climate and the impacts of climate change on the State;	X		
(4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;	X		
(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;	X		
(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;	X		
(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;	X		
(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;	X		
(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and			
(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.	X		
<i>Discussion: Climate change affects everything in the State of Hawai'i, including the environment and its inhabitants. The project supports the State's priority guidelines for Climate Change Adaptation. The project is utilizing photovoltaic panels to take advantage of the daylight hours to produce renewable energy for the project and reduce the project's demand on fossil fuels.</i>			

4.2.4 Hawai‘i 2050 Sustainability Plan

In 2005, the Hawai‘i State Legislature determined that the State of Hawai‘i should be responsible not only for resolving current public needs, but provide guidance to assure that the preferred vision and goals for Hawai‘i’s future are met. Recognizing that the present generation must address sustainability issues essential to maintaining Hawai‘i’s quality of life for future generations, the State Legislature enacted Act 8 (2005), which provided for the development of a Sustainability Plan to address the vital needs of Hawai‘i through the year 2050. Act 8 then established the Hawai‘i 2050 Sustainability Task Force to review the Hawai‘i State Plan and the State’s comprehensive planning system and promulgated the creation of the Hawai‘i 2050 Sustainability Plan (Hawai‘i 2050). Hawai‘i 2050 has as its main tenants a respect for culture, character, beauty, and history of the state’s island communities; balance among economic, community, and environmental priorities; and an effort to meet the needs of the present without compromising the ability of future generations to meet their own needs. Hawai‘i 2050 defines five goals intended to lead toward a sustainable future for Hawai‘i. These goals are accompanied by specific strategic actions for implementation and indicators to measure the success or failure of these actions over time. *Table 4-2* provides an evaluation and summary of the project’s compatibility with Hawai‘i 2050.

Table 4-2 Hawai‘i 2050 Sustainability Plan (SB2532 HD1, 2010 Legislative Session)	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
The State’s first definition of sustainability:			
A. Hawai‘i that achieves the following:			
<ul style="list-style-type: none"> • Respects the culture, character, beauty and history of our state’s island communities • Strikes a balance among economic, social and community, and environmental priorities • Meets the needs of the present without compromising the ability of future generations to meet their own needs 			
GOAL 1: Living sustainably is part of our daily practice in Hawai‘i.			
Develop a sustainability ethic.	X		
<i>Integrate sustainability principles and practices into public and private school curricula.</i>			X
<i>Develop a statewide marketing and public awareness campaign on sustainability principles and practices.</i>			X
<i>Conduct ongoing forums and cross-sector dialogue to promote collaboration and progress on achieving Hawai‘i’s sustainability goals.</i>			X
<i>Continually monitor trends and conditions in Hawai‘i’s economy, society and natural systems.</i>			X
Discussion: <i>Providing additional services and goods in the Pūpūkea, Waimea, and Kawaihoa communities will allow residents to walk or bike, or reduce drive time, and to “shop local.” A number of sustainable design elements are being incorporated into the project, including open space, landscape preservation, stormwater management, utilization of green building materials, recycling, water conservation, energy conservation, and renewable energy generation.</i>			
GOAL 2: Our diversified and globally competitive economy enables us to meaningfully live, work and play in Hawai‘i.			
Develop a more diverse and resilient economy.	X		
<i>Provide incentives that foster sustainability-related industries, which include, but aren’t limited to renewable energy, innovation and science-based industries, and environmental technologies.</i>			X
<i>Increase production and consumption of local foods and products, particularly agricultural products.</i>	X		
<i>Increase commercialization and technology transfer between post-secondary institutions and the business sector.</i>			X
Support the building blocks for economic stability and sustainability.	X		

Draft Environmental Impact Statement

Table 4-2 Hawai'i 2050 Sustainability Plan (SB2532 HD1, 2010 Legislative Session)	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
<i>Recognize and support established industries such as the visitor industry, military, construction and agriculture as strong components of the Hawai'i economy.</i>	X		
<i>Provide incentives for industries to operate in more sustainable ways.</i>			X
<i>Attract local and outside capital and investments in Hawai'i's economic activities.</i>	X		
<i>Reduce regulations and lower the cost of running a business.</i>			X
Increase the competitiveness of Hawai'i's workforce.	X		
<i>Invest in and improve our public education system to provide for a skilled workforce.</i>			X
<i>Create incentives and opportunities for workforce skills upgrade training programs, including the availability of remedial education programs.</i>			X
<i>Increase student enrollment in post-secondary educational programs.</i>			X
<i>Adopt living wage guidelines and measurements.</i>			X
Identify, prioritize and fund infrastructure "crisis points" that need fixing.			X
<i>Discussion: The project supports the State's goal to diversify the local economy to enable residents to meaningfully live, work and play in Hawai'i. The project will provide a range of locally owned businesses that will expand employment opportunities for the region, while also develop a stronger and more sustainable economic base in the North Shore.</i>			
GOAL 3: Our natural resources are responsibly and respectfully used, replenished and preserved for future generations.			
Reduce reliance on fossil (carbon-based) fuels.	X		
<i>Expand renewable energy opportunities.</i>	X		
<i>Increase energy efficiency in private and public buildings, including retrofitting existing buildings.</i>	X		
<i>Improve energy efficiencies and options in transportation.</i>	X		
<i>Encourage the production and use of locally produced bio-fuels.</i>			X
<i>Adopt building codes that encourage "green building" technology.</i>			X
<i>Encourage all government agencies to adopt sustainable practices, including purchasing hybrid cars, buying biodegradable products, and mandating recycling.</i>			X
Conserve water and ensure adequate water supply.	X		
<i>Reduce water consumption by means of education and incentives.</i>	X		
<i>Encourage greater production and use of recycled water.</i>	X		
<i>Continually review water-conserving technologies for possible incorporation in county building codes.</i>			X
<i>Encourage price structures for water use that furthers conservation.</i>			X
<i>Require water conservation plans from large private users.</i>			X
Increase recycling, reuse and waste reduction strategies.	X		
Provide greater protection for air, and land-, fresh water- and ocean-based habitats.	X		
<i>Strengthen enforcement of habitat management.</i>			X
<i>Fund public and private conservation education.</i>			X
<i>Improve management of protected watershed areas.</i>			X
<i>Incorporate the values and philosophy of the ahupua'a resource management system as appropriate.</i>			X
<i>Establish funding for invasive species control and native ecosystems protection.</i>			X
Conserve agricultural, open space and conservation lands and resources.			X
<i>Create compact patterns of urban development.</i>	X		
<i>Encourage "smart growth" concepts in land use and community planning.</i>	X		
Research and strengthen management initiatives to respond to rising sea levels, coastal hazards, erosion and other natural hazards.			X
Develop a comprehensive environmental mapping and measurement system to evaluate the overall health and status of Hawai'i's natural ecosystems.			X

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<p align="center">Table 4-2 Hawai'i 2050 Sustainability Plan (SB2532 HD1, 2010 Legislative Session)</p> <p align="center">S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p><i>Discussion:</i> The project supports the State's goal to use natural resources respectfully and responsibly. Section 3.4 through 3.7 of the EIS evaluate potential project impacts on natural resources on and around the project site. As identified in Section 3.16 Infrastructure, the rural community commercial center integrates sustainable features in its design and will promote recycling and waste minimization in its operation. Power generation from renewable solar energy on-site will offset fossil fuel-powered electricity from the utility.</p>			
<p>GOAL 4: Our community is strong, healthy, vibrant and nurturing, providing safety nets for those in need.</p>			
<p>Strengthen social safety nets.</p>			X
<p>Increase affordable housing opportunities for households up to 140% of median income.</p>			X
<p>Ensure access to affordable health care for all residents.</p>			X
<p>Reduce crime and violence.</p>			X
<p>Provide access to elderly housing, care-giving and other long-term care services.</p>			X
<p>Invest in greater prevention and treatment of those suffering from substance abuse and mental illness.</p>			X
<p>Increase awareness of and competency in financial literacy and asset building.</p>			X
<p>Strengthen the nonprofit sector, philanthropy and volunteerism.</p>			X
<p>Ensure that persons with disabilities are afforded equal opportunity to participate & excel in all aspects of community life.</p>			X
<p>Provide after-school and extra-curricular programs to enable Hawai'i's youth to broaden their life experiences.</p>			X
<p>Improve public transportation infrastructure and alternatives.</p>			X
<p><i>Reduce traffic congestion.</i></p>			X
<p><i>Encourage and provide incentives for telecommuting.</i></p>			X
<p><i>Increase and improve bicycle and pedestrian facilities, including multi-use pathways.</i></p>			X
<p>Strengthen public education.</p>			X
<p><i>Support parenting, educational and financial literacy initiatives that span early childhood through lifelong learning.</i></p>			X
<p><i>Increase high school graduation rates.</i></p>			X
<p><i>Strengthen career pathways for technical and trade schools that enhance Hawai'i's workforce.</i></p>			X
<p><i>Support post-secondary and distance learning programs that broaden personal and professional learning opportunities.</i></p>			X
<p>Provide access to diverse recreational facilities and opportunities.</p>			X
<p><i>Discussion:</i> The project supports the State's goals for a strong, healthy, vibrant and nurturing community. The center will meet all standards of the Americans with Disability Act and thus be accessible to persons with physical disabilities. The project will provide space for an urgent care facility to increase access to expedient health care for residents and visitors in this community. The rural community commercial center will be pedestrian- and bicycle-friendly and tie to existing multi-modal paths in the area, and the project proposes access improvements to the highway to minimize vehicular congestion around the existing and proposed commercial businesses.</p>			
<p>GOAL 5: Our Kanaka Maoli and island cultures and values are thriving and perpetuated.</p>			
<p>Honor Kanaka Maoli culture and heritage.</p>			X
<p>Ensure the existence of and support for public and private entities that further the betterment of Kanaka Maoli.</p>			X
<p>Increase fluency in Kanaka Maoli language. It is one of the official languages of Hawai'i.</p>			X
<p>Sponsor cross-sector dialogue on Kanaka Maoli culture and island values.</p>			X
<p>Protect Kanaka Maoli intellectual property and related traditional knowledge.</p>			X
<p><i>Provide Kanaka Maoli cultural education for residents, visitors and the general public.</i></p>			X
<p>Celebrate our cultural diversity and island way of life.</p>			
<p><i>Identify and protect the places, features and sacred spaces that give Hawai'i its unique character and cultural significance.</i></p>			X

Draft Environmental Impact Statement

Table 4-2 Hawai'i 2050 Sustainability Plan (SB2532 HD1, 2010 Legislative Session)	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
<i>Increase the number of educators who teach cultural and historic education.</i>			X
Enable Kanaka Maoli and others to pursue traditional Kanaka Maoli lifestyles and practices.			X
<i>Provide Kanaka Maoli mentors with opportunities to pass on Hawaiian culture and knowledge to the next generation of Kanaka Maoli and others. The power of wisdom comes from communication.</i>			X
<i>Perpetuate Kanaka Maoli food production associated with land and ocean traditions and practices.</i>			X
Provide support for subsistence-based businesses and economies.			X
<i>Discussion: The project supports the State's goals related to Kanaka Maoli and island cultures, however, no specific element of the project will advance the goals on a State-wide scale. The EIS examined both cultural and archaeological history of Pūpūkea. Cultural interpretive signage will also be incorporated into the rural center.</i>			

4.2.5 Hawai'i State Functional Plans

Developed in the late 1980s and early 1990s as part of the Statewide Planning System, the State Functional Plans are the primary guidance tools for implementing the Hawai'i State Plan. While the Hawai'i State Plan establishes long-term objectives for Hawai'i, the purposes of the Functional Plans are to identify major statewide concerns; define current strategies for the functional area; identify major relationships among functional areas; and to provide strategies for departmental policies, programs, and priorities. The Functional Plans provide guidance as to State and County roles and the allocation of resources to fulfill identified activities in the areas of agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, transportation, and water resources.

The applicable Functional Plan for the project is the Human Services State Functional Plan. The plan places an emphasis on policies related to essential human services such as access to child care and access to health care. The rural community center will provide an urgent care facility, and potentially a child care center.

4.2.6 Coastal Zone Management, Hawai'i Revised Statutes Chapter 205A

HRS Chapter 205A, Coastal Zone Management, describes the State's objectives, policies, laws, standards, and procedures to guide and regulate public and private uses through its coastal zone management program. Ten over-arching resources are addressed through both objectives and policies: (1) recreational resources, (2) historic resources, (3) scenic and open space resources, (4) coastal ecosystems, (5) economic uses, (6) coastal hazards, (7) managing development, (8) public participation, (9) beach protection, and (10) marine resources.

The Hawai'i CZM law charges the counties with designating and administering a Special Management Area (SMA) within the State's coastal areas to provide for "... special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided." (HRS §205A Part 2). A "development" as defined by the CZM Law, which is located within the SMA, requires a Special Management Area Use Permit (SMP).

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Discussion: The project is located within the SMA, and subject to the Hawai‘i Coastal Zone Management and City and County of Honolulu’s SMA policies and controls. Table 4-3 outlines the objectives and policies of HRS Chapter 205A and discusses the applicability to the project.

Table 4-3 Coastal Zone Management Program HRS Section 205 A - Objectives and Policies				S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable						
OBJECTIVES & POLICIES						
(1) Recreational resources;						
Provide coastal recreational opportunities accessible to the public.						
(A)	Improve coordination and funding of coastal recreational planning and management; and					X
(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;	X				
	(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;	X				
	(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;					X
	(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;					X
	(v) Ensuring public recreational uses of county, state and federally-owned or controlled shoreline lands having recreational value consistent with public safety standards and conservation of natural resources.					X
	(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect	X				
	(vii) Developing new shoreline recreational opportunities					X
	(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, and county authorities; and crediting such dedication against the requirements of section 46-6.					X
Discussion: The project is separated from the shoreline by Kamehameha Highway. Pūpūkea Beach Park, located across the highway, is a recreational draw for both residents and visitors, and includes popular snorkel and scuba diving access points and the Pūpūkea Marine Life Conservation District (MLCD). The Project does not affect recreational access or use of the shoreline. The project plan incorporates numerous measures to address environmental protection, foremost being soil conservation, storm water runoff management, waste management and protection of water quality. Improvements to the site will meet or exceed water quality standards set by the State Department of Health for both point and non-point source pollution (EIS Section 3.6.2 and 3.6.2).						
(2) Historic resources;						
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.						
(A)	Identify and analyze significant archaeological resources;	X				
(B)	Maximize information retention through preservation of remains and artifacts or salvage operations; and	X				
(C)	Support state goals for protection, restoration, interpretation, and display of historic resources.					X

Draft Environmental Impact Statement

Table 4-3 Coastal Zone Management Program HRS Section 205 A - Objectives and Policies S = Supportive, N/S = Not Supportive, N/A = Not Applicable		S	N/S	N/A
<p>Discussion: The project supports the CZM historic resources objective and policies to 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. A Cultural Inventory Survey and Archaeological Assessment were prepared for the EIS. Previous archaeological investigations within the immediate project area have not identified any historic properties within the project site or immediate vicinity of the project area (EIS Appendices D and E).</p>				
<p>(3) Scenic and open space resources;</p>				
<p>Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.</p>				
(A) Identify valued scenic resources in the coastal zone management area;		X		
(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;		X		
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and		X		
(D) Encourage those developments that are not coastal dependent to locate in inland areas.				X
<p>Discussion: The project supports the CZM objectives and policies to protect and preserve coastal scenic and open space resources. The center will be built to comply with B-1 Neighborhood Business height requirements and setback distances. Important viewsheds within the project vicinity are identified in the NSSCP; none are impacted by the project (EIS Section 3.17).</p>				
<p>(4) Coastal ecosystems;</p>				
<p>Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.</p>				
(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;		X		
(B) Improve the technical basis for natural resource management;				X
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;		X		
(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		X		
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.		X		
<p>Discussion: Hanapohaku LLC is cognizant of the project's close proximity to the Pūpūkea-Waimea MLCD and the importance of sustainable design strategies and best management practices to protect the valued coastal and marine resources of the area. Sections 3.6 and 3.7 of this EIS discuss the project's mitigation measures for maintaining marine water and groundwater quality in the vicinity of the project. No significant long-term adverse impacts are anticipated.</p>				
<p>(5) Economic uses;</p>				
<p>Provide public or private facilities and improvements important to the State's economy in suitable locations.</p>				
(A) Concentrate coastal dependent development in appropriate areas;				X
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as 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				X

Draft Environmental Impact Statement

<p>Table 4-3 Coastal Zone Management Program HRS Section 205 A - Objectives and Policies S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p>(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects are minimized; and (iii) The development is important to the State's economy.</p>			X
<p>Discussion: The center is appropriately located on Urban, B-1 Neighborhood Business zoned lands, and on parcels designated for rural community commerce in the City's NSSCP. The project will be in compliance with all CZM and SMA rules and regulations.</p>			
<p>(6) Coastal hazards;</p>			
<p>Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.</p>			
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;	X		
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;	X		
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and	X		
(D) Prevent coastal flooding from inland projects.	X		
<p>Discussion: The project supports the State's objectives and policies related to coastal hazards. As discussed in Section 3.3 of the EIS, the rural community commercial center will be constructed on lands designated as Flood Zone X and outside of the tsunami evacuation zone. Construction of the buildings will comply with all requirements for the Federal Flood Insurance Program and will meet the standards for natural hazards.</p>			
<p>(7) Managing development;</p>			
<p>Improve the development review process, communication, and public participation in the management of coastal resources and hazards.</p>			
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;	X		
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and	X		
(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 public to facilitate public participation in the planning and review process.	X		
<p>Discussion: Development of the rural community commercial center is aligned with the CZM objective and policies related to permitting for coastal developments. In addition to this EIS, the rural center will file the required documents to obtain a Special Management Area-Major permit, National Pollutant Discharge Elimination System Construction Storm Water permit, building permits, Highway Use and Access permit, and other required City permits listed in Table 1-1 of the EIS.</p>			
<p>(8) Public participation;</p>			
<p>Stimulate public awareness, education, and participation in coastal management.</p>			
(A) Promote public involvement in coastal zone management processes;			X
(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 issues, developments, and government activities; and			X
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.			X
<p>Discussion: The project will comply with the State's goal of public participation for the coastal zone through the SMA permit process.</p>			
<p>(9) Beach protection;</p>			
<p>Protect beaches for public use and recreation.</p>			

Draft Environmental Impact Statement

Table 4-3 Coastal Zone Management Program HRS Section 205 A - Objectives and Policies			
	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;			X
(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			X
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.			X
Discussion: Construction for the project is located mauka of Kamehameha Highway, which is inland from the shoreline setback. No structure related to the rural center will impact shoreline processes.			
(10) Marine resources;			
Promote the protection, use, and development of marine and coastal resources to assure their sustainability.			
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;	X		
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;			X
(C) 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;			X
(D) 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	X		
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.			X
Discussion: The rural community commercial center will include a variety of shops and resources, including surf and action sport shops that promote marine conservation ethics.			

4.2.7 Marine Life Conservation Districts – Pūpūkea (HAR Title 13 Chapter 34)

Marine Life Conservation Districts (MLCD) were introduced to Hawai‘i in 1967, with the intent of conserving and replenishing marine resources. The protected areas designated under the MLCD generally prohibit consumptive uses, and are meant to allow fish and other aquatic life to grow and reproduce without human threats. The Pūpūkea Marine Life Conservation District was established in 1983 under HAR Title 13, Chapter 34.

Regulations for the Pūpūkea MLCD include limits to possessing limu kohu and limu lipe‘epe‘e; possession of knives for personal safety only; limits to fish catch by number of fishing poles per person and hooks per line; usage of legal nets; seasons for ‘opelu and akule; prohibitions on taking or injuring fish with non-allowable equipment; prohibitions on taking or altering corals and sands; and prohibitions on snagging akule.

Discussion: The Pūpūkea MLCD and the coastal and marine resources of Pūpūkea and Waimea are valuable assets of the North Shore. The project supports the continued protection of the marine sanctuary.

4.2.8 Electric Vehicle Parking and Charging

Hawaii Revised Statute §291-71 requires places of public accommodation, with at least 100 parking spaces available for use by the general public, to have at least one parking space exclusively for electric vehicles. The statute also requires the space be equipped with an electric vehicle charging system.

Discussion: *The rural center will have two parking spaces dedicated to electric vehicles with one charging station that can charge two cars simultaneously.*

4.2.9 DLNR Makai Watch Program

The State of Hawai'i Makai Watch Program was formed in the early 2000's is a collaborative marine management program between the public and the Department of Land and Natural Resources to encourage compliance to resource rules, education, and monitoring. The key Makai Watch components include Awareness Raising and Outreach; Observation and Incident Reporting; and Human-use Monitoring and Biological Literacy Education. Through the Makai Watch Program and its standardized Observation and Incident Reporting component, community members volunteer their time to watch over designated Makai Watch sites to reduce inappropriate uses of marine resources by beachgoers and visitors.

The Pūpūkea-Waimea Marine Life Conservation District was designated as O'ahu's first Makai Watch Program Site in 2006 through the collaborative efforts of Mālama Pūpūkea-Waimea, Hawaii Community Stewardship Network, and Hawaii DLNR. Over thirty volunteers were initially trained to steward the district, which includes Waimea Bay, Kalaea-Maua, and Pūpūkea. Makai Watch volunteers work to reduce the impacts of tourism, overuse, and poaching of marine resources on the MLCD; hold outreach and education sessions; monitor human use; conduct fish surveys; and give mini presentations on the culture, history, and ecology of the area.

Discussion: *The project supports the State DLNR Makai Watch Program and the ongoing efforts of Malama Pūpūkea Waimea to preserve and protect the Pūpūkea-Waimea MLCD.*

4.3 CITY AND COUNTY OF HONOLULU PLANS, POLICIES AND CONTROLS

4.3.1 Chapter 25, Revised Ordinances of Honolulu

The State Coastal Zone Management law charges the counties with designating and administering a Special Management Area (SMA) within the State's coastal areas to provide for ". . . *special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided.*" (HRS §205A Part 2).

Chapter 25 of the Revised Ordinances of Honolulu (ROH) provides the SMA policies for the City and County of Honolulu to "preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawaii."

The objectives and policies of Chapter 25 are those contained in HRS Section 205A. Procedural guidelines for the SMA and the SMA Permit (SMP) are set forth in ROH 25-3.3 and include the following:

- a) All development within the special management area shall be subject to review by the agency under the provisions of this chapter. Such review shall be pursuant to the objectives, policies and guidelines set forth herein.
- b) Consultation. Any applicant contemplating development within the special management area is encouraged to contact the agency for information regarding procedures and general information which may have a direct influence on the applicant's proposed development.
- c) Assessment Requirements for Special Management Area Use Permits.
 - 1) Any proposed development within the special management area requiring a special management area use permit shall be subject to an assessment by the agency in accordance with the procedural steps set forth in HRS Chapter 343. The director may allow the assessment to be conducted concurrently with the processing of the application for a special management area use permit.
 - 2) The director may waive the requirements of subdivision (1) for any proposed development which has been assessed under the National Environmental Policy Act or under HRS Chapter 343, and for which a finding of no significant impact has been filed or a required EIS has been accepted.
- d) Review Criteria. The director shall review the proposal based on the following criteria:
 - 1) The valuation or fair market value of the development; and
 - 2) The potential effects and the significance of each effect according to the significance criteria established by Section 25-4.1.
- e) Determination.
 - 1) For the purposes of this chapter, other than special requirements for shoreline lots as provided in Section 25-6.3, the director shall declare a development proposal exempt where the director finds that the proposal is not defined as development under Section 25-1.3. No shoreline lot shall be exempt from the special requirements for shoreline lots.
 - 2) The director shall issue a special management area minor permit where the director finds that the development proposal:
 - A) Has a valuation or fair market value not in excess of \$500,000.00; and

Draft Environmental Impact Statement

- B) Will not significantly affect the special management area and/or special wetland area

Within the City and County of Honolulu, the SMP application review is administered by the DPP, and the decision on its issuance is rendered by the City Council, pursuant to Ordinance No. 84-4.

Discussion: *The project is located within the SMA, and subject is to the Hawai'i Coastal Zone Management and City and County of Honolulu's SMA policies and controls. The project will be required to obtain a SMP, as outlined in ROH, Sec. 25-1.2; HRS Chapter 205A-21. As such, this EIS is being filed to fulfill of the City and County SMA assessment requirements per the procedural steps provided in HRS, Chapter 343. Issuance of the SMP is based on the consistency of the proposed development project with the policies and review guidelines specified in the CZM Law. The project's compliance with the review guidelines contained in ROH 25-3.2 is discussed in Table 4-4.*

Table 4-4 Special Management Area – Objectives and Policies – City and County of Honolulu
(1) All development in the special management area shall be subject to reasonable terms and conditions set by the Council to ensure that:
<ul style="list-style-type: none"> • Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;
Discussion: <i>The project will not affect public access to Pūpūkea Beach Park or adjacent recreational facilities along the shoreline.</i>
<ul style="list-style-type: none"> • Adequate and properly located public recreation areas and wildlife preserves are reserved.
Discussion: <i>The project will complement the adjacent public recreational areas of Pūpūkea Beach Park.</i>
<ul style="list-style-type: none"> • Provisions are made for solid and liquid waste treatment, disposition, and management that will minimize adverse effects upon special management area resources.
Discussion: <i>Sections 3.6 and 3.7 of the EIS evaluate potential impacts to both groundwater and marine waters, and concludes that no short-term or long-term impacts are anticipated from the project. The Pūpūkea Rural Community Commercial Center's commitment to sustainability includes solid waste reduction and recycling.</i>
<ul style="list-style-type: none"> • Alterations to existing land forms and vegetation; except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation or failure in the event of earthquake.
Discussion: <i>The project will develop a property that has historically been used commercial endeavors. The appropriately scaled one- and two-story buildings will not have an adverse effect on water, scenic, or recreational resources in the area. Design and construction will be in compliance with all relevant code and safety standards to minimize the any potential damage from natural hazards.</i>
(2) No development shall be approved unless the authority has first found:
<ul style="list-style-type: none"> • That the development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interests. Such adverse effects shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and the elimination of planning options;
Discussion: <i>The Pūpūkea Rural Community Commercial Center will not create substantial adverse environmental or ecological effects. Identified potential long-term impacts and recommended mitigation measures are discussed in Section 3.0.</i>
<ul style="list-style-type: none"> • That the development is consistent with the objectives, policies, and special management area guidelines of this chapter and any guidelines enacted by the legislature;
Discussion: <i>The project remains consistent with the policies and objectives of the HRS Chapter 205A CZM and its review guidelines, as well as the ROH, Chapter 25 SMA guidelines. Consistency with CZM is discussed in Section 4.2.6 and Table 4-3. The commercial uses on the Hanapohaku property and site improvements required under</i>

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Table 4-4 Special Management Area – Objectives and Policies – City and County of Honolulu
<i>2017/SMA-21 guide existing uses; approval by Council for a SMA-Major permit will be sought prior to development with other relevant permits.</i>
<ul style="list-style-type: none"> • That the development is consistent with the county general plan and zoning. Such a finding of consistency does not preclude concurrent processing where a general plan or zoning amendment may also be required.
<i>Discussion:</i> <i>The project is consistent with the City and County of Honolulu’s General Plan, NSSCP, and State Land Use Ordinance; no planning or zoning amendment is required.</i>
(3) The authority shall seek to minimize, where reasonable:
<ul style="list-style-type: none"> • Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;
<i>Discussion:</i> <i>The Pūpūkea Rural Community Commercial Center does not involve dredging, filling, or the altering of any bay, estuary, salt marsh, river mouth, slough or lagoon.</i>
<ul style="list-style-type: none"> • Any development which would reduce the size of any beach or other area usable for public recreation;
<i>Discussion:</i> <i>The project is located mauka of Kamehameha Highway in the State Land Use District - Urban and City-zoned Neighborhood Business district, and is not on the beach and will not reduce the size of the beach or any other public recreational area.</i>
<ul style="list-style-type: none"> • Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management areas and the mean high tide line where there is no beach;
<i>Discussion:</i> <i>The project does not reduce or impose restrictions upon public access to tidal and submerged lands, beach areas, or to the mean high tide line.</i>
<ul style="list-style-type: none"> • Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast;
<i>Discussion:</i> <i>The rural community commercial center does not interfere with or detract from the line of sight toward the sea from Kamehameha Highway.</i>
<ul style="list-style-type: none"> • Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.
<i>Discussion:</i> <i>The project will take all necessary environmental precautions and will be in compliance with the rules and regulations relating to water quality, fisheries, and wildlife habitats in the project location. Section 3.7 of the EIS concludes that no short-term or long-term impacts to marine water quality are anticipated from the project. Section 3.16.2 of the EIS details the reduction of storm water runoff that will occur as a result of the proposed project improvements.</i>

4.3.2 City and County of Honolulu General Plan

The General Plan of the City and County of Honolulu (1992 edition, as amended in 2002) is a statement of long-range socio-economic, environmental, and design objectives and policies to be achieved for the general prosperity and welfare for the people of the city. It is intended to serve as a guide for all levels of government, private enterprise, neighborhood and citizen groups, organizations, and individual citizens (City and County of Honolulu Revised Charter 2000, Sec. 6-1508). The General Plan consists of eleven subject areas and provides the framework for the City’s expression of public policy concerning the needs of the people and the functions of government. The subject areas address all aspects of health, safety, and welfare for O’ahu’s communities, and include: population trends and growth, economic activity, the natural environment, housing, transportation and utilities, energy, physical development and urban design, public safety, health and education, culture and recreation, and government operations and fiscal management. *Table 4-5* discusses how the project addresses the applicable objectives and policies of the City and County of Honolulu General Plan.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

In 2012, the City developed the Draft O’ahu 2035 General Plan update, which was circulated to the public for review and comments. The document is still pending final approval. Accordingly, the project must address its consistency with the existing 2002 amended version. However, pending the City’s approval of the Draft O’ahu 2035 General Plan, the project’s consistency with applicable objectives and policies of the Plan update is also addressed as a separate discussion under each relevant objective.

Table 4-5 City & County of Honolulu General Plan - Objectives and Policies		S	N/S	N/A																		
S = Supportive, N/S = Not Supportive, N/A = Not Applicable																						
PART I: POPULATION																						
OBJECTIVE A: To control the growth of O’ahu's resident and visitor populations in order to avoid social, economic, and environmental disruptions.																						
Policy 1: Participate in State and Federal programs which seek to develop social, economic, legal, and environmental controls over population growth.				X																		
Policy 2: Seek a balance between the rate of in-migration and the rate of out-migration by reducing in-migration.				X																		
Policy 3: Support Federal policies providing for a more even distribution of immigrants throughout the country.				X																		
Policy 4: Seek to maintain a desirable pace of physical development through City and County regulations.				X																		
Policy 5: Encourage family planning.				X																		
Policy 6: Publicize the desire of the City and County to limit population growth.				X																		
<i>Discussion: City objective and policies related to controlling resident and visitor populations island-wide are not directly applicable to the project. The project follows objectives and guidelines in the NSSCP – see Table 4-6.</i>																						
OBJECTIVE B: To plan for future population growth.																						
Policy 1: Allocate efficiently the money and re- sources of the City and County in order to meet the needs of O’ahu's anticipated future population.				X																		
Policy 2: Provide adequate support facilities to accommodate future growth in the number of visitors to O’ahu.				X																		
<i>Discussion: The project will not impact the population or mix of residents (Section 3.11.2 of the EIS).</i>																						
OBJECTIVE C: To establish a pattern of population distribution that will allow the people of O’ahu to live and work in harmony.																						
Policy 1: Facilitate the full development of the primary urban center.				X																		
Policy 2: Encourage development within the secondary urban center at Kapolei and the ‘Ewa and Central O’ahu urban-fringe areas to relieve developmental pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.				X																		
Policy 3: Manage physical growth and development in the urban-fringe and rural areas so that: (a) An undesirable spreading of development is prevented; and (b) Their population densities are consistent with the character of development and environmental qualities desired for such areas.				X																		
Policy 4: (Amended, Resolution 02-205, CD1): Direct growth according to Policies 1, 2, and 3 above by providing land development capacity and needed infrastructure to seek a 2025 distribution of O’ahu's residential population as follows:				X																		
<table border="1"> <thead> <tr> <th align="center">Location</th> <th align="center">% Share of 2025 Island-wide Population</th> </tr> </thead> <tbody> <tr> <td>Primary Urban Center</td> <td align="center">46.0%</td> </tr> <tr> <td>‘Ewa</td> <td align="center">13.0%</td> </tr> <tr> <td>Central O’ahu</td> <td align="center">17.0%</td> </tr> <tr> <td>East Honolulu</td> <td align="center">5.3%</td> </tr> <tr> <td>Ko’olaupoko</td> <td align="center">11.6%</td> </tr> <tr> <td>Ko’olauloa</td> <td align="center">1.4%</td> </tr> <tr> <td>North Shore</td> <td align="center">1.7%</td> </tr> <tr> <td>Wai’anae</td> <td align="center">4.0%</td> </tr> </tbody> </table>	Location	% Share of 2025 Island-wide Population	Primary Urban Center		46.0%	‘Ewa	13.0%	Central O’ahu	17.0%	East Honolulu	5.3%	Ko’olaupoko	11.6%	Ko’olauloa	1.4%	North Shore	1.7%	Wai’anae	4.0%			
Location	% Share of 2025 Island-wide Population																					
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PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies</p> <p>S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p>Discussion: The project is an opportunity to provide employment as well as goods and services on a rural scale in a manner consistent with the NSSCP.</p>			
<p>PART II: ECONOMIC ACTIVITY</p>			
<p>OBJECTIVE A: To promote employment opportunities that will enable all the people of O’ahu to attain a decent standard of living.</p>			
<p>Policy 1: Encourage the growth and diversification of O’ahu's economic base.</p>	X		
<p>Policy 2: Encourage the development of small businesses and larger industries, which will contribute to the economic and social well-being of O’ahu residents.</p>	X		
<p>Policy 3: Encourage the development in appropriate locations on O’ahu of trade, communications, and other industries of a nonpolluting nature.</p>			X
<p>Policy 4: Encourage the development of local, national, and world markets for the products of O’ahu-based industries.</p>			X
<p>Policy 5: Encourage the wider distribution of available employment opportunities through such methods as shortening the work-week and reducing the use of overtime.</p>			X
<p>Policy 6: Encourage the continuation of a significant level of Federal employment on O’ahu.</p>			X
<p>Discussion: The project supports the City’s objectives to encourage the growth and diversification of O’ahu’s economic base and the development of small businesses. The rural center will provide goods and services complementary to the existing Foodland grocery store to strengthen commerce on the North Shore. Some of the types of businesses at the center may include: pharmacy and health products, a business center, professional services, real estate office, surf retail, yoga and fitness studio, child care center, quick service food, health food market, and a restaurant.</p> <p>2035 General Plan Discussion: The project supports the proposed 2035 objective and policies to encourage the viability of businesses and industries which contribute to the economic and social well-being of O’ahu residents, and to support entrepreneurship and innovation. Hanapohaku is committed to supporting local businesses to strengthen the local economy of the North Shore.</p>			
<p>OBJECTIVE B: To maintain the viability of O’ahu’s visitor industry.</p>			
<p>Policy 1: Provide for the long-term viability of Waikiki as O’ahu's primary resort area by giving the area priority in visitor industry related public expenditures.</p>			X
<p>Policy 2: Provide for a high quality and safe environment for visitors and residents in Waikiki.</p>			X
<p>Policy 3: Encourage private participation in improvements to facilities in Waikiki.</p>			X
<p>Policy 4: Prohibit major increases in permitted development densities in Waikiki.</p>			X
<p>Policy 5: Prohibit further growth in the permitted number of hotel and resort condominium units in Waikiki.</p>			X
<p>Policy 6: Permit the development of secondary resort areas in West Beach, Kahuku, Makaha, and Lā’ie.</p>			X
<p>Policy 7: Manage the development of secondary resort areas in a manner which respects existing lifestyles and the natural environment, and avoids substantial increases in the cost of providing public services in the area.</p>			X
<p>Policy 8: Preserve the well-known and widely publicized beauty of O’ahu for visitors as well as residents.</p>			X
<p>Policy 9: Encourage the visitor industry to provide a high level of service to visitors.</p>			X
<p>Discussion: Due to the project’s close proximity to the Pūpūkea MLCD, a number of sustainable principles and best management practices will be employed during construction and operations of the rural community commercial center. The project is cognizant of the importance of preserving the beauty of the North Shore of O’ahu.</p> <p>2035 General Plan Discussion: The project supports the proposed 2035 objective and policies related to O’ahu’s visitor industry. Specifically, Policy 2 related to respecting and emphasizing the value that Native Hawaiian culture and cultural practitioners, and other established ethnic traditions bring to enriching the visitor experience.</p>			

Draft Environmental Impact Statement

<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies</p> <p>S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
OBJECTIVE C: To maintain the viability of agriculture on O’ahu.			
Policy 1: Assist the agricultural industry to ensure the continuation of agriculture as an important source of income and employment.			X
Policy 2: Support agricultural diversification in all agricultural areas on O’ahu.			X
Policy 3: Support the development of markets for local products, particularly those with the potential for economic growth.			X
Policy 4: Provide sufficient agricultural land in ‘Ewa, Central O’ahu, and the North Shore to encourage the continuation of sugar and pineapple as viable industries.			X
Policy 5: Maintain agricultural land along the Windward, North Shore, and Wai‘anae coasts for truck fanning, flower growing, aquaculture, livestock production, and other types of diversified agriculture.			X
Policy 6: Encourage the more intensive use of productive agricultural land.			X
Policy 7: Encourage the use of more efficient production practices by agriculture, including the efficient use of water.			X
Policy 8: Encourage the more efficient use of non- potable water for agricultural use.			X
<i>Discussion: While Hanapohaku supports City policies related to agricultural diversification, these policies are not applicable to the project. The project may promote locally sourced agricultural products through periodic farmers' markets.</i>			
OBJECTIVE D: To make full use of the economic resources of the sea.			
Policy 1: Assist the fishing industry to maintain its viability.			X
Policy 2: Encourage the development of aquaculture, ocean research, and other ocean- related industries.			X
Policy 3: Focus the development of ocean related economic activities in the Northwestern Hawaiian Islands on those, which are compatible with preserving the area’s unique environmental, marine, and wildlife assets.			X
<i>Discussion: While Hanapohaku supports City policies related to economic resources of the sea, these policies are not applicable to the project.</i>			
OBJECTIVE E: To prevent the occurrence of large-scale unemployment.			
Policy 1: Encourage the training and employment of present residents for currently available and future jobs.			X
Policy 2: Make full use of State and Federal employment and training programs.			X
Policy 3: Encourage the provision of retraining programs for workers in industries with planned reductions in their labor force.			X
<i>Discussion: While Hanapohaku supports the City’s policies related to preventing large-scale unemployment, these policies are not directly applicable to the project. Indirectly, the project will provide new employment opportunities a rural area of the island through encouraging local Hawai’i entrepreneurs and providing employment in new retail, food, and service businesses to be located in the rural community commercial center.</i>			
<i>2035 General Plan Discussion: Same as above.</i>			
OBJECTIVE F: To increase the amount of Federal spending on O’ahu.			
Policy 1: Take full advantage of Federal programs and grants which will contribute to the economic and social well-being of O’ahu’s residents.			X
Policy 2: Encourage the Federal government to pay for the cost of public services used by Federal agencies.			X
Policy 3: Encourage the Federal government to lease new facilities rather than construct them on tax exempt public land.			X
Policy 4: Encourage the military to purchase locally all needed services and supplies which are available on O’ahu.			X

Draft Environmental Impact Statement

<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies</p> <p>S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p>Discussion: While Hanapohaku is in support of Federal programs and grants for the economic and social well-being of O'ahu residents, the policies related to Federal spending are not applicable to the project.</p>			
<p>OBJECTIVE G: To bring about orderly economic growth on O'ahu.</p>			
<p>Policy 1: Direct major economic activity and government services to the primary urban center and the secondary urban center at Kapolei.</p>			X
<p>Policy 2: Permit the moderate growth of business centers in the urban-fringe areas.</p>			X
<p>Policy 3: Maintain sufficient land in appropriately located commercial and industrial areas to help ensure a favorable business climate on O'ahu.</p>	X		
<p>Policy 4: Encourage the continuation of a high level of military-related employment in the Hickam-Pearl Harbor, Wahiawā, Kailua-Kāne'ohe, and 'Ewa areas.</p>			X
<p>Discussion: The project supports the City's objectives related to economic growth on O'ahu. The rural center will include new locally owned retail, services, and eateries to expand the North Shore's economic base. Appropriately located on B-1 Neighborhood Business zoned land, the project site is also designated within the NSSCP as a Rural Community Commercial Center.</p>			
<p>PART III: NATURAL ENVIRONMENT</p>			
<p>OBJECTIVE A: To protect and preserve the natural environment.</p>			
<p>Policy 1: Protect O'ahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.</p>	X		
<p>Policy 2: Seek the restoration of environmentally damaged areas and natural resources.</p>	X		
<p>Policy 3: Retain the Island's streams as scenic, aquatic, and recreation resources.</p>	X		
<p>Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation.</p>	X		
<p>Policy 5: Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.</p>	X		
<p>Policy 6: Design surface drainage and flood-control systems in a manner, which will help preserve their natural settings.</p>	X		
<p>Policy 7: Protect the natural environment from damaging levels of air, water, and noise pollution.</p>	X		
<p>Policy 8: Protect plants, birds, and other animals that are unique to the State of Hawai'i and the Island of O'ahu.</p>	X		
<p>Policy 9: Protect mature trees on public and private lands and encourage their integration into new developments.</p>	X		
<p>Policy 10: Increase public awareness and appreciation of O'ahu's land, air, and water resources.</p>	X		
<p>Policy 11: Encourage the State and Federal governments to protect the unique environmental, marine, and wildlife assets of the Northwestern Hawaiian Islands.</p>	X		
<p>Discussion: As discussed in Sections 3.4 through 3.7, construction and operations of the rural community commercial center will continue to maintain the area's natural environment, while also incorporating new elements such as native and tropical plant species for landscaping.</p>			
<p>2035 General Plan Discussion: The project supports the 2035 General Plan policies related to protecting and preserving the natural environment. Specifically, the project considers the impacts of climate change on the natural environment, and is actively working to incorporate on-site renewable energy generation to reduce demands on fossil fuels.</p>			
<p>OBJECTIVE B: To preserve and enhance the natural monuments and scenic views of O'ahu for the benefit of both residents and visitors.</p>			
<p>Policy 1: Protect the Island's well-known resources: its mountains and craters; forests and watershed areas; marshes, rivers, and streams; shoreline, fishponds, and bays; and reefs and offshore islands.</p>	X		

Draft Environmental Impact Statement

<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
Policy 2: Protect O’ahu’s scenic views, especially those seen from highly developed and heavily traveled areas.	X		
Policy 3: Locate roads, highways, and other public facilities and utilities in areas where they will least obstruct important views of the mountains and the sea.	X		
Policy 4: Provide opportunities for recreational and educational use and physical contact with O’ahu’s natural environmental.	X		
Policy 5: Identify all areas where priority should be given to preserving rural character and lifestyle.			X
Policy 6: Utilize Hawai’i’s limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	X		
Policy 7: Protect and enhance Hawai’i’s shoreline, open spaces, and scenic resources.	X		
<p>Discussion: Designated within the NSSCP as a Rural Community Commercial Center, the project will be developed per the guiding directives of the Plan. As discussed in Section 3.17 of this EIS, the project will maintain its wastewater system and disposal to meet State and City standards.</p>			
<p>2035 General Plan Discussion: Per the 2035 General Plan policies, the project supports the promotion of public access to the natural environment for recreational, educational and cultural purposes. The rural center’s location mauka of the Pūpūkea Waimea MLCDD and will not interfere with public access to the natural environment for recreational, educational, and cultural purposes.</p>			
<p>PART IV: HOUSING</p>			
<p>OBJECTIVE A: To provide decent housing for all the people of O’ahu at prices they can afford.</p>			
Policy 1: Develop programs and controls, which will provide decent homes at the least possible cost.			X
Policy 2: Streamline approval and permit procedures for housing and other development projects.			X
Policy 3: Encourage innovative residential development, which will result in lower costs, added convenience and privacy, and the more efficient use of streets and utilities.			X
Policy 4: Establish public, and encourage private, programs to maintain and improve the condition of existing housing.			X
Policy 5: Make full use of State and Federal programs that provide financial assistance for low- and moderate-income homebuyers.			X
Policy 6: Expand local funding mechanisms available to pay for government housing programs.			X
Policy 7: Provide financial and other incentives to encourage the private sector to build homes for low and moderate-income residents.			X
Policy 8: Encourage and participate in joint public- private development of low- and moderate-income housing.			X
Policy 9: Encourage the preservation of existing housing which is affordable to low- and moderate-income persons.			X
Policy 10: Promote the construction of affordable dwellings, which take advantage of O’ahu’s year-round moderate climate.			X
Policy 11: Encourage the construction of affordable homes within established low-density communities by such means as “ohana” units, duplex dwellings, and cluster development.			X
Policy 12: Encourage the production and maintenance of affordable rental housing.			X
Policy 13: Encourage the provision of affordable housing designed for the elderly and the handicapped.			X
Policy 14: Encourage equitable relationships between landowners and leaseholders, between landlords and tenants, and between condominium developers and owners.			X

Draft Environmental Impact Statement

<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies</p> <p>S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p><i>Discussion: While Hanapohaku supports the City's objective to provide housing at affordable prices for all people of O'ahu, these policies are not directly applicable to the project.</i></p>			
<p>OBJECTIVE B: To reduce speculation in land and housing.</p>			
<p>Policy 1: Encourage the State government to coordinate its urban-area designations with the developmental policies of the City and County.</p>			X
<p>Policy 2: Discourage private developers from acquiring and assembling land outside of areas planned for urban use.</p>			X
<p>Policy 3: Seek public benefits from increases in the value of land owing to City and State developmental policies and decisions.</p>			X
<p>Policy 4: Require government-subsidized housing to be delivered to appropriate purchasers and renters.</p>			X
<p>Policy 5: Prohibit the selling or renting of government-subsidized housing for large profits.</p>			X
<p><i>Discussion: The rural community commercial center will provide goods and services on lands zoned for neighborhood business and rural community commercial center activities. The City's policies related to speculation in land and housing are not directly applicable to the project.</i></p>			
<p>OBJECTIVE C: To provide the people of O'ahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.</p>			
<p>Policy 1: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.</p>			X
<p>Policy 2: Encourage the fair distribution of low- and moderate-income housing throughout the Island.</p>			X
<p>Policy 3: Encourage residential development near employment centers.</p>			X
<p>Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.</p>			X
<p>Policy 5: Discourage residential development where roads, utilities, and community facilities cannot be provided at a reasonable cost.</p>			X
<p>Policy 6: Preserve older communities through self-help, housing-rehabilitation, improvement districts, and other governmental programs.</p>			X
<p><i>Discussion: While the rural community commercial center will create employment and services and goods for the North Shore, the policies related to residential living environments are not directly applicable to the project.</i></p>			
<p>PART V: TRANSPORTATION AND UTILITIES</p>			
<p>OBJECTIVE A: To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.</p>			
<p>Policy 1: Develop and maintain an integrated ground-transportation system consisting of the following elements and their primary purposes:</p>			X
<p>Public transportation-for travel to and from work, and travel within Central Honolulu;</p>			X
<p>Roads and highways-for commercial traffic and travel in non-urban areas</p>			X
<p>Bikeways-for recreational activities and trips to work, schools, shopping centers, and community facilities; and</p>			X
<p>Pedestrian walkways-for getting around Downtown and Waikiki, and for trips to schools, parks, and shopping centers.</p>			X
<p>Policy 2: Provide transportation services to people living within the 'Ewa, Central O'ahu, and Pearl City-Hawai'i Kai corridors primarily through a mass transit system including exclusive right-of-way rapid transit and feeder-bus components as well as through the existing highway system with limited improvements as may be appropriate.</p>			X
<p>Policy 3: Provide transportation services outside the 'Ewa, Central O'ahu, and Pearl City-Hawai'i Kai corridors primarily through a system of express- and feeder-buses as well as through the</p>			X

Draft Environmental Impact Statement

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<p>highway system with limited to moderate improvements sufficient to meet the needs of the communities being served.</p>			
<p>Policy 4: Improve transportation facilities and services in the 'Ewa corridor and in the trans-Ko'olau corridors to meet the needs of 'Ewa and Windward communities.</p>			X
<p>Policy 5: Improve roads in existing communities to reduce congestion and eliminate unsafe conditions.</p>	X		
<p>Policy 6: Consider both environmental impact as well as construction and operating costs as important factors in planning alternative modes of transportation.</p>			X
<p>Policy 7: Promote the use of public transportation as a means of moving people quickly and efficiently, of conserving energy, and of guiding urban development.</p>	X		
<p>Policy 8: Make available transportation services to people with limited mobility: the young, the elderly, the handicapped, and the poor.</p>			X
<p>Policy 9: Promote programs to reduce dependence on the use of automobiles.</p>	X		
<p>Policy 10: Discourage the inefficient use of the private automobile, especially in congested corridors and during peak-hours.</p>	X		
<p>Policy 11: Make public, and encourage private, improvements to major walkway systems.</p>	X		
<p>Policy 12: Encourage the provision of separate aviation facilities for small civilian aircraft.</p>			X
<p>Policy 13: Facilitate the development of a second deep-water harbor to relieve congestion in Honolulu Harbor.</p>			X
<p>Discussion: The project will include an added turning lane for safe entry and exit from the rural community commercial center. In addition, the buildings will be set back from the highway with parking sited behind to create an open, park-like space along Kamehameha Highway with ample walkways and bicycle paths.</p>			
<p>OBJECTIVE B: To meet the needs of the people of O'ahu for an adequate supply of water and for environmentally sound systems of waste disposal.</p>			
<p>Policy 1: Develop and maintain an adequate supply of water for both residents and visitors.</p>			X
<p>Policy 2: Develop and maintain an adequate supply of water for agricultural and industrial needs.</p>			X
<p>Policy 3: Encourage the development of new technology, which will reduce the cost of providing water and the cost of waste disposal.</p>			X
<p>Policy 4: Encourage a lowering of the per-capita consumption of water and the per-capita production of waste.</p>	X		
<p>Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services.</p>	X		
<p>Policy 6: Support programs to recover resources from solid-waste and recycle wastewater.</p>	X		
<p>Policy 7: Require the safe disposal of hazardous waste.</p>	X		
<p>Discussion: The project supports the City's objectives to meet the needs of the people of O'ahu for an adequate supply of water for environmentally sound waste disposal systems. The State-compliant wastewater system is described in Section 3.16 of this EIS.</p> <p>2035 General Plan Discussion: The project will provide water and environmentally sound systems of waste disposal, as discussed in Section 3.16 of this EIS. The 2035 General Plan's policies to support initiatives that educate the community about conserving resources and reducing waste streams, as well as requiring safe disposal of hazardous waste are strongly supported by Hanapohaku at the rural community center.</p>			
<p>OBJECTIVE C: To maintain a high level of service for all utilities.</p>			
<p>Policy 1: Maintain existing utility systems in order to avoid major breakdowns.</p>	X		
<p>Policy 2: Provide improvements to utilities in existing neighborhoods to reduce substandard conditions.</p>	X		
<p>Policy 3: Plan for the timely and orderly expansion of utility systems.</p>			X
<p>Policy 4: Increase the efficiency of public utilities by encouraging a mixture of uses with peak periods of demand occurring at different times of the day.</p>			X

Draft Environmental Impact Statement

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<p>Discussion: Utilities, such as water, for the rural community commercial center will be coordinated in advance with the appropriate provider to avoid major breakdowns or substandard conditions.</p>			
<p>OBJECTIVE D: To maintain transportation and utility systems which will help O’ahu continue to be a desirable place to live and visit.</p>			
<p>Policy 1: Give primary emphasis in the capital- improvement program to the maintenance and improvement of existing roads and utilities.</p>			X
<p>Policy 2: Use the transportation and utility systems as a means of guiding growth and the pattern of land use on O’ahu.</p>			X
<p>Policy 3: Encourage the study and use of telecommunications as an alternative to conventional transportation facilities.</p>			X
<p>Policy 4: Evaluate the social, economic, and environmental impact of additions to the transportation and utility systems before they are constructed.</p>	X		
<p>Policy 5: Require the installation of underground utility lines wherever feasible.</p>	X		
<p>Policy 6: Seek improved taxing powers for the City and County in order to provide a more equitable means of financing transportation and utility services.</p>			X
<p>Discussion: The project’s transportation and utility systems are evaluated in Sections 3.13 and 3.16 of this EIS. The project supports the City’s objectives for maintaining O’ahu’s transportation and utility systems to help O’ahu continue to be a desirable place to live and visit.</p>			
<p>PART VI: ENERGY</p>			
<p>OBJECTIVE A: To maintain an adequate, dependable, and economical supply of energy for O’ahu residents.</p>			
<p>Policy 1: Develop and maintain a comprehensive plan to guide and coordinate energy conservation and alternative energy development and utilization programs on O’ahu.</p>			X
<p>Policy 2: Establish economic incentives and regulatory measures which will reduce O’ahu’s dependence on petroleum as its primary source of energy.</p>			X
<p>Policy 3: Support programs and projects which contribute to the attainment of energy self-sufficiency on O’ahu.</p>	X		
<p>Policy 4: Promote and assist efforts to establish adequate petroleum reserves within Hawai’i’s boundaries.</p>			X
<p>Policy 5: Give adequate consideration to environmental, public health, and safety concerns, to resource limitations, and to relative costs when making decisions concerning alternatives for conserving energy and developing natural energy resources.</p>			X
<p>Policy 6: Work closely with the State and Federal governments in the formulation and implementation of all City and County energy-related programs.</p>			X
<p>Discussion: A portion of the energy for the project will be provided onsite from the photovoltaic canopy in the rear parking area. The renewable source of energy supports the City’s objective to maintain an economical supply of energy for O’ahu.</p>			
<p>2035 General Plan Discussion: The project supports the City’s 2035 objective to increase energy self-sufficiency and maintain efficient, reliable, resilient, and cost-efficient energy systems. The use of renewable energy for the project supports many of the City’s policies in reducing the island’s dependence on fossil fuels.</p>			
<p>OBJECTIVE B: To conserve energy through the more efficient management of its use.</p>			
<p>Policy 1: Ensure that the efficient use of energy is a primary factor in the preparation and administration of land use plans and regulations.</p>			X
<p>Policy 2: Provide incentives and, where appropriate, mandatory controls to achieve energy-efficient siting and design of new developments.</p>			X
<p>Policy 3: Carry out public, and promote private, programs to more efficiently use energy in existing buildings and outdoor facilities.</p>	X		
<p>Policy 4: Promote the development of an energy- efficient transportation system.</p>			X

Draft Environmental Impact Statement

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<p>Discussion: Sustainability is a key feature of the project. Renewable energy from the photovoltaic canopies and rooftop installations, as well as energy efficient fixtures will be used to support the project facilities.</p>			
<p>2035 General Plan Discussion: While the project's photovoltaic canopy and use of the generated renewable energy will not have a direct effect on encouraging the implementation of a reliable electrical grid or energy storage, the added energy production may help influence solutions for increased storage of solar power.</p>			
<p>OBJECTIVE C: To fully utilize proven alternative sources of energy.</p>			
<p>Policy 1: Encourage the use of commercially available solar energy systems in public facilities, institutions, residences, and business developments.</p>	X		
<p>Policy 2: Support the increased use of operational solid waste energy recovery and other biomass energy conversion systems.</p>			X
<p>Discussion: Photovoltaic canopies will be installed in the parking area rear of the buildings. The photovoltaic canopies and rooftop installations will provide a renewable source of energy to the project, reducing the project's overall demand on fossil fuels.</p>			
<p>2035 General Plan Discussion: The 2035 General Plan's objective and policies relate to fostering an ethic of energy conservation that inspires sustainable practices. The project's photovoltaic canopy in the rear parking area will provide an opportunity to share information on renewable energy and the costs associated with the island's dependence on imported fossil fuels.</p>			
<p>OBJECTIVE D: To develop and apply new, locally available energy resources.</p>			
<p>Policy 1: Support and participate in research, development, demonstration, and commercialization programs aimed at producing new, economical, and environmentally sound energy supplies from:</p>			X
<p>a. solar insulation;</p>			X
<p>b. biomass energy conversion;</p>			X
<p>c. wind energy conversion;</p>			X
<p>d. geothermal energy; and</p>			X
<p>e. ocean thermal energy conversion.</p>			X
<p>Policy 2: Secure State and Federal support of City and County efforts to develop new sources of energy.</p>			X
<p>Discussion: While the project strongly supports the research, development, and commercialization programs aimed at producing new energy supplies, these policies are not directly applicable to the project.</p>			
<p>OBJECTIVE E: To establish a continuing energy information program.</p>			
<p>Policy 1: Supply citizens with the information they need to fully understand the potential supply, cost, and other problems associated with O'ahu's dependence on imported petroleum.</p>			X
<p>Policy 2: Foster the development of an energy conservation ethic among O'ahu residents.</p>	X		
<p>Policy 3: Keep consumers informed about available alternative energy sources and their costs and benefits.</p>			X
<p>Policy 4: Provide information concerning the impact of public and private decisions on future energy use.</p>			X
<p>Discussion: The project supports the City's objectives related to energy, specifically as it relates to renewable solar energy. The parking area of the project will produce photovoltaic energy from panels to offset the project's reliance on fossil fuel energy. Shops and restaurants at the rural center will also employ energy conservation strategies to more efficiently and sustainably operate the center.</p>			
<p>PART VII: PHYSICAL DEVELOPMENT AND URBAN DESIGN</p>			
<p>OBJECTIVE A: To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.</p>			

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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<p>Policy 1: Plan for the construction of new public facilities and utilities in the various parts of the Island according to the following order of priority: first, in the primary urban center; second, in the secondary urban center at Kapolei; and third, in the urban- fringe and rural areas.</p>			X
<p>Policy 2: Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.</p>	X		
<p>Policy 3: Phase the construction of new developments so that they do not require more regional supporting services than are available.</p>			X
<p>Policy 4: Require new developments to provide or pay the cost of all essential community services, including roads, utilities, schools, parks, and emergency facilities that are intended to directly serve the development.</p>			X
<p>Policy 5: Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.</p>	X		
<p>Policy 6: Encourage the clustering of developments to reduce the cost of providing utilities and other public services.</p>	X		
<p>Policy 7: Locate new industries and new commercial areas so that they will be well related to their markets and suppliers, and to residential areas and transportation facilities.</p>			X
<p>Policy 8: Locate community facilities on sites that will be convenient to the people they are intended to serve.</p>			X
<p>Policy 9: Exclude from residential areas, uses which are major sources of noise and air pollution.</p>			X
<p>Policy 10: Establish danger zones to exclude incompatible uses from hazardous areas surrounding airfields, electromagnetic- radiation sources, and storage places for fuel and explosives.</p>			X
<p>Policy 11: Prohibit new airfields, electromagnetic-radiation sources, and storage places for fuel and explosives from locating on sites where they will endanger or disrupt nearby communities.</p>			X
<p>Discussion: <i>The rural community commercial center will be constructed on appropriately designated lands for Neighborhood Business and Rural Community Commercial Center use on jointly developed lands with Foodland Pūpūkea. Adequate water supply, wastewater disposal, drainage, transportation, and public safety facilities will be coordinated at the appropriate times prior to and during construction.</i></p>			
<p>2035 General Plan Discussion: <i>The project is consistent with the 2035 General Plan objectives related to coordinating changes in the physical environment of O’ahu, specifically the opportunity for community to participate meaningfully in planning and development processes. This EIS is one step of the process which was preceded by a public meeting on the project to receive public comments. Information about the rural center is also continually provided on Hanapohaku’s project website.</i></p>			
<p>OBJECTIVE B: To develop Honolulu (Wai’alae-Kāhala to Halawā), ‘Aiea, and Pearl City as the Island’s primary urban center.</p>			
<p>Policy 1: Stimulate development in the primary urban center by means of the City and County's capital improvement program and State and Federal grant and loan programs.</p>			X
<p>Policy 2: Provide for the expanded development of low-rise multi-unit housing.</p>			X
<p>Policy 3: Encourage the establishment of mixed-use districts with appropriate design and development controls to insure an attractive living environment and compatibility with surrounding land uses.</p>			X
<p>Policy 4: Provide downtown Honolulu and other major business centers with a well-balanced mixture of uses.</p>			X
<p>Policy 5: Encourage the development of attractive residential communities in downtown and other business centers.</p>			X

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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Policy 6: Maintain and improve downtown as the financial and office center of the Island, and as a major retail center.			X
Policy 7: Provide for the continued viability of the Hawai'i Capital District as a center of government activities and as an attractive park-like setting in the heart of the City.			X
Policy 8: Foster the development of Honolulu's waterfront as the State's major port and maritime center, as a people-oriented mixed-use area, and as a major recreation area.			X
Policy 9: Facilitate the redevelopment of Kaka'ako as a major residential, as well as commercial and light industrial area.			X
<p>Discussion: <i>The project is located in the North Shore region of O'ahu; therefore, the objective and policies related to the Island's primary urban center are not applicable.</i></p>			
<p>2035 General Plan Discussion: <i>A section was added to the 2035 General Plan relating to the long-term impacts of climate change. The project supports the policies related to integrating climate change adaptation into planning, design and construction of developments. In addition, the project operations will prepare for the anticipated impacts of sea level rise on the coastal community of Pūpūkea</i></p>			
<p>OBJECTIVE C: To develop a secondary urban center in 'Ewa with its nucleus in the Kapolei area.</p>			
Policy 1: Allocate funds from the City and County's capital-improvement program for public projects that are needed to facilitate development of the secondary urban center at Kapolei.			X
Policy 2: Encourage the development of a major residential, commercial, and employment center within the secondary urban center at Kapolei.			X
Policy 3: Encourage the continuing development of Barbers Point as a major industrial center.			X
Policy 4: Coordinate plans for the development of the secondary urban center at Kapolei with the State and Federal governments and with the sugar industry.			X
Policy 5: Cooperate with the State and Federal governments in the development of a deep water harbor at Barbers Point.			X
Policy 6: Encourage the development of the 'Ewa Marina Community as a major residential and recreation area emphasizing recreational boating activities through the provision of a major marina and a related maritime commercial center containing light-industrial, commercial, and visitor accommodation uses.			X
<p>Discussion: <i>The project is located in the North Shore region of O'ahu; therefore, the objective and policies related to 'Ewa are not applicable.</i></p>			
<p>OBJECTIVE D: To maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live.</p>			
Policy 1: Develop and maintain urban-fringe areas as predominantly residential areas characterized by generally low rise, low density development which may include significant levels of retail and service commercial uses as well as satellite institutional and public uses geared to serving the needs of households.			X
Policy 2: Coordinate plans for developments within the 'Ewa and Central O'ahu urban-fringe areas with the State and Federal governments and with the sugar, pineapple, and other emerging agricultural industries.			X
Policy 3: Establish a green belt in the 'Ewa and Central O'ahu areas of O'ahu in the Development Plans.			X
Policy 4: Maintain rural areas as areas which are intended to provide environments supportive of lifestyle choices which are dependent on the availability of land suitable for small to moderate size agricultural pursuits, a relatively open and scenic setting, and/or a small town, country atmosphere consisting of communities which are small in size, very low density and low rise in character, and may contain a mixture of uses.			X
<p>Discussion: <i>The project is located in the North Shore region of O'ahu; therefore, the objective and policies related to the urban fringes of 'Ewa and Central O'ahu are not applicable.</i></p>			

Draft Environmental Impact Statement

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<p>OBJECTIVE E: To create and maintain attractive, meaningful, and stimulating environments throughout O’ahu.</p>			
<p>Policy 1: Prepare and maintain a comprehensive urban-design plan for the Island of O’ahu.</p>			X
<p>Policy 2: Integrate the City and County’s urban-design plan into all levels of physical planning and developmental controls.</p>			X
<p>Policy 3: Encourage distinctive community identities for both new and existing districts and neighborhoods.</p>	X		
<p>Policy 4: Require the consideration of urban-design principles in all development projects.</p>	X		
<p>Policy 5: Require new developments in stable, established communities and rural areas to be compatible with the existing communities and areas.</p>	X		
<p>Policy 6: Provide special design standards and controls that will allow more compact development and intensive use of lands in the primary urban center.</p>			X
<p>Policy 7: Promote public and private programs to beautify the urban and rural environments.</p>	X		
<p>Policy 8: Preserve and maintain beneficial open space in urbanized areas.</p>			X
<p>Policy 9: Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve.</p>			X
<p>Policy 10: Establish a review process to evaluate the design of major development projects.</p>			X
<p>Discussion: The project supports the City’s objective to create and maintain attractive, meaningful, and stimulating environments throughout Hawai’i. The rural community commercial center will be developed on lands designated in the NSSCP for Rural Community Commercial Center, and will share a driveway with the existing Foodland Pūpūkea. The center which will provide complementary goods and services to Foodland, will be designed in a manner consistent with the country character of the North Shore. One- to two- story buildings will be set back from the highway to create an open, park-like space along Kamehameha Highway.</p>			
<p>2035 General Plan Discussion: The project supports the 2035 General Plan added policy of recognizing the importance of using Native Hawaiian plants in landscaping to further the traditional Hawaiian concept of mālama ‘āina and to create a more Hawaiian sense of place. Appropriately sited ornamental and native plant species will be integrated throughout the landscaped elements of the project.</p>			
<p>OBJECTIVE F: To promote and enhance the social and physical character of O’ahu’s older towns and neighborhoods.</p>			
<p>Policy 1: Encourage new construction to complement the ethnic qualities of the older communities of O’ahu.</p>			X
<p>Policy 2: Encourage, wherever desirable, the rehabilitation of existing substandard structures.</p>			X
<p>Policy 3: Provide and maintain roads, public facilities, and utilities without damaging the character of older communities.</p>	X		
<p>Policy 4: Seek the satisfactory relocation of residents before permitting their displacement by new development, redevelopment, or neighborhood rehabilitation.</p>			X
<p>Discussion: The City’s objectives related to physical development and urban design are supported by the rural community commercial center. The design of the rural center will be appropriately scaled and be compatible with the communities and character of the Sunset Beach – Pūpūkea area. Sustainability and environmental protection are some of the important features of the project. As such, the project supports the beautification of urban and rural environments. Objectives specific to ‘Ewa and urban fringe areas are not applicable to the project.</p>			
<p>PART VIII: PUBLIC SAFETY</p>			
<p>OBJECTIVE A: To prevent and control crime and maintain public order.</p>			
<p>Policy 1: Provide a safe environment for residents and visitors on O’ahu.</p>	X		
<p>Policy 2: Provide adequate criminal justice facilities and staffing for City and County law-enforcement agencies.</p>			X
<p>Policy 3: Emphasize improvements to police and prosecution operations which will result in a higher proportion of wrongdoers who are arrested, convicted, and punished for their crimes.</p>			X

Draft Environmental Impact Statement

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Policy 4: Keep the public informed of the nature and extent of criminal activity on O’ahu.			X
Policy 5: Establish and maintain programs to encourage public cooperation in the prevention and solution of crimes.			X
Policy 6: Seek the help of State and Federal law- enforcement agencies to curtail the activities of organized crime syndicates on O’ahu.			X
Policy 7: Conduct periodic reviews of criminal laws to ensure their relevance to the community's needs and values.			X
Policy 8: Cooperate with other law-enforcement agencies to develop new methods of fighting crime.			X
Policy 9: Encourage the improvement of rehabilitation programs and facilities for criminals and juvenile offenders.			X
<p>Discussion: Police and fire protection services will not be affected by the construction or operations of the rural center. Hanapohaku strives to provide a safe environment for residents and visitors through the rural community commercial center. However, the policies related to criminal justice facilities, staffing, and crime prevention are primarily the responsibility of the City, and as such are not applicable to the project.</p>			
<p>OBJECTIVE B: To protect the people of O’ahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.</p>			
Policy 1: Keep up-to-date and enforce all City and County safety regulations.	X		
Policy 2: Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.	X		
Policy 3: Participate with State and Federal agencies in the funding and construction of flood-control projects.			X
Policy 4: Cooperate with State and Federal agencies to provide tsunami warning and protection for O’ahu.			X
Policy 5: Cooperate with State and Federal agencies to provide protection from war, civil disruptions, and other major disturbances.			X
Policy 6: Reduce hazardous traffic conditions.	X		
Policy 7: Provide adequate fire protection and effective fire prevention programs.	X		
Policy 8: Provide adequate search and rescue and disaster response services.			X
Policy 9: Design safe and secure public buildings.			X
Policy 10: Provide adequate staff to supervise activities at public facilities.			X
Policy 11: Develop civil defense plans and programs to protect and promote public health, safety and welfare of the people.			X
Policy 12: Provide educational materials on civil defense preparedness, fire protection, traffic hazards and other unsafe conditions.	X	?	
<p>Discussion: Public safety provisions are primarily the responsibility of the State and City. However, the project’s revitalization of the space will promote a safe environment for residents and visitors. The design and operations of the center will also comply with all City and County safety regulations.</p>			
<p>PART IX: HEALTH AND EDUCATION</p>			
<p>OBJECTIVE A: To protect the health of the people of O’ahu.</p>			
Policy 1: Encourage the provision of health-care facilities that are accessible to both employment and residential centers.	X		
Policy 2: Encourage prompt and adequate ambulance and first-aid services in all areas of O’ahu.	X		
Policy 3: Coordinate City and County health codes and other regulations with State and Federal health codes to facilitate the enforcement of air-, water-, and noise-pollution controls.			X
<p>Discussion: The rural community commercial center supports the objectives to protect the health of the people of O’ahu. An urgent care facility will be provided at the center to serve the North Shore community which currently lacks adequate access to healthcare services.</p>			
<p>OBJECTIVE B: To provide a wide range of educational opportunities for the people of O’ahu.</p>			

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

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Policy 1: Support education programs that encourage the development of employable skills.			X
Policy 2: Encourage the provision of informal educational programs for people of all age groups.			X
Policy 3: Encourage the after-hours use of school buildings, grounds, and facilities.			X
Policy 4: Encourage the construction of school facilities that are designed for flexibility and high levels of use.			X
Policy 5: Facilitate the appropriate location of learning institutions from the preschool through the university levels.			X
<p>Discussion: <i>The rural community commercial center will primarily provide commercial goods and services for the North Shore community. While a child care center may be located at the center, the policies related to educational opportunities are not applicable to the project.</i></p>			
<p>OBJECTIVE C: To make Honolulu the center of higher education in the Pacific.</p>			
Policy 1: Encourage continuing improvement in the quality of higher education in Hawai'i.			X
Policy 2: Encourage the development of diverse opportunities in higher education.			X
Policy 3: Encourage research institutions to establish branches on O'ahu.			X
<p>Discussion: <i>Higher education is outside the scope of the rural community commercial center. As such, the policies are not applicable to the project.</i></p>			
<p>PART X: CULTURE AND RECREATION</p>			
<p>OBJECTIVE A: To foster the multiethnic culture of Hawai'i.</p>			
Policy 1: Encourage the preservation and enhancement of Hawai'i's diverse cultures.	X		
Policy 2: Encourage greater public awareness, understanding, and appreciation of cultural heritage and contributions to Hawai'i made by the City's various ethnic groups.	X		
Policy 3: Encourage opportunities for better interaction among people with different ethnic, social, and cultural backgrounds.	X		
Policy 4: Encourage the protection of the ethnic identities of the older communities of O'ahu.			X
<p>Discussion: <i>A Cultural Impact Assessment was conducted for the project site, which included the traditional history of Pūpūkea and important cultural sites in the North Shore region. While there were no significant findings on the project parcels, the CIA has provided detailed information on the Hawaiian history and culture of the area, with elements of which will be shared through interpretive signage at the rural center.</i></p>			
<p>OBJECTIVE B: To protect O'ahu's cultural, historic, architectural, and archaeological resources.</p>			
Policy 1: Encourage the restoration and preservation of early Hawaiian structures, artifacts, and landmarks.	X		
Policy 2: Identify, and to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.	X		
Policy 3: Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.	X		
Policy 4: Promote the interpretive and educational use of cultural, historic, architectural, and archaeological sites, buildings, and artifacts.	X		
Policy 5: Seek public and private funds, and public participation and support, to protect social, cultural, historic, architectural, and archaeological resources.			X
Policy 6: Provide incentives for the restoration, preservation, and maintenance of social, cultural, historic, architectural, and archaeological resources.			X
<p>Discussion: <i>Hanapohaku supports the protection of O'ahu's cultural, historic, architectural, and archaeological resources. A CIA and AIS were conducted for the project. Both yielded negative findings for cultural and/or archaeological resources on the property. The project will include installations for interpretive signage to share the cultural and historic significance of Pūpūkea.</i></p>			
<p>OBJECTIVE C: To foster the visual and performing arts.</p>			
Policy 1: Encourage and support programs and activities for the visual and performing arts.	X		
Policy 2: Encourage creative expression and access to the arts by all segments of the population.			X

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<p>Table 4-5 City & County of Honolulu General Plan - Objectives and Policies</p> <p>S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<p>Policy 3: Provide permanent art in appropriate City public buildings and places.</p>			X
<p>Discussion: The project site plan includes an open space courtyard that could potentially be used for outdoor performances and events.</p>			
<p>OBJECTIVE D: To provide a wide range of recreational facilities and services that are readily available to all residents of O’ahu.</p>			
<p>Policy 1: Develop and maintain community-based parks to meet the needs of the different communities on O’ahu.</p>			X
<p>Policy 2: Develop and maintain a system of regional parks and specialized recreation facilities.</p>			X
<p>Policy 3: Develop and maintain urban parks, squares, and beautification areas in high-density urban places.</p>			X
<p>Policy 4: Encourage public and private botanic and zoological parks on O’ahu to foster an awareness and appreciation of the natural environment.</p>			X
<p>Policy 5: Encourage the State to develop and maintain a system of natural resource-based parks, such as beach, shoreline, and mountain parks.</p>			X
<p>Policy 6: Provide convenient access to all beaches and inland recreation areas.</p>	X		
<p>Policy 7: Provide for recreation programs which serve a broad spectrum of the population.</p>			X
<p>Policy 8: Encourage ocean and water-oriented recreation activities that do not adversely impact on the natural environment.</p>	X		
<p>Policy 9: Require all new developments to provide their residents with adequate recreation space.</p>			X
<p>Policy 10: Encourage the private provision of recreation and leisure-time facilities and services.</p>	X		
<p>Policy 11: Encourage the after-hours, weekend, and summertime use of public schools facilities for recreation.</p>			X
<p>Policy 12: Provide for safe and secure use of public parks, beaches, and recreation facilities.</p>	X		
<p>Policy 13: Encourage the safe use of O’ahu’s ocean environments.</p>	X		
<p>Policy 14: Encourage the State and Federal governments to transfer excess and underutilized land to the City and County for public recreation use.</p>	X		
<p>Discussion: The project is located mauka of the Pūpūkea Beach Park and the Pūpūkea-Waimea MLCD, a popular preserve and recreational area. The rural community commercial center will not interfere with existing access to the nearby beaches. Some of the services and products provided at the project are related to the promotion of surf and ocean recreation. While the project supports the City’s objectives and policies related to the provision of safe public parks, beaches, recreation facilities, and ocean environments, it is primarily the responsibility of the City’s Department of Parks and Recreation. As such, those policies are not directly applicable to the project.</p>			
<p>PART XI: GOVERNMENT OPERATIONS AND FISCAL MANAGEMENT</p>			
<p>OBJECTIVE A: To promote increased efficiency, effectiveness, and responsiveness in the provision of government services by the City and County of Honolulu.</p>			
<p>Policy 1: Maintain City and County government services at the level necessary to be effective.</p>			X
<p>Policy 2: Promote consolidation of State and City and County functions whenever more efficient and effective delivery of government programs and services can be achieved.</p>			X
<p>Policy 3: Ensure that government attitudes, actions, and services are sensitive to community needs and concerns.</p>			X
<p>Policy 4: Prepare, maintain, and publicize policies and plans which are adequate to guide and coordinate City programs and regulatory responsibilities.</p>			X
<p>Discussion: The City’s objective to promote increased efficiency, effectiveness, and responsiveness in government services are the responsibility of City agencies. As such, these policies are not applicable to the project.</p>			
<p>OBJECTIVE B: To ensure fiscal integrity, responsibility, and efficiency by the City and County government in carrying out its responsibilities.</p>			
<p>Policy 1: Provide for a balanced budget.</p>			X

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Table 4-5 City & County of Honolulu General Plan - Objectives and Policies	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Policy 2: Allocate fiscal resources of the City and County to efficiently implement the policies of the General Plan and Development Plans.			X
<i>Discussion: The policies guiding the fiscal integrity, responsibility, and efficiency of the City's budget and fiscal resources are not applicable to the project.</i>			

4.3.3 North Shore Sustainable Communities Plan

The North Shore Sustainable Communities Plan (NSSCP) is one of eight community oriented plans intended to help guide public policy, investment, and decision-making over the next 25 years. Each of these plans addresses one of eight planning regions on O’ahu, responding to specific conditions and community values of each region. Below are the objectives and policies of the NSSCP (Table 4-6).

Table 4-6 North Shore Sustainable Communities Plan - Objectives and Policies - City and County of Honolulu	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
<i>The Key Elements of the vision for the North Shore reflect . . . :</i>			
Maintain the Community Growth Boundary to Protect Agricultural, Open Space, and Natural Resources			X
Promote a Diversified Agricultural Industry			X
Enhance the Region’s Recreational and Educational Potential			X
Promote Hale’iwa and Waialua Towns as “Country Towns”			X
Support Waialua as the North Shore’s Industrial Center			X
Direct New Housing to Areas Contiguous to Hale’iwa and Waialua Towns and Use Rural Design Guidelines for Rural Residential Development			X
Provide Adequate and Appropriately-Sized Public Infrastructure, Facilities, and Services			X
Preserve and Protect Cultural and Historic Resources	X		
Adapt the Ahupua’a Concept as a Framework for Land Use and Natural Resource Management			X
Integrate Principles of Sustainability into Decision-Making Processes	X		
<i>Discussion: The project supports the NSSCP’s vision elements including preserving and protecting cultural and historic resources, and integrating sustainability into decision-making processes. As evaluated in Sections 3.8 and 3.9 of this document, a Cultural Impact Assessment and Archaeological Assessment were conducted for the project area. The findings were negative for cultural deposits or human burials. Sustainable elements will also be incorporated throughout the design and operations of the project.</i>			
Open Space and Natural Environment			
Guidelines			
Mountain Areas			
<ul style="list-style-type: none"> Maintain, protect and restore native forests and ecosystems within the State Conservation District and lands designated Preservation on the North Shore Sustainable Communities Plan Land Use Map. Ensure the protection of State conservation lands, especially those on the Ka’ena coastline and Mokolē’ia foothills. Reclassify important watershed areas which are designated but unused State Agricultural or Urban Districts to the State Conservation or City Preservation Districts. Identify and protect endangered species habitats, native ecosystems, and other important ecologically sensitive areas, including the natural area reserves and forest reserves, from such threats as fire, alien species, feral animals, and human activity. 			X

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<p>Table 4-6 North Shore Sustainable Communities Plan - Objectives and Policies - City and County of Honolulu S = Supportive, N/S = Not Supportive, N/A = Not Applicable</p>	S	N/S	N/A
<ul style="list-style-type: none"> • Identify mountain areas within the AG-2 General Agricultural District that are suitable for rezoning to P-2 General Preservation District. • Avoid the establishment of utility corridors and other uses that would disturb areas with high concentrations of native species. • Encourage coordination of natural resource protection and management efforts between the State DLNR and private landowners, as well as with the U.S. Military, especially where the Kahuku and Kawaihoa Training Areas overlap with environmentally sensitive areas. • Acquire and maintain public access easements to trail heads and public campgrounds, including parking and signage at trailheads, where appropriate. Such access should be required, as appropriate, for any new development. • Support State efforts to seek opportunities for cooperative agreements with private landowners to gain access to trails leading to public lands. • Implement recommendations in the State’s Na Ala Hele Program Plan to maintain and enhance mauka trail systems. • Identify historic trails and old government roads of cultural and recreational value to the public. 			
<p>Shoreline Areas</p> <ul style="list-style-type: none"> • Preserve rare and sensitive coastal resources including coastal strand vegetation, sand dunes, and anchialine pools. Establish buffer zones around these areas where necessary. • Prohibit off-road vehicle, motorcycle and bicycle use in ecologically sensitive areas, including coastal dunes and shoreline beaches. Identify and maintain recreational areas specifically designated for such use. • Protect nearshore coral reefs and other marine life from damaging activities such as soil erosion, nonpoint source pollution, dredging of coral reefs, and alterations to nearshore water circulation. • Establish access where justified by public demand, traditional use patterns, high quality recreational resources, or to circumvent barriers that exist along the shoreline. • Improve and expand public access to the shoreline at approximately 1/2-mile intervals with vehicular and bicycle parking and lateral access along the shoreline. • Implement the recommendations of the State of Hawai‘i’s Coastal Nonpoint Pollution Control Program and utilize best management practices in agricultural land use and operations to avoid or minimize chemical runoff and other “nonpoint” contaminants in shoreline areas. • Support research to determine causes of coastal erosion and identify appropriate management strategies to avoid future erosion hazards. • Encourage interagency coordination and public/private cooperation in developing and implementing beach management plans, with an emphasis on nonstructural approaches. • Discourage development or activities which result in beach loss, and encourage development practices or activities such as increased shoreline setbacks which result in beach preservation or enhancement. • Require buildings along the shoreline to adhere to the City’s and Federal Emergency Management Agency (FEMA) minimum building elevations and structural guidelines. In addition, adopt development standards that require new structures to incorporate building styles compatible with coastal hazards such as coastal erosion, tsunami and hurricane overwash. • Discourage visual obstructions such as walls and fences along the coastal highway to maintain and enhance existing panoramic views identified on the Open Space Map. Clear shrubs and vegetation on vacant State- and County-owned properties that would maintain views of the ocean from public roadways along the shoreline. 	X		

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<ul style="list-style-type: none"> Implement active protection and management practices that preserve and enhance native and other resident fish and aquatic species populations and habitats, including nearshore coral reefs. Efforts to enhance opportunities for commercial and recreational fishing should use management practices and techniques that sustain fish populations and habitat quality so as to maintain a quality aquatic environment for public enjoyment. Place sand from channel, stream, and harbor mouth dredging projects on local beaches in accordance with Hawai'i Revised Statutes Chapter 205A. 			
<p>Wetlands</p> <ul style="list-style-type: none"> Preserve and maintain all North Shore wetlands and wildlife habitats. When considering future activities/construction in the vicinity of biologically sensitive areas such as wetlands, the preferred sequence will be to: avoid ecologically sensitive areas entirely; minimize potential project impacts; and require mitigation that will offset the loss of resources. Support the restoration and protection of 'Uko'a Marsh. Protection can be achieved through fee acquisition, land banking, cooperative agreements with public agencies and private landowners, conservation easements, or other strategies. Support efforts to restore Loko Ea Fishpond as an interactive, productive and functioning aquaculture resource. Promote the development of a cultural learning center providing both visitors and residents opportunities to experience the unique environment around Loko Ea Pond and 'Uko'a Marsh. Possible activities may include tours of a working aquaculture farm, as well as cultural and environmental education programs that teach traditional and modern aquaculture techniques and the history of the Pond and its adjacent areas. Walkways extending north to 'Uko'a Pond could provide opportunities for interpretive nature walks. 			X
<p>Natural Gulches, Streams, and Drainageways</p> <ul style="list-style-type: none"> Preserve the aesthetic and biological values of the natural gulches, streams, and drainageways as part of the North Shore's open space system. Where feasible, establish wildlife habitat protective buffer zones and/or setbacks along rivers, streams, and shoreline areas. Where possible, provide public access to these open space and recreational resources. Minimize soil erosion, runoff of pesticides, fertilizers and other nonpoint source contaminants into streams, wetlands, and marine habitats. In addition to stream setback, utilize erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as recommended in the State Coastal Nonpoint Pollution Control Program, to prevent pollution of wetlands, streams, estuaries, and nearshore waters. Limit uses in these areas to conservation uses, compatible recreational uses such as hiking, traditional hunting, fishing, gathering, religious and cultural practices, and controlled diversion for agricultural purposes. Avoid development in ecologically sensitive areas; if activities are allowed, minimize impacts and implement mitigative measures that will fully offset any loss of resources. Preserve and maintain the natural streams and drainageways within the developed areas by designating them as part of the open space system. To the extent possible, limit any modifications to natural gulches and drainageways, unless they are necessary for flood protection, to preserve water quality and protect aesthetic and biological resources. If modifications are necessary, mitigate impacts on biological habitats by using stream-side vegetation, rip-rap boulder lining of steam banks, v-shaped bottom channels to maintain a stream flow during low rainfall periods, and other designs to promote aeration. Integrate planned improvements to the North Shore drainage system into the regional open space network by emphasizing the use of retention basins and recreational access in the design approach. 	X		

Draft Environmental Impact Statement

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<p>Scenic Resources and Scenic Views</p> <ul style="list-style-type: none"> • Conduct planning with attention to preservation of natural open space, protecting coastal and <i>mauka</i> views from public roadways, and conserving important viewsheds. • When view reductions may come from agricultural activities which intrude into viewplanes or otherwise degrade or diminish scenic qualities, the protection of roadway views should be balanced with the operating requirements of agriculture. • Evaluate the impact of land use proposals on the visual quality of the landscape, including viewplane and open space considerations. • Site new antennas, telecommunication equipment and alternative energy systems in appropriate locations to minimize their impact on visual resources. Encourage site clustering and techniques that blend the equipment into the natural landscape. • Discourage the use and installation of overhead utility lines and poles. Strong consideration should be given to placing replacement and new transmission lines underground. Undergrounding utility lines will enhance viewplanes and increase highway safety. Whenever possible, relocate or place underground overhead utilities that significantly obstruct public views. If unavoidable, locate any future overhead utilities on the <i>mauka</i> side of the public coastal highway. • Minimize the adverse effects of artificial lighting on wildlife and human health by balancing the need of outdoor lighting for night utility, security, and desire for reasonable architectural expression with the need to conserve energy and protect the natural environment. • Adopt outdoor night lighting standards that encourage efforts to minimize glare and stray light, and reinforce the differences between urban and rural communities. 	X		
<p>Utility Corridors and Greenways</p> <ul style="list-style-type: none"> • Provide sufficient easement width for the major trunk lines and transmission lines for utility systems, when their alignment is not within a road right-of-way, to permit the growth of trees within the easement. • When overhead transmission lines are located within or adjacent to a road right-of-way, there should be sufficient width to permit the growth of trees adjacent to the transmission line, consistent with the applicable operations, maintenance, and safety requirements. The purpose of the landscaping is to divert attention from the overhead lines and, preferably, obscure views of the overhead line from the travelway and adjacent residential areas • Permit the use of utility easements for pedestrian and bicycle routes. Encourage coordination between utility companies, landowners, pertinent agencies, and the community to ensure that safety, liability, and maintenance issues are adequately addressed. • Encourage the use of indigenous vegetation that is slow growing and thus minimizes the need to use herbicides for vegetation control. • Promote technologies that support alternative energy sources, including solar, wind, and wave power. Allow community and agency review of individual proposals to ensure compatibility and suitability. 	X		
<p>Discussion: <i>The rural community commercial center supports the NSSCP's guidelines related to open space and the natural environment. As discussed in Section 3.0 of this EIS, shoreline areas, drainageways, scenic resources, and greenways in the vicinity of the project area will be maintained to State and City standards. Landscaping for the project will be a mix of tropical and indigenous plant species to minimize the need for herbicides for vegetation control. Alternative energy production, including solar, will be implemented in the rear parking area of the project.</i></p>			
<p>Agriculture</p>			
<p>Guidelines</p>			
<p>Agricultural Lands</p> <ul style="list-style-type: none"> • Enforce permitted uses on agricultural lands to ensure that the use is contributing to meaningful and credible agricultural production on the same or nearby properties. 			X

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> • Cluster and locate dwellings near similar uses to preserve open space, maximize the use of productive agricultural lands, and reduce infrastructure costs, when planned as part of an agricultural activity. • Design and site buildings and other facilities that are accessory to an agricultural operation to minimize the visual impact on nearby areas and views from arterial and major collector roads. • Adopt development standards and permitting procedures that simplify and streamline the permitting requirements for uses that support the growth of agriculture, including agricultural support facilities and agriculture-based tourism. • Maintain adequate physical buffers between agricultural land uses and surrounding land uses. • Base any subdivision of agricultural lands on the most appropriately sized, viable economic unit for agricultural production. • Identify and implement – as an immediate high priority action item at the State and County levels – appropriate economic incentives designed to promote and facilitate the growth of diversified agriculture. • Support agricultural research and development activities targeted towards increasing operational efficiencies, economic returns, and the effective utilization of agricultural lands and supporting infrastructure, which enables sustainable usage of agricultural resources. • Assist residents to develop skills in agriculture and related specialized industries so that residents can seek local employment in the area. • Support a mentor program for area teens to learn about agricultural practices, economics, and business so that interest and commitment to agriculture may continue on to future generations. • Support the expansion and diversification of aquaculture in the region, including the continued cleanup of the former Dillingham Quarry site in Mokulē‘ia and expansion of existing aquaculture operations in the area. • Identify potential sites for aquaculture or mariculture parks. • Encourage agricultural producers to develop Conservation Plans in conjunction with the West O‘ahu Soil and Water Conservation District to manage and protect natural resources. • Assist governmental agencies and landowners to upgrade and maintain existing infrastructure networks, including roads and irrigation systems. • Improve the quality of irrigation water from Lake Wilson. • Work with the State to identify and protect Important Agricultural Lands (IAL) as defined by Act 183 (2005). 			
<p>Agricultural Support Facilities</p> <ul style="list-style-type: none"> • Develop agricultural support facilities in Waialua and Kawaihoa. • Ensure that permitted agricultural support facilities do not adversely affect agricultural production in the area or present health hazards or nuisances to adjacent areas. • Require all agricultural support facilities in the region to maintain a direct relationship to local agricultural production. • Site and design facilities to minimize development impacts and maximize the amount of farmland preserved. 			X
<p>Agriculture-Based Tourism</p> <ul style="list-style-type: none"> • Allow agricultural, recreational and educational programs, and limited outdoor recreational or other uses if the activity is complementary to the primary agricultural use of the land and it does not interfere with the agricultural use of the site. 			X

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> • Monitor tourism-related activities conducted on agricultural lands to ensure that such activities do not adversely impact on-site or adjacent agricultural activities or other resources. • Provide technical and business development support for visitor-related proposals. • Identify and develop a convenient, suitable location in or near Hale‘iwa and/or Waialua Town to establish a farmers’ market where farmers can market products locally. • Identify and develop a permanent site in the Sunset Beach vicinity to promote the North Shore Country Market. • Develop an agricultural museum that includes a demonstration area showing various crops in different stages of growth and processing. 			
<p><i>Discussion: The rural community commercial center will be located on lands designated as Urban and zoned for Neighborhood Business. The guidelines related to Agriculture are not applicable to the project.</i></p>			
<p align="center">Parks and Recreation</p>			
<p>Guidelines</p>			
<p>Community and Neighborhood Parks and Facilities</p>			
<ul style="list-style-type: none"> • Develop Hale‘iwa Beach Park Mauka as a community-based park to expand active recreational facilities for North Shore residents. • Acquire Pu‘uiki Park for community use. • Expand Waialua District Park by acquiring agricultural land across Goodale Avenue. • If new residential development occurs, it should provide land for open space and recreation purposes at a minimum of two acres per 1,000 residents. Community-based parks (and associated service radius) include miniparks (1/2 mile), neighborhood parks (1/2 mile), community parks (one mile), and district parks (two miles). • Locate community and neighborhood parks which emphasize intensive uses such as ball fields, playing courts, and community buildings in or adjacent to the neighborhoods or communities they serve, in order to maximize accessibility. • Provide more youth activities, programs and facilities on the North Shore. 			X
<p>Mauka Areas</p>			
<ul style="list-style-type: none"> • Expand public access to the upland or mauka areas for appropriate types of recreational activities that are low-impact, resource-sensitive and do not compromise significant environmental resources and important agricultural activities. These would include nature-based activities such as picnicking, camping, hiking, mountain biking, hunting and the appreciation of scenic, natural and cultural resources. • Acquire and maintain public and/or private campgrounds and hiking trails in the mauka areas. • Develop a system of mauka trails and paths to interconnect the major recreational areas of the North Shore for use by nonmotorized transportation modes, e.g., walking, biking, horseback riding. • Coordinate planned private and public actions pertaining to trails and access. Identify historic trails and old government roads of cultural and recreational value to the public. 			X
<p>Beach Parks and Shoreline Areas</p>			
<ul style="list-style-type: none"> • Limit new developments along the shoreline to parks and other compatible open space uses. • Improve and expand public access to the shoreline at approximately one half mile intervals in rural areas of the North Shore, or at closer intervals where justified by public demand, traditional use patterns, the quality of the recreational resources, emergency services response time, or to bypass natural barriers that impede public access to the shoreline. • Maintain and expand lateral access along the coast, especially in areas with high recreational or scenic value, including the shoreline along Sunset Beach and Kawailoa where access to popular sandy beaches and surf spots are in demand. 	X		

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> Limit uses within beach parks and nearshore ocean area uses to preserve overall environmental quality, rural character, scenic views, and open space. Provide adequate public parking and related support facilities (such as rest rooms and showers) at popular beach parks, including lifeguard equipment storage facilities in anticipation of increased lifeguard services needed at those parks. Improvements are planned for North Shore beach parks at Pu'uiki Beach, Laniākea, Chun's Reef, Kawailoa, Leftovers, Uppers, Kahawai, Banzai Rock, Kaunala, and Waiale'e. Acquire shoreline properties as opportunities arise or obtain public use easements and maintenance agreements with private landowners, especially lands adjacent to existing public parks. 			
<p>Maintenance and Management of Parks, Recreation Areas and Recreational Resources</p> <ul style="list-style-type: none"> Provide sufficient resources – including funding and manpower – to ensure that public facilities are adequately maintained. Identify limitations on recreational resources and implement policies to regulate and mitigate impacts to these resources. Establish and enforce rules and regulations to mitigate conflicts among recreational activities. Engage public and private organizations in partnership with government agencies to maintain recreational resources. 			X
<p>Site Design of Recreational Facilities</p> <ul style="list-style-type: none"> Incorporate natural and/or cultural features of the site and use landscape materials that are indigenous to the area, where feasible, into the design of recreation facilities and areas. Locate uses that generate high noise levels away from existing and planned residential areas. Design and site improvements and landscaping to enhance the rural character and the aesthetic value of open space elements and natural resources. Provide pedestrian and bicycle pathways from surrounding streets to parks, to facilitate convenient access to the parks. Site parks and recreational attractions intended for regional or island-wide uses along or near regional roadways. Minimize environmental impacts (such as siltation, pesticide and fertilizer runoff) of recreational facilities and activities. Expansive recreational facilities, such as community and regional parks, should comply with State Department of Health guidelines related to ground and nearshore water quality. 			X
<p>Recreational Activities that Support the North Shore's Economy</p> <ul style="list-style-type: none"> Promote recreational and specialty events such as surf meets, fishing tournaments, bike tours, races and other competitions which contribute to the North Shore's economy. Such events shall meet State and City rules and regulations for park and ocean uses to avoid conflict with recreational uses. Manage impacts to the recreational resource and surrounding communities (such as noise, parking, traffic, etc.) associated with special events. Promote instructional programs, training clinics and other activities that cater to the health and recreation industry and which will not impact the North Shore's rural character. Explore the potential of equestrian activities, such as trail rides and riding adventures, as an adjunct to the area's attractions. Support equine activities through a variety of means, including establishment of well-designed, safe riding trail networks linking destinations in the rural communities and in the mauka areas that have long been used by riders. Cooperative agreements for the development and maintenance of such networks should be forged through public-private partnerships. 	X		

Draft Environmental Impact Statement

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<p>Discussion: <i>The rural community commercial center supports the guidelines for parks and recreation. Although the project will be located mauka of Kamehameha Highway, its proximity to Pūpūkea Beach Park is an important consideration to the planning and design stages of the buildings. Public access to the Beach Park and the Pūpūkea-Waimea MLCD will not be affected by the project. Off-street parking will be provided for patrons of the rural center to prevent patrons from using the public parking designated for Pūpūkea Beach Park users.</i></p>			
<p>Historic and Cultural Resources</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Implement in situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique, historic, cultural and archaeological features, and for which the State Historic Preservation Division has recommended such treatment. • Consider the particular qualities of a site and its relationship to its physical surroundings when determining the appropriate treatment for a site. Determine appropriate preservation measures, site boundaries and setbacks, and development restrictions on a site-by-site basis in consultation with the State Historic Preservation Division. • Include input from all pertinent community resources in the development of a site preservation plan. • Include sight lines and view planes that are significant to the original purpose and value of the site in criteria for adjacent use restrictions. • Determine the appropriateness of public access on a site-by-site basis in consultation with the State Historic Preservation Division, Hawaiian cultural organizations, and the owner of the land on which the site is located. 			X
<p>Discussion: <i>The project site was surveyed for cultural and historic deposits. The negative findings determined that the project will not require an archaeological monitoring plan. While the guidelines for historic and cultural resources are not directly applicable to the project site due to its negative findings, SHPD will be notified and all construction work will immediately cease in the event that historic or cultural remains are discovered at the project site.</i></p>			
<p>Residential Communities</p>			
<p>Guidelines</p>			
<p>Rural</p>			
<ul style="list-style-type: none"> • Utilize a traditional density of one unit per acre with lots ranging in size from one to three acres, although alternative layouts that promote clustering are encouraged. Limit buildings to two stories or 25 feet, although the height may vary according to required flood elevation, slope, and roof form. • Ensure compatibility between country-district uses and adjacent agricultural lands, natural resources, views, or cultural features. 			
<p>Rural Residential</p>			
<ul style="list-style-type: none"> • Densities range from five to eight units per acre, or up to 10 units per acre for alternative development options which enhance rural character and maximize consolidated, usable open space. Lot sizes range from 5,000 square feet to 10,000 square feet, allowing the application of optional design standards. For smaller lot developments of less than 5,000 square feet, alternative clustering is encouraged. • Use rural development standards to determine appropriate scale and character, smaller building footprints, greater setbacks, and more landscaping (use of hedges to create walls and grassed front yards, and rural roadways with no sidewalk, curbs, and gutters). • Avoid monotonous rows of garages and driveways along neighborhood street frontages by employing features such as varied building setbacks and shared driveways. 			X

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<ul style="list-style-type: none"> Plan and design new or infill housing development, as well as modifications to existing homes, to be generally compatible with the predominant form and character of existing homes on adjacent properties and with the neighborhood as a whole. Use plantation architectural features such as pitched roofs in varied forms, exterior colors and finishes, building orientation, floor plans and architectural details to provide visual interest and individual identity and accentuate the rural setting. In general, buildings are to be less than two stories or 25 feet, although the height may vary in response to required flood elevation, slope, or other physical site constraints. Support affordable housing initiatives in areas designated for new housing development. 			
<p>Low-Density Apartment</p> <ul style="list-style-type: none"> Maintain the existing apartment district boundaries. Densities range from 10 to 20 units per acre. Buildings should not be more than three stories or exceed 40 feet in height. When possible, enhance the compatibility of development within apartment district uses with adjacent residential uses. Employ building form, orientation, location of entries and landscape screening that reflects single-family residential character and provides greater privacy and individual identity for housing units. Ensure compatibility of building scale, roof form and the quality of materials with those of adjacent residential areas. 			X
<p>Special Needs Housing</p> <ul style="list-style-type: none"> Locate special needs housing within or near Hale‘iwa or Waialua Towns within close proximity to public transit, community services and commercial activities, but not so clustered together to create a significant change to neighborhood character, especially as viewed along collector roads. As an exception to standard density situations, special needs housing may have densities of up to 20 units per acre, not including beds in skilled nursing facilities, if they consist primarily of smaller dwelling units with residential scale and character. Proposals for special needs housing should be subject to community and agency review. Limit building heights in line with the region’s rural character. Ensure compatibility of building scale, roof form, and materials with adjacent residential areas. 			X
<p>Discussion: The project is not zoned for residential housing. These guidelines are not applicable to the rural community commercial center project.</p>			
<p>Commercial Areas</p>			
<p>Guidelines</p>			
<p>Hale‘iwa Country Town</p> <ul style="list-style-type: none"> Limit building heights to two stories, and employ building design elements which reflect the architectural characteristics of the early 1900-period architecture identified in the Hale‘iwa Special District Design Guidelines. Incorporate generous, functional, public and open spaces reflective of the town’s agricultural heritage. Encourage commercial and related activities that are conducive to the pedestrian character to locate at the sidewalk level along Kamehameha Highway. Encourage less pedestrian-dependent and conducive activities (such as manufacturing areas for products and compatible light industrial uses, residences, services, etc.) to locate behind or above commercial activities so as not to detract from the commercial retail character of Kamehameha Highway. 			X

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<ul style="list-style-type: none"> • Focus the town’s commercial core around a mix of compatible activities such as recreation, marine-related enterprises, farmers’ markets, historic and cultural attractions, “clean” light industrial, small businesses and offices, civic and governmental services, businesses and retail activities for both residents and visitors. • Upgrade drainage, wastewater, and water infrastructure within Hale’iwa Town, as needed. • Support home-based businesses and “Mom and Pop” type stores within the town center. • Concentrate new development near existing built areas emphasizing redevelopment and infill along Kamehameha Highway, makai of the Hale’iwa Joseph P. Leong Highway (Hale’iwa Bypass Road). Provide adequate landscaped buffer adjacent to the bypass. • Ensure that commercial uses adjoining the Kamehameha Highway corridor include support facilities such as parking lots and rest rooms that can adequately accommodate the planned commercial activities. • Support the expansion and enhancement of Hale’iwa Harbor. If possible, integrate the harbor’s attractions and facilities with commercial activities in Hale’iwa Town. • Expand indoor recreational and educational facilities and programs (museums, movie theater, gym, and cultural performance theaters) and historical, cultural, and arts programs to further enrich Hale’iwa’s civic core. • Provide improved, expanded, and continuous pedestrian walkways linking commercial establishments within Hale’iwa, including connections between farmers’ markets or other kinds of agricultural product and retail outlets, and open space and environmental resources (such as beach parks, Hale’iwa Harbor and Loko Ea Pond). • Enhance the attractiveness and general landscaped open space character of the area by providing roadway improvements, street trees, streetlights, street furniture, and signage compatible with the rural character of Hale’iwa Town. • Continue to use and support production of a visitors’ map showing attractions and services in Hale’iwa. • Maintain Kamehameha Highway as a two-lane thoroughfare through Hale’iwa Town. • Consolidate off-street parking to areas behind buildings, while retaining existing on-street parking wherever possible and appropriate. As needed, parking should be rearranged to accommodate the pedestrian walkway system along Kamehameha Highway. • Provide signage and other forms of orientation to help direct motorists through the town to major facilities and to off-street parking facilities. • Improve conditions for transit and bicycling through Hale’iwa Town by providing better designed and located bus stops, and a designated bike lane through the town. • Enhance Weed Junction and Kamehameha Highway/Joseph P. Leong Junction, which are entry points to Hale’iwa, in a manner which conveys their gateway functions through appropriate design, landscaping, signage and painting. • Encourage private and community-based initiatives to protect and enhance the streams, wetlands, and other natural resources within Hale’iwa Town. Retain the agricultural use adjacent to Weed Junction and the Preservation designation at Loko Ea Pond. 			
<p>Waiialua Country Town</p> <ul style="list-style-type: none"> • Ensure new developments are consistent with the <u>Waiialua Town Master Plan</u> recommendations for the town center. • Integrate neighborhood parks and community-oriented recreation areas into new residential development. • Locate churches and public facilities in or near the town. • Retain large, readily accessible open spaces where outdoor recreation facilities and neighborhood gardens create open vistas and green spaces. Retain open space entrances to 			X

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<p>the town core, including Weed Junction, Thompson Corner, and Waialua Beach Road, with Waialua Park as the entrance to the country town district.</p> <ul style="list-style-type: none"> • Incorporate significant historic features from the plantation era and earlier periods into new developments, where feasible and appropriate. Existing buildings of historical, cultural and/or architectural significance, such as the surviving elements of the Waialua Mill, should be preserved and maintained through rehabilitation and adaptive reuse. Where feasible, adapt and highlight these structures as landmarks and icons representative of Waialua’s plantation town history. • While buildings in the commercial core may be two stories in height, one-story heights should be emphasized, in keeping with the area’s historic scale and to preserve the prominence and views of existing mill structures. • New commercial buildings should be similar in architectural character, scale and materials to historic structures such as the former Waialua Sugar Company offices and the Waialua Library. • Use design guidelines described in the <u>Waialua Town Master Plan</u> to promote and develop a special image for Waialua’s commercial and industrial core that reflects the town’s historic character and reinforces the town’s role as the cultural and business center for Waialua. Encourage renovations and new construction in accordance with the design guidelines. • Provide pedestrian and bicycle access between surrounding residential neighborhoods and Waialua’s commercial core. • Encourage infill development and new commercial development around Kealohanui Street to strengthen the town core and provide the critical mass necessary in developing a healthy town center. • Direct new residential development outside but adjacent to the town core, as generally indicated on the Land Use Map. • Locate industrial uses around the former sugar mill (see Section 3.7 Industrial Areas for applicable policies and guidelines). • Promote agricultural support activities at the agricultural support area adjacent to the mill site. • New housing units should incorporate rural features (such as small building footprints, larger setbacks, and more landscaping) and be sited and organized to give a strong sense of community. • Work with developers to establish housing programs that place high priority on the needs of existing Waialua residents. • Provide job or entrepreneurial opportunities for area residents, and make available training programs for new jobs and businesses. • Promote historical and cultural attractions such as museums or activity centers that illustrate the history of the community or feature current agricultural operations near the mill site to encourage visitors to Waialua Town. • Encourage computer-oriented, high technology business, health care, and medical services to locate in Waialua. • Provide for safe and pleasant pedestrian circulation along the storefronts. As it redevelops, emphasize pedestrian circulation along Kealohanui Street. Retain a distinctive pedestrian-oriented commercial area for residents and visitors through the use of signage, street furniture, and street tree plantings to encourage walking and biking. • Support production of a map showing services in Waialua and attractions in the region, such as Ka’ena Point and nearby beach parks. • Promote Kealohanui Street as a pedestrian-oriented promenade in Waialua. 			

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<ul style="list-style-type: none"> • Link proposed pedestrian walkways to the Waialua Town core, including linkages to proposed farmers’ markets and other kinds of agricultural product and retail outlets. • Provide convenient parking that should be landscaped and screened from roadways. • Enhance Waialua Beach Road and Farrington Highway as gateways to Waialua Town through signage and landscaping. • Plant street trees to enhance the pedestrian experience and to create a strong streetscape image. A detailed street tree and planting plan should be developed and implemented as part of the right-of-way plan. 			
<p>Rural Community Commercial Center</p> <ul style="list-style-type: none"> • Limit rural community commercial centers to existing zoned areas between Pūpūkea Road and Pāhoe Road that currently serve the commercial needs of residents and visitors. • Design rural community commercial centers to provide a compact and efficient organization of various commercial services which primarily serve the immediate community. • Architectural scale and character should respect the surrounding natural features, and adjacent residential areas. Buildings should reflect a rural character compatible with surrounding open spaces and adjacent residential use. • Limit building heights to no more than two stories. • Locate parking behind buildings or provide parking that is landscaped. Parking should be visually screened from the street and adjacent residential lots, by planting a landscaped screen of trees and hedges along street frontages and property lines and planting shade trees throughout the parking lot. • Incorporate pedestrian and bicycle facilities, including bicycle paths and storage racks, and off-site improvements such as crosswalks. • Site bus stops in close proximity to rural community commercial centers. 	X		
<p>Country Stores</p> <ul style="list-style-type: none"> • Design country stores to be small-scale, freestanding, compact commercial facilities. Prohibit country stores from expanding to larger, continuous commercial strip types of developments along arterial roads. • Limit country stores primarily to retail uses that provide services to the surrounding community. • Architectural scale and character should respect the surrounding natural features, and adjacent residential areas. Buildings should reflect a rural character compatible with surrounding open spaces and adjacent residential uses. • Limit building heights to one story. • Locate parking behind buildings, or provide parking that is landscaped. Parking should be visually screened from the street and adjacent residential lots, by planting a landscaped screen of trees and hedges along street frontages and property lines and planting shade trees throughout the parking lot. • Promote pedestrian and bicycle access to country stores. • Assist business owners with maintaining their financial stability to ensure that country stores remain in operation. 			X

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<p>Discussion: The project concept and design were derived from the guidance of the NSSCP and the Rural Community Commercial Center guidelines for the project site. The B-1 Neighborhood Business zoned project site was designated as Rural Community Commercial Center, in an effort to consolidate the future of existing and new commercial uses in the Sunset Beach-Pūpūkea region. The rural center will follow a style consistent with the surrounding North Shore country setting. The planned commercial uses at the center will be clustered into two main commercial buildings -one building on the north side aligned mauka to makai, and the other building at the center of the parcel extending parallel to the grade and highway. Parking will be provided in the rear of the buildings to promote an open frontage along Kamehameha Highway. Open space areas and landscaping will be incorporated throughout the project site.</p>			
Industrial Areas			
Guidelines			
<ul style="list-style-type: none"> • Maintain adequate open buffer zones between industrial activities and residential districts. • Minimize impacts (views, noise and smells) and reduce the visibility of large building masses, machinery elements, parking, storage areas, industrial equipment and operation areas through proper site planning and landscape plantings. • Encourage uses which have few environmental impacts and those which complement the development scale of the surrounding community. • Allow low-impact, service industrial uses in enclosed buildings within the Hale'iwa and Waialua Country Town Districts, so as not to detract from the pedestrian-oriented commercial/retail character of roadways, such as Kamehameha Highway, Kealohanui Street, and Goodale Avenue. These could include manufacturing of clothing, arts and crafts and surfboard repair. • Building height and form should reflect the contexts of their sites. At the Waialua Mill site, they should follow guidelines reflecting the Mill's image. In Hale'iwa Town, they should follow the Hale'iwa Special District Design Guidelines. In Waialua Town, they should be consistent with guidelines of this document and the Waialua Town Master Plan. In general, buildings should be designed to reflect the architectural character of Hale'iwa or Waialua Town. Basic design principles, texture, construction materials, and colors should be compatible with the styles from the era and surrounding buildings. • Where taller vertical structures are required as part of an industrial operation, site and design such structures to minimize impacts on view planes and reduce visibility from scenic vistas, public roadways, residential areas, commercial areas, parks, and other significant open space areas. • Limit industrial uses located along the shoreline to water-dependent activities (such as boat repair and maritime-related activities). Consider environmental, visual, and noise impact during the permit application process. • Maintain and upgrade infrastructure to support industrial facilities. 			
<p>Discussion: The project is a rural community commercial center which will provide goods and services to the North Shore community. The guidelines related to industrial areas are not applicable to the project.</p>			
Visitor Accommodations			
Guidelines			
<ul style="list-style-type: none"> • Allow visitor accommodations in Hale'iwa Town to help restore and promote the historic character of the town. • Design visitor accommodations to be consistent with the Hale'iwa Special District Design Guidelines. In general, visitor accommodations should be small in scale (limited to two stories in height), be compatible with the architectural style and character of Hale'iwa Town, and observe the same building envelopes and design standards of adjacent buildings. • Provide convenient and safe access for pedestrians and vehicles. 		X	

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> • Incorporate mixed use that caters to pedestrian activity located on the ground floor and visitor accommodations provided on the upper floor. • Provide adequate off-street parking which is landscaped and screened from public roadways. • Address the streetscape and provide a setting that is conducive to pedestrian activity, when located along pedestrian-oriented streets. • Ensure that existing and/or proposed infrastructure can adequately accommodate the proposed development and associated visitor population. • Minimize impacts (noise, traffic, parking, visual) on surrounding activities/properties and from public roadways. • Prohibit the granting of new permits, including nonconforming use certificates for B&B and vacation rental operations on the North Shore. 			
<p>Discussion: The project is meant to provide a range of goods and services for residents and visitors of the area. While the rural center will not be a visitor accommodation, it will still support the guidelines including compatible architectural style and character; convenient and safe access for pedestrians and vehicles; adequate off-street parking; providing a setting conducive to pedestrian activity when located along streets; ensuring infrastructure can adequately accommodate the development; and minimizing impacts on surrounding activities/properties.</p>			
<p>Institutional Uses</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Colocate neighborhood or community parks with elementary or intermediate schools and coordinate design of facilities when efficiencies in development and use of athletic, meeting and parking facilities can be achieved. • Colocate social, social service institutions, and other public service agencies to provide convenient one-stop services to the region. 			X
<p>Discussion: The rural community commercial center will not include social service institutions or community parks. These guidelines are not applicable to the project.</p>			
<p>Military</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Encourage all government agencies (City, State, and Federal) to coordinate efforts with the U.S. military, especially where the Kahuku and Kawaihoa Training Areas overlap with environmentally sensitive areas. • Encourage the military to provide appropriate infrastructure services to support military uses on their lands and minimize any potential impacts to the region. • Work with the military to allow use of Drum Road as an emergency access bypass route during natural disasters or other emergency incidents. • Encourage low-rise military facilities that support educational and recreational programs and are compatible with the region on military reservation lands such as Dillingham Airfield. 			X
<p>Discussion: The project is a rural community commercial center and on private lands. The guidelines related to military are not applicable to the project.</p>			
<p>Transportation Systems</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Establish rural streetscape design and development standards within residential areas consistent with the rural character of the region. Allow for rural elements that reduce the amount of impervious surfaces, such as minimum pavement widths to support traffic demands and emergency vehicle access, shared driveways, reduced parking requirements, more landscaping, and grassed swales as an alternative to sidewalks with curbs and gutters. • Emphasize accessibility from residential streets to bus routes, parks, schools and commercial centers. Design roadways to facilitate the use of alternative transportation forms, including bicycle and pedestrian travel, and personal motorized devices. 	X		

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> • Provide scenic lookout points to minimize hazards created by slower sightseeing traffic and to enhance the appreciation of the region’s scenic resources. • Provide appropriately sited and designed off-street parking areas at popular beach parks wherever feasible, including parking in support parks mauka of the highway. • Study the safety and feasibility of developing passing zones on Kamehameha Highway and Kaukonahua Road from Hale’iwa/Waialua to Wahiawā to reduce traffic delays due to slower moving vehicles, and to improve safety conditions. • Provide safety improvements along Kaukonahua Road and Kamehameha Highway from the Joseph P. Leong Highway (Hale’iwa Bypass Road) to Wahiawā and beyond. Promote the development of emergency runaway vehicle ramps on Kamehameha Highway and Kaukonahua Road, from Wahiawā to Hale’iwa/Waialua. • Approve new residential and commercial development only if the State DOT and the City DTS certify that adequate transportation access and services can be provided. • Continue to include the daily visitor population that visits the North Shore in determining allocations of resources and facilities for the North Shore. • Promote the use of transportation demand management strategies, including measures such as ride-sharing (car/van pooling), improved bus service and routes, the use of non-vehicular travel modes, modified work hours and teleworking to reduce commutes. • Protect the natural resources of Ka’ena Point from potentially damaging vehicular traffic. Prohibit construction of a roadway around Ka’ena Point. • Provide pedestrian-friendly walkways, off-street parking, bus pull-outs, tour bus maneuvering areas, and drainage improvements in Hale’iwa Town. • Improve the main roadways within Hale’iwa and Waialua Country Town Districts with shade trees, landscaping, sidewalks, street furniture, and signage to promote pedestrian orientation within these country towns. • Create a regional pedestrian/bikeway system linking the parks, schools and town centers in Hale’iwa and Waialua with outlying communities. • Coordinate bikeway development with responsible State and City agencies and private landowners to ensure that safety, liability, and a mixture of use issues are adequately addressed. • Locate bus stops to be convenient and accessible to residential areas and hubs of community activity. • Design bus shelters to provide weather protection for bus passengers and complement the natural setting. • Explore the possibility of a Historic Hale’iwa Trolley as an alternative for visitors to experience the North Shore. • Encourage the State to upgrade, maintain, and expand the boating facilities at Hale’iwa Harbor to meet the needs of recreational and commercial fishing and leisure boating activities. • Maintain small aircraft, general aviation and other recreational, commercial, or other military uses at Dillingham Airfield in cooperation with the U.S. Army. As necessary, upgrade and maintain facilities to support airfield use. • Limit uses in the vicinity of Dillingham Airfield to those that are compatible with aircraft noise levels and overflights from the airfield. • Identify and maintain former cane haul roads and other mauka roads to provide for the safe and quick evacuation of residents and the movement of emergency response personnel (e.g., fire, police, ambulance) in the event that the primary highways become impassable due to natural disasters or other emergency incidents. Investigate the use of the following for safety and emergency access: the cane haul road system mauka of Farrington Highway in Mokulē’ia; the roads connecting with Drum Road including cane haul road (Twin Bridge Road) in 			

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Draft Environmental Impact Statement

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Hale'iwa, Kawailoa Road, Ashley Road, Pūpūkea Road and Motocross/Kaunala Road. COMSAT/Girl Scout Camp (Paumalū) Road does not connect with Drum Road and would be for evacuation use only.			
<i>Discussion: The project supports the guidelines related to transportation systems. A full discussion on the roadway improvements associated with the project is provided in Section 3.13 of this EIS.</i>			
Water Systems			
Guidelines			
<ul style="list-style-type: none"> Confirm that adequate potable and nonpotable water is available before approving new residential or commercial development. Ensure that State and private well development projects are integrated into and consistent with City water source development plans. Support infrastructure improvements that provide for the efficient and secure transmission and delivery of quality water. Conserve the use of potable water by implementing the following measures, as feasible and appropriate: low-flush toilets, flow constrictors, rainwater catchment and other water conserving devices in commercial and residential developments; indigenous, drought-tolerant plant material and drip irrigation systems in landscaped areas; and reclaimed water for the irrigation of agricultural lands, parks, golf courses and other landscaped areas where this would not adversely affect potable groundwater supply or pose possible health and safety risks. 	X		
<i>Discussion: The project supports the NSSCP's guidelines for water systems. Water will be supplied through an existing BWS water meter. BWS has confirmed that offsite water protection is adequate to accommodate the project.</i>			
Wastewater Treatment			
Guidelines			
<ul style="list-style-type: none"> Use reclaimed water for irrigation and other uses, where feasible, in accordance with the <u>Guidelines for the Treatment and Use of Recycled Water</u> (May 15, 2002) by the State Department of Health and the No Pass Line established by the Board of Water Supply. A "wetlands" treatment system could serve as wild bird refuges that could also be used as a picnicking area and/or children's fishing park. Replace outdated individual cesspools with septic tanks and individual wastewater systems. Consider public programs or policies to support private conversion efforts. Discourage new residential, commercial or school uses in close proximity to wastewater treatment facilities where odors may be objectionable. Identify appropriate areas and technologies for future wastewater facilities that maintain the rural character and are proportionate to future population projections. Do not permit an ocean outfall for treated wastewater effluent in the North Shore area. 	X		
<i>Discussion: Section 3.16.2 of the EIS describes the wastewater system appropriate for the project. The site lies outside of the Honolulu Board of Water Supply No Pass zone, where installation of waste treatment facilities is allowed.</i>			
Electrical Systems			
Guidelines			
<ul style="list-style-type: none"> Provide adequate and reliable electrical service. Locate and design system elements such as electrical power facilities, substations, communication sites, and transmission lines to avoid or mitigate any potential adverse impacts on scenic and natural resources. Locate powerlines underground or away from Kamehameha Highway. Promote the use of renewable energy sources and energy conservation measures. 	X		

Draft Environmental Impact Statement

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<p>Discussion: The existing utility lines are adequate for the project’s electrical demand. Renewable energy will also be generated on-site from solar photovoltaic panels. Required utility lines on-site will be underground.</p>			
<p>Solid Waste Handling and Disposal</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Expand recycling collection facilities and services, and public outreach and education programs that promote responsible waste management and source reduction. • Encourage recycling of regional green waste by establishing green waste facilities in an appropriate location, possibly integrated with or adjacent to the Kawaihoa Refuse Transfer Station. • Expand the use of automated refuse collection in residential areas. • Monitor and regulate illegal dumping and littering activities. 	X		
<p>Discussion: Solid waste for the construction and operations of the project will be transported off site. Recycling will be encouraged for all tenants of the rural community commercial center.</p>			
<p>Drainage Systems</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Require all structural and land improvements to provide adequate drainage and flood mitigation measures to reduce storm runoff and flood hazard. • Employ retention and detention methods that allow for the gradual release of stormwater. Where feasible, use open spaces, including parking lots, landscaped areas, and parks, to detain or allow ground infiltration of storm water flows to reduce their volume, runoff rates, and the amounts of sediment and pollutants transported. • Use detention/retention basins as passive recreational areas and to provide recreational access for pedestrians and bicyclists. • Retain natural gulches as flood plains and open space resources. Restrict development within gulches, and prohibit grading or other disturbance of gulch walls. • Emphasize control and minimization of nonpoint source pollution in drainage system design. Where hardening of stream channels is unavoidable, improvements should protect habitat, maintain rural character and aesthetic quality, and avoid degradation of coastline and of stream and nearshore water quality, consistent with guidelines stated in Section 3.1.2.4. • Design drainageways to control 100-year floods. Any future work performed within the 100-year floodplain shall adhere to the requirements of the Federal Emergency Management Agency (FEMA) and meet all flood-proofing requirements. • Regularly maintain and clean drainageways and flood mitigation structures of debris to ensure that they achieve the purpose for which they were designed. • Employ best management practices to minimize runoff from existing conservation and agricultural land uses, and other areas that may generate sediment and debris. • Repair and maintain related agricultural irrigation systems and infrastructure. • Develop a drainage master plan for the Waialua watershed to address erosion and flood protection concerns. • Conduct public outreach and education programs that explain the potential for flooding and efforts to minimize the effects of flooding. 	X		
<p>Discussion: Storm water from the project site will be collected through gutters, drain inlets, catch basins, trench drains, and pervious pavement. These flows will then be transported through the flow- and volume-based Best Management Practices (in the form of bioswales, rain gardens, planter boxes, sand filters, and infiltration chambers) toward a detention system at the front of the project.</p>			
<p>School Facilities</p>			
<p>Guidelines</p>			

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Draft Environmental Impact Statement

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<ul style="list-style-type: none"> • Confirm the adequacy of school facilities before approving new residential development. Approve new residential developments only after the State Department of Education confirms that adequate school facilities, either at existing schools or at new school sites, will be available at the time new residential units are occupied. • Design DOE schools as community centers to facilitate community use after school hours. • Colocate elementary and intermediate schools with parks, and coordinate facility design with the State DOE and the City DPR whenever possible to avoid duplication of parking and athletic, recreation, and meeting facilities. • Coordinate the development and shared use of athletic facilities such as swimming pools, gymnasiums, and playfields and courts with the DOE where the joint use of such facilities would maximize use and reduce duplication of function without compromising the schools’ athletic programs. • Promote facility design and construction that allows for school buildings to be used as public hurricane shelters. • Support the State DOE’s request for school impact fees from developers of residential projects to ensure that adequate school facilities are in place at the time new residential units are occupied. 			X
<p>Discussion: <i>The rural community commercial center will not be located adjacent to any DOE schools, and will not affect school facilities and/or operations. The guidelines related to school facilities are not applicable to the project.</i></p>			
<p>Public Safety Facilities</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Include visitor demands and needs when allocating public safety resources. • Sponsor public education programs to increase awareness about public safety issues. • Identify, improve and service transportation networks (via signage, traffic control personnel and equipment) to ensure efficient evacuee movement. • Support highway improvements that would reduce emergency vehicle response times and facilitate emergency personnel movement through traffic. • Expand lifeguard services at beaches with high visitor demands, such as Laniākea, Chun’s Reef, and Velzyland. • Confirm the availability of adequate police and fire protection before approving new development. • Increase police presence, including car and bicycle patrols and community policing efforts, especially in high-theft areas such as beach parks. Support the availability of adequate staffing and funding to enable this. • Establish facilities which police officers could use as a local base of operations. • Support the physical improvements and infrastructure upgrades needed to ensure adequate fire protection. • Use crime-preventive principles in the planning and design of communities, open spaces, circulation networks, and buildings. • Design new public buildings such as schools and recreation centers to serve a secondary function as an emergency shelter. 			X
<p>Discussion: <i>Public safety facilities and programs are primarily the responsibility of the State and City. As such, the guidelines are not applicable to the project.</i></p>			
<p>Other Community Facilities</p>			
<p>Guidelines</p>			
<ul style="list-style-type: none"> • Encourage colocation of antennae; towers should host the facilities of more than one service provider to minimize their proliferation and reduce visual impacts. 			X

Draft Environmental Impact Statement

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<ul style="list-style-type: none"> Mount antennae onto existing buildings or structures so that public scenic views and open spaces will not be negatively affected. However, except for the occupant’s personal use, antennae on single-family dwelling roofs in residential districts are not appropriate. Use “stealth” technology (e.g., towers disguised as trees) especially on free-standing antenna towers in order to blend in with the surrounding environment and minimize visual impacts. 			
<p>Discussion: Community facilities such as cell service towers are primarily the responsibility of the State and City. The guidelines are not applicable to the project.</p>			

4.3.4 Coastal View Study

In 1987, the City and County of Honolulu published a Coastal View Study for the island of O’ahu, which identified and inventoried the coastal views and land forms of the island. The study provides accompanying recommendations for the City’s preservation and enhancement of coastal views to better manage development and as a supporting document to Federal and State policies related to coastal views.

The significant view identified in the vicinity of the project area included Section E of the North Shore Viewshed. Section E consists of 5.75 miles of coastline from Waimea Bay to Kawela Bay.

Significant Roadway Views include the following:

- NS-6 Makai views from Kamehameha Highway looking across the bay (from both sides of Waimea) and continuous intermittent views at the area fronting Pūpūkea Beach Park.
- NS-7 Intermittent makai views from Kamehameha Highway between Pūpūkea Beach Park to Sunset Beach.
- NS-8 Intermittent makai views from Kamehameha Highway. Views also include important open space (agriculture) and landscape features (Ironwood trees).

Significant Stationary Views include pedestrian views from the road pull-over above Waimea Bay, from the shoreline at Waimea Bay and from the coral formations at Pūpūkea Beach Park.

Discussion: The rural community commercial center is located mauka of Kamehameha Highway, and will be designed in compliance with height requirements for the B-1 Neighborhood Business zoned district. As such, the project will not affect significant roadway views makai of Kamehameha Highway looking out towards Pūpūkea Beach Park. The project will may also increase public opportunities to view the coast from the outdoor areas of the project.

5.0

ALTERNATIVES

5.0 ALTERNATIVES

5.1	Project Objectives and Evaluation Criteria	5-1
5.2	Alternatives Considered and Dismissed from Further Study.....	5-2
5.3	No-Action Alternative	5-3
5.4	Commercial Shopping Center Alternative	5-5
5.5	Alternative Development Timetable (Deferral).....	5-7
5.6	Summary Comparison of Alternatives	5-8

Alternatives to the Proposed Action for development of the Pūpūkea Rural Community Commercial Center address a range of options for the future use of the subject properties. A wide range of alternative uses are considered, with identification and review under the established project Objectives and Evaluation Criteria. Several alternatives are considered and dismissed from further study, as they would not result in the achievement of the project objectives. Three alternatives are evaluated in greater detail, including the No-Action Alternative, a Commercial Shopping Center Alternative and Alternative Project Timetable (Deferral).

5.1 PROJECT OBJECTIVES AND EVALUATION CRITERIA

The stated objectives of the project are in support of the development of a Rural Community Commercial Center consistent with the policies and guidelines of the North Shore Sustainable Communities Plan. The rural center is intended to provide goods and services to residents of the Pūpūkea, Waimea and Kawaihoa communities and its visitors. This proposed action is consistent with the commercial zoning of the parcels and the government/community long range plans for the properties. A description of the center is presented in *Chapter 2*.

The Objectives for the project are stated in Chapter 2 as Major Themes and Planning Principles, in summary described as:

1. Creation of a Community Gathering Place,
2. Sensitivity to the Environment and Sustainability,
3. Setting for Local Hawaii Businesses to Thrive, and
4. Honoring Hawaiian Culture and the North Shore Lifestyle.

Within the context of the four project Objectives, there are four primary Evaluation Criteria which must be satisfied for the project to be economically viable and socially and environmentally responsible. The four criteria were developed by the planning team to establish standards upon which planning judgments or decisions can be made in examining alternative actions to be included in the project.

The four Evaluation Criteria used to gauge the project's proposed uses or activities include:

1. Fulfill the Policies and Guidelines established for the Rural Community Commercial Center in the 2011 North Shore Sustainable Communities Plan.
2. Design of the site and facilities must meet environmental standards, and strive to achieve sustainable design and operations standards.
3. Provide space for local Hawaii entrepreneurs and enterprises to conduct business, and provide employment opportunities for North Shore residents.
4. Hawaiian Culture and North Shore Lifestyle themes and elements are integrated in the places, buildings, landscape and center programming.

With achievement of the specifically defined project objectives in perspective, a range of potential alternative actions could be contemplated. For this EIS alternatives analysis, several categories of alternatives to the Proposed Action are evaluated in this section. Alternatives to the Proposed Action include the following: 1) No-Action Alternative, 2) Alternative Locations for the Proposed Project, and 3) Alternative Development Scenario. The following analysis provides an evaluation of the wide range of alternatives considered.

5.2 ALTERNATIVES CONSIDERED AND DISMISSED FROM FURTHER STUDY

The state objectives of the project are in support of the development of a Rural Community Commercial Center consistent with the policies and guidelines of the North Shore Sustainable Communities Plan. Alternative uses of the property could be considered for certain uses that are not consistent with the existing B-1 Neighborhood Business District zoning under the City's Land Use Ordinance. These alternative land uses which are not consistent with the B-1 zoning district include: agriculture, open space/park/outdoor recreation, government/public facilities, residential development or industrial use. An alternative location option and the potential for project delay are also considered. A summary of these potential alternative uses is provided as follows, assessed in the context of the established project Objectives and Evaluation Criteria, including compliance with North Shore SCP policies and guidelines.

Agricultural Use. The property has generally poor soils for commercial scale cultivated crops, orchard or nursery, and is also surrounded by residential uses and commercial uses. Many other agricultural parcels are available on the North Shore with better quality agricultural soils and fewer conflicts with adjoining land uses. Agricultural use would not meet the objectives and criteria for the creation of a rural center for local businesses and community gathering, and was dismissed from further study.

Open Space Park/Recreation Use. The property is across the highway from a large continuous County beach park system, which provides a significant open space resource for the community and visitors. Open space park and recreation use would not meet the objectives and criteria for the creation of a rural center for local businesses and community gathering, and was dismissed from further study.

Government/Public Facilities Use. The development of a government center or public facilities would duplicate resources existing elsewhere in the community, such as the schools and recreation centers, and satellite city hall near population centers in Wahiawa and Kaneohe. Government facilities use would not meet the objectives and criteria for the creation of a rural center for local businesses and community gathering, and was dismissed from further study.

traffic, runoff and wastewater could be considerable with this potential use. Residential development use would not meet the objectives and criteria for the creation of a rural center for local businesses and community gathering, and was dismissed from further study.

Industrial Use Alternative. The property would require an unlikely rezoning to allow for redevelopment as an industrial park project. With I-1 Industrial District zoning, the property could support an industrial subdivision with approximately 10 business sites of 10,000 SF each. Impacts such as traffic, runoff and wastewater could be considerable with this potential use. Industrial development use would not meet the objectives and criteria for the creation of a rural center for local businesses and community gathering, and was dismissed from further study.

Alternative Project Location. This alternative considers the relocation of planned commercial uses to an alternate location. There are no other locations on the North Shore that have been designated in the NS Sustainable Communities Plan for development of a Rural Commercial Community Center. Use of land at a different North Shore location would not meet the specific SCP designation of this Pūpūkea site. There are undeveloped parcels in Sunset Beach, Pūpūkea, Kawailoa and Waialea, but most are zoned for agricultural use and would require rezoning to State Urban Land Use and City/County commercial zoning. In all circumstances, these properties would be less suited to commercial center development due to their adjoining neighborhood settings, and their location away from the community center. Commercially zoned properties which may possibly be available in Hale'iwa, Waialua, Kahuku and Lā'ie are distant from the Sunset Beach/Pūpūkea area, and would not improve the local community's access to goods and services. In conclusion, the development of a center at an alternative location would not meet the objectives and criteria to create a rural center for local businesses and community gathering. This alternative was dismissed from further study.

5.3 NO-ACTION ALTERNATIVE

The No-Action Alternative is the baseline against which all other alternatives are measured. Under this scenario, the existing subject properties would remain as described under "existing conditions" in Chapter 3. The commercial uses on the property are entitled under the SMA Minor Permit approved in August 2017 (2017/SMA-21). In the No-Action Alternative, these approved uses would continue operations on the property indefinitely, and include five mobile food establishments (food trucks) and businesses operating from the four existing commercial buildings.

The No-Action Alternative would dismiss the future development of the proposed action for the Rural Community Commercial Center designed to be consistent with the principles of the North Shore Sustainable Communities Plan. There would be no further development actions on the property for either temporary uses, new permanent structures or supporting infrastructure.

The potential impacts of the No-Action Alternative are summarized below for the anticipated future conditions under the various EIS impact assessment categories.

Soils. Soils disturbance would be limited to the existing operations, with soils stabilization and erosion control measures in place. No new grading or excavation would occur.

Flora/Fauna. Flora and fauna disturbance would be limited to the existing site conditions, with no beneficial landscape enhancements to establish new habitat.

Water Use. Water use for potable demand and landscape irrigation would be comparable to the existing levels of water demand. There would be no increase in water use.

Wastewater. Wastewater produced on site would be comparable to existing levels, managed through the limited IWS service and the portable toilets/hand wash station.

Drainage/Storm water Management. Drainage conditions and storm water management would be similar to existing conditions, with the recently installed storm water management controls.

Traffic & Transportation. Traffic conditions with the existing facilities would utilize the existing driveway to the properties, and not consolidate the driveway with the entrances for the Foodland grocery store. Bicycle and pedestrian circulation would continue without further improvements.

Economics/Fiscal. Revenues associated with the existing facilities would be the same as with the existing commercial uses of the property. There would be no additional expansion of business establishments, employment or government revenues. The estimated total employment on the property is 25 full time equivalent jobs among the various tenants operating on the property. In 2017, the Real Property Tax for the parcels totaled \$36,000 to the City and County of Honolulu.

Land Use/Zoning. The continued use of the property in its existing operations would be consistent with the commercial zoning. However, the No Action alternative would not achieve the policies and objectives of the North Shore SCP. There would be no further improvements made at the site which would help provide goods and services to the surrounding community. The No Action alternative also would not create a greater community gathering place, and those elements which could support a holistic Rural Commercial Center for Pūpūkea/Sunset Beach.

Archaeological and Cultural Resources. The use of the property under existing conditions would have no adverse effect on archaeological and cultural resources.

Groundwater. There would be no new effects to groundwater resources at the property with the existing commercial operations. The existing disposal system from the ATU IWS and storm water infiltration areas would be the only inputs to groundwater on the property, with minor contributions of nutrients to shallow groundwater.

Surface Water/Storm Water Runoff Quality. Storm water management controls on the property would minimize the release of suspended sediment and urban runoff contaminants. Runoff water reaching the ocean would be comparable quality as with the existing conditions.

Marine Environment. Storm water management controls on the property would minimize the release of suspended sediment and urban runoff contaminants. The minor contributions of nutrients in shallow groundwater from wastewater disposal will not adversely affect the nearshore water quality. The marine environment would not be adversely affected by the no-action alternative.

Noise and Air Quality. Noise conditions at the property would be the same as with the existing commercial operations with set operational times. There would be no change in existing effects to air quality, such as dust and vehicle emissions.

Visual Resources. Existing views of the ocean, coastline and mountains would continue to be affected in a similar manner to the existing conditions. There would be no significant improvements at the property for landscaping, buffers, driveways, setbacks, and commercial buildings.

5.4 COMMERCIAL SHOPPING CENTER ALTERNATIVE

The City and County of Honolulu classify commercial developments in excess of 40,000 square feet (SF) as shopping centers. The Commercial Shopping Center Alternative would propose development of the three parcels (2.7 acres) at shopping center scale, as allowed per the B-1 Neighborhood Business zoning district. The existing B-1 zoning would allow for 1.0 FAR (Floor Area Ratio), which would equate to commercial buildings with over 100,000 SF floor area. The calculated maximum commercial floor area for this property under existing B-1 zoning would be 117,443 SF. This floor area would be roughly five times the commercial floor area of the adjoining Foodland Pūpūkea store.

In 2004, a development proposal for the subject properties contemplated a commercial shopping center project with a floor area of approximately 75,000 SF. The 2004 project proposed a two- to three- stories with a height of 35 feet, and access to Kamehameha Highway solely from driveways along Pāhoehoe Road. A large basement parking garage was proposed for 249 parking spaces. The 2004 shopping center project sought to capitalize on the large site development potential, with a Floor Area Ratio of 0.65 FAR. The 2004 shopping center proposal included several food and beverage components with anticipated water demand of 92,000 gpd. Of note, the 2004 shopping center also projected a wastewater volume of more than 73,000 gpd, proposed to be handled by underground injection. Generated traffic estimates were significant at 256 vehicle trips during the Saturday peak hour.

Clear community opposition to the 2004 proposal requires a smaller shopping center be contemplated. This EIS alternative considers development of approximately 46,000 SF commercial floor area, with a range of food and beverage, retail, and service businesses. The larger Hanapohaku properties could easily support an FAR denser than the existing commercial floor area of the Foodland store at .294 FAR. With 46,000 SF floor area and 117,443 SF property, this alternative proposes an FAR of 0.392, which is approximately 40 percent of the allowable LUO density. To serve the Shopping Center alternative, there would need to be access driveways connecting off both Kamehameha Highway and Pāhoehoe Road, with partial basement parking.

The potential impacts of the Commercial Shopping Center Alternative are evaluated in the following discussion for the anticipated future conditions in the various EIS impact assessment categories.

Soils. Soils disturbance would be substantial under the Shopping Center alternative. The entire property would be graded with excavation for utilities and building foundations. The development would require compliance with rules for erosion protection and low impact development.

Flora/Fauna. Flora and fauna disturbance would be temporary during construction. The site coverage from shopping center buildings and parking area would limit opportunities to create beneficial landscape enhancements, with new habitat for common introduced bird species.

Water Use. Water use for potable demand by the Shopping Center alternative would require service for several food and beverage tenants, projected at 56,200 gpd with landscape irrigation.

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Wastewater. Wastewater generation by the Shopping Center alternative would be projected at 48,000 gpd, which would require disposal through a groundwater injection well disposal system.

Drainage/Storm water. Drainage conditions and storm water management would be required to meet City standards. With the Shopping Center alternative, there would be large impervious surfaces of roof area and parking area over 80,000 SF, requiring sizable on-site runoff management. Compliance with low impact development rules necessitate on-site storm water storage prior to off-site release.

Traffic & Transportation. Traffic conditions with the Shopping Center would generate approximately 157 vehicle trips during the Saturday peak hour, with access via Kamehameha Highway and Pāhoehoe Road. Bicycle and pedestrian circulation would improve with a sidewalk and highway crosswalk.

Economics/Fiscal. Revenues associated with the Shopping Center alternative would be substantially increased. There would be an expansion of business establishments, employment or government revenues. The estimated total employment would be 86 full time equivalent jobs among the various tenants. The Real Property Tax due to the City and County of Honolulu would be about \$148,600 annually.

Land Use/Zoning. The Shopping Center use of the property would be consistent with the commercial zoning. There would be some community gathering area at the Shopping Center, however, the large scale of center development could limit the open space/public areas and landscape setting. However, the No Action alternative would not be consistent with all the policies and objectives of the North Shore SCP. Improvements made at the site would help provide goods and services to the surrounding community. However, the scale of the Shopping Center improvements and its business and tenant composition would be slanted more heavily toward offerings which cater to visitors to the area. There would also be a greater percentage of mainland business franchises in the Shopping Center.

Archaeological and Cultural Resources. The use of the property under the Shopping Center alternative would have no adverse effect on archaeological resources. The large scale of center development could limit the open space/public areas and landscape setting for cultural education and activities.

Groundwater. There would be impacts to groundwater resources at the property with the Shopping Center commercial operations. The injection well disposal system from the 48,000 gpd would be the injected into the groundwater below the property. The injection disposal of wastewater effluent would mix into the subsurface aquifer, which ultimately discharges into the nearshore ocean waters.

Surface Water/Storm Water Runoff Quality. Storm water management controls on the property would be installed to minimize the release of suspended sediment and urban runoff contaminants. With the Shopping Center alternative, there would be a larger volume of storm water generated onsite due to the increased amount of impervious surface area. Without effective onsite measures to minimize inputs, there may be greater amount of contaminants in the runoff water reaching the ocean.

Marine Environment. Storm water management controls on the property would minimize the release of suspended sediment and urban runoff contaminants. However, the contributions of nutrients in groundwater resulting from injection disposal of 48,000 gpd of wastewater would raise an increased potential for adverse effects to the nearshore ocean water quality and marine environment.

Noise and Air Quality. Construction phase noise and dust generation would represent short term adverse effects under this alternative. Once operational, the Shopping Center alternative would have noise associated with trucks and vehicles accessing the commercial operations. There would also be vehicle emissions associated with the trucks and vehicles accessing the site.

Visual Resources. Existing views of the ocean, coastline and mountains would be affected by views of the commercial buildings and site improvements with the Shopping Center alternative. Depending upon the building design and parking strategy, the two-story buildings could extend to heights of 35 to 40 ft. With the scale of the Shopping Center commercial buildings and supporting facilities, there would be limited opportunities for creating large open space, landscaping, buffers, and setbacks.

5.5 ALTERNATIVE DEVELOPMENT TIMETABLE (DEFERRAL)

This alternative considers the deferral of the project to a later date. The NS Sustainable Communities Plan did not specify timing for development of a Rural Commercial Community Center. However, the land has been zoned for commercial use since the 1970s. Over time, the demand for commercial goods and services by the residents of Sunset Beach/Pūpūkea community and its visitors has grown substantially. A delay or deferral of the project development would not immediately meet the objectives and criteria for the creation of a rural center for local businesses and community gathering.

The Sunset Beach/Pūpūkea community has expressed that some existing commercial operations at the property are less desirable, such as the disorganized commercial activities, multiple tents and seating areas, nighttime lighting and noise, unauthorized parking along the highway, haphazard vehicle ingress/egress, and non-focused pedestrian access. With the City's approval of SMA/2017-21 there is authorization to continue with a conditional use of the property, with very specific actions required of the owners to manage activities to minimize effects to neighbors, the community and the environment. Importantly, it remains the stated purpose of the owners to diligently plan towards the long-term objective of creating the Rural Community Commercial Center, as they seek to achieve the common objectives of the community and government planning policy for future use of this property.

In terms of environmental effects, should the project deferral to a later date, it would extend the existing conditions at the property. Potential impacts would essentially be similar to those described for the No-Action Alternative, as presented in Section 5.3. Environmental and economic benefits associated with the completion of the Rural Community Commercial Center would not be realized until its development is completed at some point in the future. In the interim, the local and regional traffic conditions are expected to remain challenging. As a result, the community residents would continue to travel a significant distance to accessing many goods and services.

With the current owners, who are a local family that has lived on the North Shore for many decades, the intention is to actively move forward with completion of the Rural Community Commercial Center. Should the project timing be deferred to a later date, there would always be the potential for a change in ownership to another entity, possibly an offshore owner group with different business perspectives and site development objectives. Another owner's approach to the property may not be similar to the current plan for a low intensity development scale (25 percent FAR) and compatible style/character, in keeping with the North Shore SCP.

5.6 SUMMARY COMPARISON OF ALTERNATIVES

This section provides summary comparison evaluation of the potential impacts associated with the proposed action and each of the alternatives.

Tables 5-1 and 5-2 provide a comparison of the Proposed Action with the three Alternatives in their achievement of the established Project Objectives and Evaluation Criteria, as described in *Section 2.3 Purpose and Need* and summarized in *Section 5.1*. A summary evaluation is presented for each Alternative, along with a rating of Suitable, Partially Suitable, or Not Suitable.

Table 5-3 provides a comparison of the Proposed Action with the three Alternatives in their potential for generating environmental effects, addressed by each resource categories evaluated in Section 3.0.

**Table 5-1
Comparison of Alternatives by Project Objectives**

Objective1: Creation of a Community Gathering Place.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development of the Rural Center will create a large central gathering place for leisure and activities by community & visitors.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses under the SMA minor plan would not fulfill this objective.</p>	<p>PARTIAL</p> <p>Development of the large Shopping Center would limit opportunities to create a large central gathering place.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses under the SMA minor plan would not fulfill this objective. The potential future project plans are unknown.</p>

Objective 2: Sensitivity to the Environment and Sustainability.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development based on Sustainable Design and Environmental goals, including Low Impact Development, On-site Solar Energy, Native Landscape, Water and Waste Controls.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses under the SMA minor plan would not fulfill this objective, with limited environmental controls.</p>	<p>PARTIAL</p> <p>Development of the large Shopping Center could include some Sustainable Design & Environmental goals, with less open space and greater impacts such as water use, wastewater injection disposal, solid waste & vehicle traffic.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses under the SMA minor plan would not fulfill this objective, with limited environmental controls. The potential future project plans are unknown.</p>

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Objective 3: Setting for Local Hawaii Businesses to Thrive.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p align="center">SUITABLE</p> <p>Development of the Rural Center would provide a place of business for local Hawaii entrepreneurs and local resident jobs.</p>	<p align="center">PARTIAL</p> <p>Retention of current uses on the site would provide limited ongoing use for local Hawaii businesses and local resident jobs.</p>	<p align="center">SUITABLE</p> <p>This Alternative would provide a business place for both local Hawaii companies and national tenants, with greater scale of resident jobs.</p>	<p align="center">PARTIAL</p> <p>Retention of current uses on the site would provide limited ongoing use for local Hawaii businesses and local resident jobs. Deferred to future.</p>

Objective 4: Honoring Hawaiian Culture and the North Shore Lifestyle.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p align="center">SUITABLE</p> <p>Development of the Rural Center would integrate Culture & Lifestyle themes in landscape, buildings & programs.</p>	<p align="center">NOT SUITABLE</p> <p>There would be limited opportunities to integrate Culture & Lifestyle themes in landscape, buildings & programs.</p>	<p align="center">PARTIAL</p> <p>Development of the Rural Center would integrate Culture & Lifestyle themes in landscape, buildings & programs. The large scale of facility would detract from this.</p>	<p align="center">NOT SUITABLE</p> <p>There would be limited opportunities to integrate Culture & Lifestyle themes in landscape, buildings & programs. Possible future project to be determined.</p>

**Table 5-2
Comparison of Alternatives by Evaluation Criteria**

1. Fulfill Policies and Guidelines established for the Rural Center in NSSCP.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development of the Rural Center would fulfill the policies and objectives of the NSSCP.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses on the site would not fulfill the policies and objectives of the NSSCP.</p>	<p>PARTIAL</p> <p>The Alternative would fulfill the policies and objectives of the NSSCP. Facility scale would exceed needs of the community & visitors.</p>	<p>NOT SUITABLE</p> <p>Deferring development of the Rural Center would retain the current uses, and defer fulfilling the policies and objectives of the NSSCP to the future.</p>

2. Design of site and facilities meets environmental standards, strives to achieve sustainable design and operations standards.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development of the Rural Center would be designed and operate consistent with sustainable design principals.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses on the site would not be designed and operated to achieve sustainable design principals.</p>	<p>PARTIAL</p> <p>The Alternative would be designed and operate consistent with sustainable design principals, at a larger scale than required.</p>	<p>NOT SUITABLE</p> <p>Retention of current uses would not achieve sustainable design principals, which would be deferred to the future redevelopment.</p>

3. Provide space for local Hawaii entrepreneurs and enterprises to conduct business, and provide employment opportunities for North Shore residents.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development of the Rural Center would provide a place of business for local Hawaii entrepreneurs and local resident jobs.</p>	<p>PARTIAL</p> <p>Retention of current uses on the site would provide limited ongoing use for local Hawaii businesses and local resident jobs.</p>	<p>SUITABLE</p> <p>This Alternative would provide a business place for both local Hawaii companies and national tenants, with greater scale of resident jobs.</p>	<p>PARTIAL</p> <p>Retention of current uses on the site would provide limited ongoing use for local Hawaii businesses and local resident jobs. Deferred to future.</p>

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

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4. Hawaiian Culture and North Shore Lifestyle themes and elements are integrated in the places, buildings, landscape and center programming.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
<p>SUITABLE</p> <p>Development of the Rural Center would integrate Culture & Lifestyle themes in landscape, buildings & programs.</p>	<p>NOT SUITABLE</p> <p>There would be limited opportunities to integrate Culture & Lifestyle themes in landscape, buildings & programs.</p>	<p>PARTIAL</p> <p>Development of the Rural Center would integrate Culture & Lifestyle themes in landscape, buildings & programs. The large scale of facility would detract from this.</p>	<p>NOT SUITABLE</p> <p>There would be limited opportunities to integrate Culture & Lifestyle themes in landscape, buildings & programs. Possible future project could achieve this.</p>

Table 5-3 Comparison of Alternatives by Environmental Impact Category

Table 5-3 provides a comparison of the Proposed Action with the three Alternatives in their potential for generating environmental effects, addressed by each resource categories evaluated in Section 3.0. Potential project effects in the categories of Climate and Rainfall, and Natural Hazards are comparable for the proposed action and alternatives, and therefore not presented below.

1. Topography, Geology and Soils.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Grading and excavation will adjust topography and soils. LID/Erosion control through BMPs and NPDES.	There would be no changes to topo/soils beyond the existing conditions (completed under SMAM Plan).	Larger project grading and excavation would adjust topography and soils. Requirements for LID/Erosion control through BMPs & NPDES.	There would be no changes to topo/soils beyond the existing conditions (completed under SMAM Plan). Future project TBD.

2. Natural Hazards.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Grading and excavation will adjust topography and soils. LID/Erosion control through BMPs and NPDES.	There would be no changes to topo/soils beyond the existing conditions (as completed under SMAM Plan).	Larger project grading and excavation would adjust topography and soils. Requirements for LID/Erosion control through BMPs & NPDES.	There would be no changes to topo/soils beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

3. Terrestrial Flora and Fauna.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Short term construction disturbance of non-native flora/fauna, with long term beneficial effects with project open space and landscaped area.	There would be no effects to non-native flora/fauna beyond the existing conditions (as completed under SMAM Plan).	Shopping Center would have short term construction disturbance of non-native flora/fauna, and provide less open space & new landscape.	There would be no effects to non-native flora/fauna beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

4. Groundwater and Surface Water.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Potable water use estimated at 8,500 gpd. Aerobic wastewater treatment disposal est. 7,320 gpd. LID and BMPs to manage storm water quality with open space infiltration.	There would be no additional effects to groundwater and surface water beyond the existing conditions (as completed under SMAM Plan).	Shopping Center would have 5x more potable water est. 56,000 gpd, and 5x wastewater injection disposal est. 48,000 gpd BMPs to manage greater storm water quantity, and less open space.	There would be no additional effects to groundwater and surface water beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

5. Marine Environment.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
The Proposed Action will have LID and BMPs to manage storm water quality with open space infiltration. On-site disposal of wastewater will not adversely affect ocean water quality and marine environment.	There would be no additional effects to ocean water and marine environment beyond the existing conditions (as completed under SMAM Plan).	Larger project would have 5x volume of wastewater (injection well disposal) est. 48,000 gpd, w/ greater potential for adverse effects. There would be greater storm water quantity, and runoff volume.	There would be no additional effects to ocean water and marine environment beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

6. Archaeology and Cultural Resources.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
The Proposed Action will have no adverse effects to archaeological, historic and cultural resources. Project will integrate Culture & Lifestyle themes in landscape, buildings & programs.	There would be no additional effects to archaeological, historic and cultural resources beyond the existing conditions (as completed under SMAM Plan).	The Shopping Center would have no adverse effects to archaeological, historic and cultural resources. Larger project could integrate Culture & Lifestyle themes into landscape, buildings & programs.	There would be no additional effects to archaeological, historic and cultural resources beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

7. Demographic and Economic Conditions.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
The Proposed Action will have substantial beneficial effects to increase local business and new employment, with net beneficial effects to State/County govt. tax revenues.	There would be no additional effects to demographics and economic conditions beyond the existing conditions (as completed under SMAM Plan).	The Shopping Center would have greater beneficial effects to increase business and new employment, adding mainland tenants, and net greater beneficial effects to State/County govt. tax revenues.	There would be no additional effects to demographics and economic conditions beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

8. Public Services.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
The Proposed Action will have new demands for public services, including fire suppression, emergency medical, and police services. Private collection of solid waste.	There would be no additional effects to public services (fire, EMS, police) and solid waste beyond the existing conditions (as completed under SMAM Plan).	The Shopping Center would have greater new demands for public services, including fire suppression, emergency medical, and police services. Private collection of solid waste.	There would be no additional effects to public services (fire, EMS, police) and solid waste beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

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Draft Environmental Impact Statement

9. Traffic.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Single project entrance with no Pāhoe Rd access. Short term construction traffic impacts of limited duration. Operations would generate est. 98 vehicle trips (Saturday peak). Highway left-turn lane, crosswalk bike/ped path.	There would be no additional vehicle traffic beyond the existing conditions (as completed under SMAM Plan).	Shopping Center with 2 entrances on Pāhoe Rd and Highway. Short term construction traffic impacts of limited duration. Operations would generate est. 157 vehicle trips (Saturday peak). Highway left-turn lane, crosswalk bike/ped path.	There would be no additional vehicle traffic beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

10. Air Quality & Noise.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Construction dust, vehicle emissions and noise will be short term duration. Operations will generate vehicle emissions and facility use noise.	There would be no additional effects to air quality and noise beyond the existing conditions (as completed under SMAM Plan).	Shopping Center would have construction dust, vehicle emissions and noise for short term duration. Operation of the shopping center with more vehicle emissions and facility use noise.	There would be no additional effects to air quality and noise beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

11. Infrastructure and Utilities.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
Public infrastructure and utilities will not be adversely affected, with on-site management of drainage, water supply, and wastewater. Single access off Highway with center turn lane striping.	There would be no additional effects to public infrastructure and utilities beyond the existing conditions (as completed under SMAM Plan).	Shopping Center would have greater demand for public infrastructure and utilities, with on-site management of drainage, water supply, and wastewater. Access off Pāhoe Rd and Hwy. with center turn lane striping.	There would be no additional effects to public infrastructure and utilities beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

12. Visual Environment.

Proposed Action	No Action Alternative	Shopping Center Alternative	Deferred Action Alternative
The Proposed Action will have beautiful buildings, landscape and a large central gathering place. Scenic views of the ocean and mountains will not be diminished.	There would be no additional effects to scenic views beyond the existing conditions (as completed under SMAM Plan).	Shopping Center would have nearly twice the development, with larger buildings and less open space. Scenic views of the ocean and mountains will not be diminished.	There would be no additional effects to scenic views beyond the existing conditions (as completed under SMAM Plan). Future project TBD.

Conclusion of Alternatives Comparison

The comparison of the proposed action with three alternative scenarios shows the relative benefits and adverse effects. The No-Action Alternative would result in ongoing adverse effects with few benefits and fail to provide the rural community commercial center envisioned by the NS SCP. In comparison to the proposed action, the Shopping Center Alternative would create much greater adverse environmental effects with some increased benefits. The Deferred Action Alternative would essentially extend the No Action Alternative indefinitely, resulting in a similar set of comparative benefits and drawbacks, awaiting the future development of the Rural Community Commercial Center.

6.0

AGENCIES AND PARTIES CONSULTED

6.0 AGENCIES AND PARTIES CONSULTED

This document was prepared as required under Revised Ordinances of Honolulu Chapter 25 for development in the Special Management Area (SMA), and in accordance with Hawai'i Revised Statutes Chapter 343 and Hawai'i Administrative Rules Chapter §11-200 (Environmental Impact Statement Rules). Initial consultation for the Pūpūkea Rural Community Commercial Center began with the City and County of Honolulu Department of Planning and Permitting, the County agency with jurisdiction for the SMA.

Outreach to community groups in the Pūpūkea area included three meetings held with the Sunset Beach Community Association (SBCA), at their regular meetings held in May 2017, July 2017, Sept 2017; numerous interactions with representatives of the citizens' group Mālama Pūpūkea-Waimea; discussions with residents of Pāhoe Road; ongoing status meetings with tenants and employees currently leasing from Hanapohaku; and coordination with Foodland. A presentation will be made to the North Shore Neighborhood Board No. 27 once the Draft EIS is published.

Notification that an EIS was to be prepared, known as an EIS Preparation Notice (EISPN), was published in the Office of Environmental Quality Control's (OEQC) *The Environmental Notice* on April 23, 2017 to solicit input on topics of interest. *Table 6-1* identifies those agencies, organizations, and individuals that were formally consulted, received a presentation, provided input on project design or are part of an ongoing consultation effort throughout the environmental review process. Comments received during the 30-day EISPN public response period are listed, whether via letter, email, or received during a community meeting. The comments, along with the response provided, are reproduced in this chapter. Availability of the Draft EIS will be provided to those listed in conjunction with the publication of the Draft EIS in *The Environmental Notice*. Publication initiates a 45-day public comment period.

Table 6-1 Agencies and Parties Consulted

Respondents and Distribution	Sent EISPN	EISPN Comments Received	DEIS Notification Sent
A. Federal Agencies			
U.S. Department of the Interior Fish and Wildlife Service			X
U.S. Department of the Interior Geological Survey, Pacific Islands Water Science Center			X
Department of Commerce National Marine Fisheries Service			X
Department of the Interior National Parks Service			X
Department of Agriculture National Resources Conservation Service			X
Department of Transportation, Federal Aviation Administration			X
Department of Transportation Federal Transit Administration			X
Department of Homeland Security Coast Guard			X

Continued on next page

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Respondents and Distribution	Sent EISPN	EISPN Comments Received	DEIS Notification Sent
B. State of Hawai'i Agencies			
Department of Accounting and General Services	X	X	X
Department of Agriculture	X		X
Department of Business, Economic Development & Tourism (DBEDT)	X		X
DBEDT, Office of Planning	X	X	X
DBEDT, Research Division Library			X
DBEDT, Strategic Industries Division			X
Department of Defense	X	X	X
Department of Education	X		X
Department of Hawaiian Home Lands	X		X
Department of Health (DOH)	X		X
DOH, Environmental Planning Office	X	X	X
DOH, Indoor Radiological Health Branch	X	X	X
Department of Land and Natural Resources (DLNR)	X		X
DLNR, Commission on Water Resource Management	X		X
DLNR, Division of Aquatic Resources			X
DLNR, Division of Forestry and Wildlife	X	X	X
DLNR, Engineering Division	X	X	X
DLNR, Historic Preservation Division	X		X
DLNR, Land Division, O'ahu District	X	X	X
DLNR, Office of Conservation and Coastal Lands	X	X	X
DLNR, Division of State Parks	X	X	X
Department of Transportation (DOT)	X	X	X
DOT, Highways Division	X		X
Office of Environmental Quality Control	X	X	X
Office of Hawaiian Affairs	X		X
University of Hawai'i, Environmental Center	X		X

Continued on next page

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Respondents and Distribution	Sent EISPN	EISPN Comments Received	DEIS Notification Sent
C. City and County of Honolulu Agencies			
Board of Water Supply			X
Department of Design and Construction			X
Department of Environmental Services			X
Department of Facility Maintenance			X
Department of Parks and Recreation	X	X	X
Department of Planning and Permitting	X	X	X
Department of Transportation Services	X	X	X
Honolulu Fire Department	X	X	X
Honolulu Police Department	X	X	X
D. Elected Officials			
U.S. Senator Brian Schatz			X
U.S. Senator Mazie Hirono			X
U.S. Congresswoman Tulsi Gabbard			X
State Senator Gil Riviere, District 23	X	X	X
State House Representative Sean Quinlan, District 47	X		X
Council District Representative Ernest Martin, District 2	X		X
E. Media			
Honolulu Star Advertiser	X		X
North Shore News	X		
F. Libraries			
Legislative Reference Bureau	X		X
State Main Library	X		X
Waialua Public Library	X		X
G. Community Interest Groups and Organizations			
Mālāma Pūpūkea-Waimea	X	X	X
North Shore Chamber of Commerce	X		X
North Shore Neighborhood Board, No. 27	X	X	X
Save Sunset Beach Coalition		X	X
Sunset Beach Community Association	X		X

Continued on next page

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

Respondents and Distribution	Sent EISPN	EISPN Comments Received	DEIS Notification Sent
H. Private Entities			
Foodland Super Market c/o Sullivan Family of Companies	X		X
Neighboring Property Owners (Pāhoe Road Residents)	X	X	X
I. Individuals			
Alessandra Bezzi		X	X
Chip Hartman		X	X
Danielle (Hannig) Fullmer		X	X
Dean Hamer		X	X
Devon Daily		X	X
Elen Atlas		X	X
Joe Wilson		X	X
Larry McElheny		X	X
Nancy Salemi		X	X
Phyllis Shipman		X	X
Warner Wacha		X	X

STATE OF HAWAI'I AGENCIES

DAVID Y. IGE
GOVERNOR



RODERICK K. BECKER
Comptroller

AUDREY HIDANO
Deputy Comptroller

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

(P)1187.7

MAY - 2 2017

Mr. Jeff Overton, AICP
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 97813

Dear Mr. Jeff Overton:

Subject: Pupukeya Rural Community Commercial Center
TMK: (1) 5-9-022:068, 069, 070, 016

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

If you have any questions, your staff may call Mr. Kimo Marion of the Planning Branch at 586-0491.

Sincerely,

KEITH S. KOGACHI
Acting Public Works Administrator

KM:mo



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Keith S. Kogachi
State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, HI 96810-0119

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Kogachi:

Thank you for your comment letter dated May 2, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We note that the Department of Accounting and General Services has no comments to offer at this time.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal



OFFICE OF PLANNING STATE OF HAWAII

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

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

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING

Ref. No. P-15597

May 10, 2017

Mr. Jeff Overton, AICP, LEED, AP
Principal
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

Subject: Environmental Impact Statement Preparation Notice – Pupukea Rural
Community Commercial Center, Haleiwa, Oahu, Hawaii
TMK: (1) 5-9-011: 068, 069, 070, and 016

Thank you for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISPN) for the Pupukea Rural Community Commercial Center, located in Haleiwa, Island of Oahu. The EISPN request review material was transmitted to our office via letter dated April 21, 2017.

It is our understanding that this project seeks to redevelop a rural community-based commercial center to provide goods and services to residents and visitors of Oahu's North Shore area. The property currently is occupied with a single grocery store retailer (Foodland). Only minor improvements are anticipated to the Foodland portion of the shopping complex. These improvements include landscaping and parking lot improvements. New infrastructure will be built to support the proposed expansion of the commercial center. The proposed commercial center improvements include new driveways, solar panel canopies built within a parking area, drainage, water supply infrastructure, and wastewater treatment facilities. The planned floor area of the proposed structures will be approximately 30,000 square feet gross floor area.

The project will support the North Shore Community Plan for Community Commercial Centers by providing diverse commercial services, maintaining open space, limiting building heights, and will utilize landscaping to maintain a rural area appeal.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. The applicant should consult with the Department of Planning and Permitting (DPP), City and County of Honolulu, the approving agency, to confirm whether an Environmental Impact Statement (EIS) is required for the proposed Pupukea Rural

Community Commercial Center. According to your pre-consultation request, an EIS rather than an Environmental Assessment will be prepared for the proposed project.

2. Section 2.3, Table 1, page 12 of the EISPN acknowledges that this project site is located within the Special Management Area (SMA) of the City and County of Honolulu. Please contact DPP on the regulatory requirements on SMA use.
3. Section 3.3, page 13 of the EISPN lists the goals, objectives, policies, State Functional Plans, and priority guidelines found of the Hawaii State Planning Act as applicable to this project.

Pursuant to Hawaii Administrative Rules (HAR) § 11-200-17(h) – relationship of the proposed action to land use plans, policies, and controls for the affected area; this project must demonstrate that it is consistent with state environmental, social, and economic goals and land-use policies. Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Planning Act, provides goals, objectives, policies, and priority guidelines for growth, development, and the allocation of resources throughout the state in areas of state interest.

The Draft Environmental Impact Statement (DEIS) should contain an analysis on the Hawaii State Planning Act to include a discussion on the project's ability to meet all of the goals, objectives, policies, and priority guidelines or clarify where it is in conflict with them. If any of these themes are not applicable to the project, the analysis should affirmatively state such determination, followed by discussion paragraphs.

3. Section 3.3, page 13 of the EISPN lists the Hawaii Coastal Zone Management (CZM) Program as a land use plan, policy and control that is applicable to this project.

The CZM area is defined as “all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea” (see HRS § 205A-1).

HRS Chapter 205A-5(b) requires all state and county agencies to enforce the CZM objectives and policies. The DEIS should include an assessment as to how the proposed action conforms to the goals and objectives of the Hawaii CZM program as listed in HRS § 205A-2. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.

4. Pursuant to HAR § 11-200-17(i) – probable impact of the proposed action on the environment, and impacts of the natural and human environment – in order to ensure that the coastal resources along the North Shore of Oahu remain protected, the negative effects of stormwater inundation ensuing from development activities within the park should be evaluated.

Pursuant to HAR § 11-200-17(m), the DEIS should also consider mitigation measures to safeguard the physical environment including water resources and the nearshore environment from natural and manmade hazards. Mitigation strategies are intended to avoid, minimize, rectify, or reduce threats. Where a mitigation measure has been chosen from among several alternatives, the measures shall be discussed and the reasoning provided.

The DEIS should summarize the potential impact from construction activities, as well as the cumulative impact of land-based pollutants and soil erosion carried by stormwater runoff on the coastal ecosystem. Issues that should be evaluated include, but are not limited to, land use classification, the expected speed and volume of storm runoff, and the marine water quality classification. All of these factors should be considered when developing mitigation measures for the protection of water resources and the coastal ecosystem.

The increase of hardened surfaces from the creation of a parking area, new buildings, and support infrastructure at this commercial center may result in increased stormwater flow. The DEIS should include an examination of stormwater mitigation strategies. An effective stormwater runoff control method is the use of low impact development (LID) design features, such as bio-retention basins, native plant rain gardens, grassed swales, and permeable pavers for walkways and parking areas that treat stormwater onsite.

OP has developed resources available to assist in the development of projects which may assist in the mitigation of sediment loss and stormwater control. We recommend consulting these guidance documents and stormwater evaluative tools when developing strategies to address polluted runoff. They offer useful techniques to keep land-based pollutants and sediment in place and prevent contaminating nearshore waters.

- Stormwater Impact Assessments can be used to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area


Mr. Jeff Overton, AICP, LEED, AP
May 10, 2017
Page 4

[http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater
impact/final_stormwater_impact_assessments_guidance.pdf](http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_impact/final_stormwater_impact_assessments_guidance.pdf)

- [Low Impact Development \(LID\), A Practitioners Guide](http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf) covers a range of structural best management practices (BMP's) for stormwater control management and layout that minimizes environmental impacts
http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf

We have no further comments at this time. If you have any questions regarding this comment letter, please contact Joshua Hekeka of our office at (808) 587-2845.

Sincerely,



Leo

Leo R. Asuncion
Director



925 Bethel Street
5th Floor

Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Leo R. Asuncion
Director
Office of Planning
State of Hawai'i
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Asuncion:

Thank you for your comment letter dated May 2, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

The City and County of Honolulu Department of Planning and Permitting (DPP) will be the approving agency for the Environmental Impact Statement (EIS). *Table 1-1 Required Reviews and Permits* of the Draft EIS identifies a Special Management Area – Major permit as one of the required permits for the project; we are coordinating closely with DPP on such permit matters.

The Draft EIS presents the relationship of the proposed action to land use plans, policies and control for the project area in Chapter 4.0. An analysis of the Hawaii State Plan is contained in *Table 4.1* of the chapter. *Table 4-3* presents the analysis of the project's conformance with the Coastal Zone Management Program.

Chapter 3.0 of the Draft EIS analyzes numerous natural resources and the project's potential impacts to these resources. *Section 3.6 Surface Water and Drainage*, and *Section 3.16 Infrastructure and Utilities* presents the improved storm water runoff conditions anticipated from the project implementation of long-term low impact development (LID) controls for the site. Storm water management during construction is discussed in *Section 3.2 Geology, Topography and Soils*. We appreciate the resources provided in your letter, and have considered them in development of the project and the environmental disclosure document.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR



ARTHUR J. LOGAN
MAJOR GENERAL
ADJUTANT GENERAL

KENNETH S. HARA
BRIGADIER GENERAL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

May 18, 2017



Mr. Jeff Overton, AICP, LEED AP
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, HI 96813-4307

Dear Mr. Overton:

Subject: Environmental Impact Statement Preparaton Notice for Pupukea Rural
Community Commercial Center, TMK: (1) 5-9-022:068, 069, 070, 016 (Pupukea,
Oahu, Hawaii)

Thank you for the opportunity to comment on the above project. The State of Hawaii
Department of Defense has no comments to offer relative to the project.

Should you have any questions or concerns, please have your staff contact Ms. Shao Yu Lee, our
Land Manager on Oahu, at (808) 733-4250.

Sincerely,

A handwritten signature in blue ink, appearing to read "Neal S. Mitsuyoshi".

NEAL S. MITSUYOSHI, P.E.
Colonel, Hawaii National Guard
Chief Engineering Officer

c: Mr. David Kennard, Hawaii Emergency Management Agency (HI-EMA)
Ms. Havinne Okamura, HI-EMA
Mr. Albert Chong, HI-EMA



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Neal S. Mitsuyoshi, P.E., Chief Engineering Officer
State of Hawai'i
Department of Defense
3949 Diamond Head Road
Honolulu, HI 96816-4495

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Colonel Mitsuyoshi:

Thank you for your comment letter dated May 18, 2017 concerning the Chapter 25, Revised Ordinances of Honolulu (ROH) Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project.

We acknowledge that the State of Hawai'i Department of Defense has no comments to offer on the project.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal



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

In reply, please refer to:
File:

EPO 17-106

May 16, 2017

Mr. Jeff Overton, AICP LEED AP
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813
Email: pupukea@g70.design

Dear Mr. Overton:

SUBJECT: Environmental Impact Statement Preparation Notice for Pupukea Rural Community Commercial Center, Pupukea, Haleiwa, Oahu
TMK: (1) 5-0-022:068, 069, 070, 016

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your EISPN to our office via the OEQC link: http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Non-343-EA-EIS-Notices/2017-04-23-OA-Chapter-25-EISPN-Pupukea-Rural-Community-Commercial-Center.pdf

We understand from the OEQC publication form project summary that *“Hanapohaku LLC is proposing to develop a rural community commercial center in Pupukea, Oahu to provide a mix of goods and services to residents and visitors of the community. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking facing Kamehameha Highway. Mobile food trucks are also proposed. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.”*

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments and available strategies to support sustainable and healthy design are provided at: <http://health.hawaii.gov/epo/landuse>. Projects are required to adhere to all applicable standard comments. EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: <http://health.hawaii.gov/epo/egis>

In 2015, Hawaii passed Act 97 which amended Hawaii’s Renewable Portfolio Standards by setting a goal for Hawaii to become one hundred percent renewable by the year 2045. To reach this goal Hawaii should transform its transportation sector from the use of fossil fuels to renewable fuel, electric vehicles (EV)s, and public transit systems including bikeshare programs. To address “range anxiety” and facilitate the adoption of EVs, it is essential that EV charging stations be added to any planned parking areas open to the EV driving public. All future plans should strive to encourage the use of personal bicycles through the development of designated bike lanes and class A bike trails. All efforts should be made to reduce harmful vehicle emissions, reduce vehicle miles travelled (VMT’s), encourage alternative modes of transport and increase physical activity.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: <https://eha-cloud.doh.hawaii.gov>. This site provides links to our e-Permitting Portal, Environmental Health Warehouse,

Mr. Jeff Overton, AICP LEED AP
Page 2
May 16, 2017

Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (Hawaii Administrative Rules {HAR}, Chapter 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: <http://health.hawaii.gov/cwb>. If you have any questions, please contact the Clean Water Branch (CWB), Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Please note that all wastewater plans must conform to applicable provisions (HAR, Chapter 11-62, "Wastewater Systems"). We reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: <http://health.hawaii.gov/wastewater> and contact the Planning and Design Section of the Wastewater Branch (WWB) at (808) 586-4294.

Any construction waste generated by the project needs to be disposed of at a solid waste disposal facility that complies with the applicable provisions (HAR, Chapter 11-58.1 "Solid Waste Management Control"). The open burning of any of these wastes, on or off site, is strictly prohibited. Additional information is accessible at: <http://health.hawaii.gov/shwb>. For specific questions call (808) 586-4226.

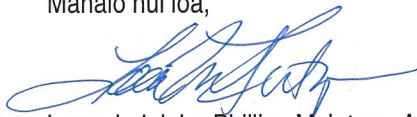
If temporary fugitive dust emissions could be emitted when the project site is prepared for construction and/or when construction activities occur, we recommend you review the need and/or requirements for a Clean Air Branch (CAB) permit (HAR, Chapter 11-60.1 "Air Pollution Control"). Effective air pollution control measures need to be provided to prevent or minimize any fugitive dust emissions caused by construction work from affecting the surrounding areas. This includes the off-site roadways used to enter/exit the project. The control measures could include, but are not limited to, the use of water wagons, sprinkler systems, and dust fences. For questions contact the Clean Air Branch via e-mail at: Cab.General@doh.hawaii.gov or call (808) 586-4200.

If noise created during the construction phase of the project may exceed the maximum allowable levels (HAR, Chapter 11-46, "Community Noise Control") then a noise permit may be required and needs to be obtained before the commencement of work. Relevant information is online at: <http://health.hawaii.gov/irhb/noise> EPO recommends you contact the Indoor and Radiological Health Branch (IRHB) at (808) 586-4700 with any specific questions.

To better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: <http://www.epa.gov/ejscreen>.

We request that you utilize all this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

Mahalo nui loa,



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

LM:nn

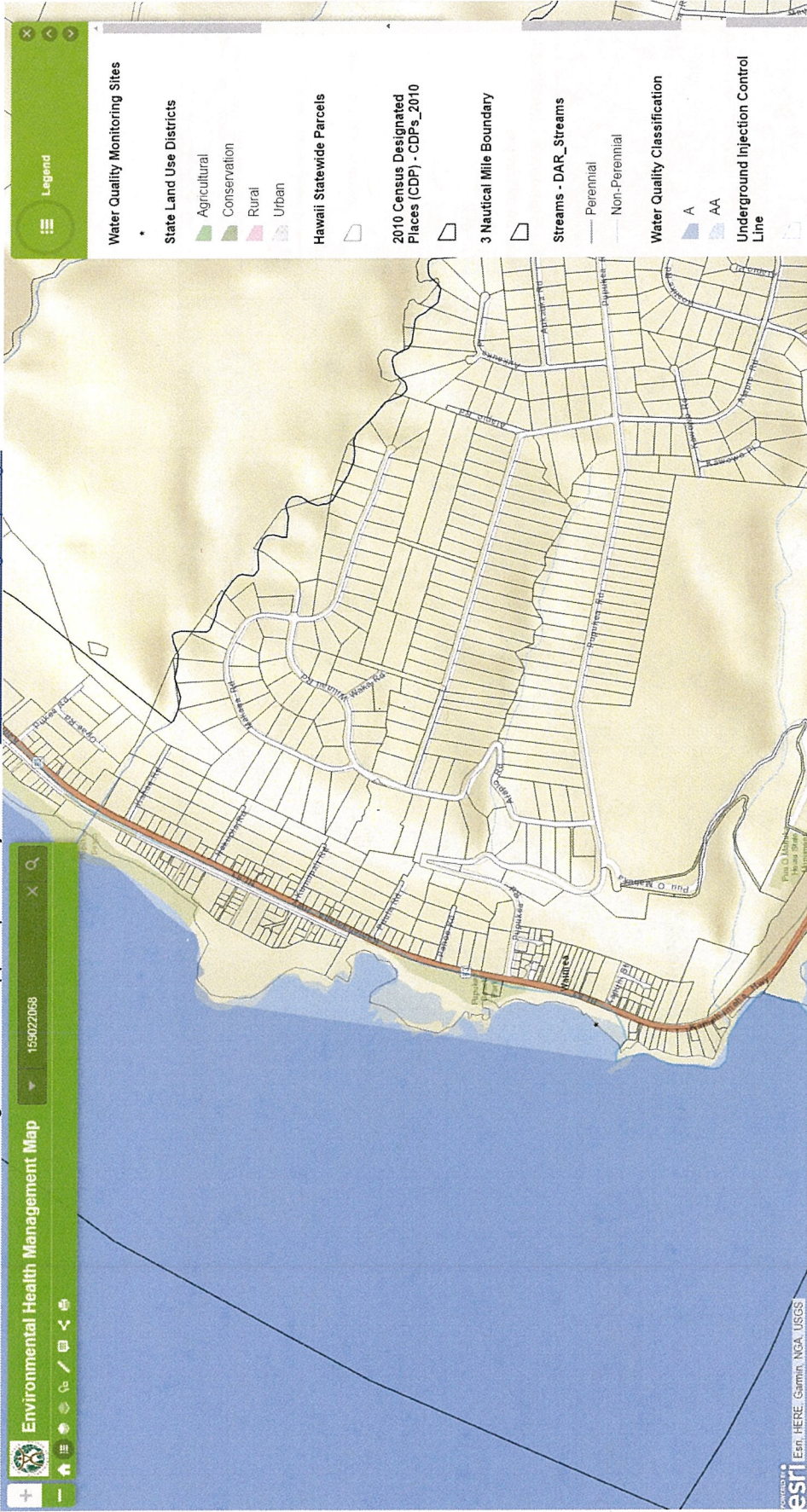
Attachment 1: Environmental Health Management Web App Snipit of Project Area: <http://health.hawaii.gov/epo/egis>

Attachment 2: Clean Water Branch: Water Quality Standards Map

Attachment 3: U.S. EPA EJSCREEN Report for Project Area

c: Andrew Yani, Hanapohaku LLC (via email: hanapohakullc@gmail.com)
Ardis Shaw-Kim, Dept. of Planning and Permitting (via email: ashaw@honolulu.gov)
DOH: CWB, WWB, CAB, SHWB, IRHB, SAN, CS (HHS, DS) {via email only}

Attachment 1: Environmental Health Management Web App Snipit of Project Area: <http://health.hawaii.gov/epo/egis>





EJSCREEN Report (Version 2016)

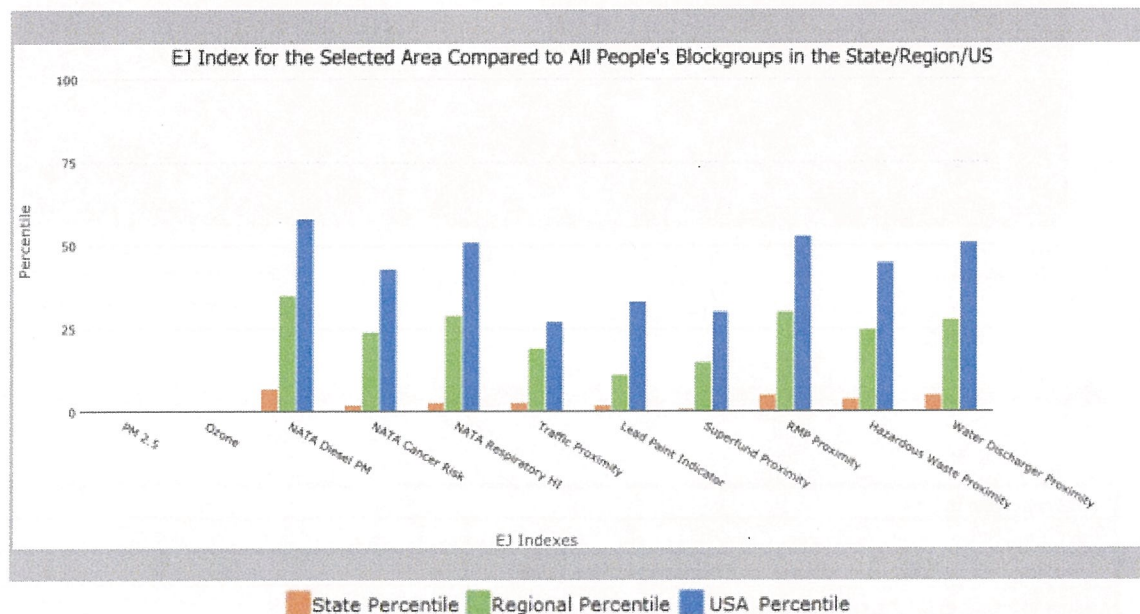


1 mile Ring Centered at 21.648439,-158.061930, HAWAII, EPA Region 9

Approximate Population: 1,521

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	7	35	58
EJ Index for NATA* Air Toxics Cancer Risk	2	24	43
EJ Index for NATA* Respiratory Hazard Index	3	29	51
EJ Index for Traffic Proximity and Volume	3	19	27
EJ Index for Lead Paint Indicator	2	11	33
EJ Index for Superfund Proximity	1	15	30
EJ Index for RMP Proximity	5	30	53
EJ Index for Hazardous Waste Proximity*	4	25	45
EJ Index for Water Discharger Proximity	5	28	51



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

1 mile Ring Centered at 21.648439,-158.061930, HAWAII, EPA Region 9

Approximate Population: 1,521

Input Area (sq. miles): 3.14



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)



1 mile Ring Centered at 21.648439, -158.061930, HAWAII, EPA Region 9

Approximate Population: 1,521

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	0.00652	0.149	2	0.978	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	25	34	9	43	<50th	40	<50th
NATA* Respiratory Hazard Index	0.5	1	9	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	150	990	49	1100	41	590	57
Lead Paint Indicator (% Pre-1960 Housing)	0.16	0.16	60	0.24	52	0.3	45
Superfund Proximity (site count/km distance)	0.067	0.098	59	0.15	48	0.13	53
RMP Proximity (facility count/km distance)	0.029	0.19	6	0.57	2	0.43	3
Hazardous Waste Proximity* (facility count/km distance)	0.029	0.14	0	0.14	10	0.11	14
Water Discharger Proximity (facility count/km distance)	0.037	0.34	9	0.2	8	0.31	5
Demographic Indicators							
Demographic Index	30%	52%	4	47%	27	36%	50
Minority Population	45%	77%	8	58%	36	37%	65
Low Income Population	16%	26%	31	36%	20	35%	21
Linguistically Isolated Population	0%	6%	23	9%	19	5%	44
Population With Less Than High School Education	3%	9%	18	17%	14	14%	15
Population Under 5 years of age	3%	6%	19	7%	21	6%	22
Population over 64 years of age	10%	15%	26	13%	48	14%	37

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

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

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



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

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

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Ms. Phillips McIntyre:

Thank you for your comment letter dated May 17, 2017 concerning the Chapter 25, Revised Ordinances of Honolulu (ROH) Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project. The following responses are offered to your comments:

- 1. State standard comments.** We appreciate the reference you have provided for standard comments to support sustainable and healthy design. We have reviewed the relevant standard comments, particularly those related to water, wastewater. Discussions on relevant comments are included in *Chapter 3.0* of the Draft EIS.
- 2. Hawai'i Renewable Portfolio Standards.** The project supports a variety of sustainability initiatives including renewable energy use and reduction of range anxiety for electric vehicles. As described in *Chapter 2.0* and *Section 3.16 Infrastructure and Utilities* in the Draft EIS, the Pūpūkea Rural Community Commercial Center will utilize photovoltaic panels to generate electricity 526,000 kilowatt hours annually, approximately one-third of the anticipated electrical demand. An electric vehicle (EV) charging station and dedicated parking will be included in the parking area for EV-driving patrons of the rural center. Bicycle parking will also be included as a part of the project to promote alternative modes of transportation and reduce vehicle emissions on the North Shore.
- 3. Hawai'i Environmental Health Portal.** We appreciate the resource you have provided us to access the Hawai'i Environmental Health Portal. Applicable information has been incorporated into the Draft EIS.
- 4. Clean Water Branch requirements.** As discussed in *Sections 3.5 and 3.6* of the Draft EIS, the project will comply with the requirements of the Clean Water Branch. A National Pollutant Discharge Elimination System permit for construction will be obtained for the project prior (refer to *Table 1-1 Required Reviews and Permits* in the EIS).

5. **Wastewater provisions under HAR, Chapter 11-62.** As discussed in the Draft EIS under *Section 3.5 Groundwater*, the wastewater treatment system requires approval by the Department of Health Wastewater Branch.
6. **Construction Waste.** Construction waste generated by the project will be disposed of at a solid waste disposal facility in compliance with applicable provisions.
7. **Fugitive Dust Emissions.** Project construction will comply with Clean Air Branch requirements. Specific dust control will be documented in a dust control plan for the project, to prevent fugitive dust from becoming airborne and crossing the property line (*EIS Section 3.14 Air Quality*).
8. **Noise.** A Noise Assessment for the project was conducted for the EIS. Noise minimization and mitigation for both the construction phase, and long-term operations, are documented in the Draft EIS (*Section 3.15 Noise*).
9. **US Environmental Protection Agency EJSCREEN.** We appreciate you providing us with the link to the US Environmental Protection Agency Environmental Justice Mapping and Screening Tool (EJSCREEN). We will review the map for the project area and utilize applicable environmental and demographic information in the Draft EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

RECEIVED

MAY 19 2017

G70

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

In reply, please refer to:
File:

May 17, 2017

Mr. Jeff Overton, AICP LEED AP
G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813

Dear Mr. Overton:

Thank you for your submittal requesting comments to the Environmental Impact Statement for Pupukea Rural Community Commercial Center, Pupukea, Haleiwa, Oahu.

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

- Chapter 11-46 Community Noise Control
- Chapter 11-501 Asbestos Requirements

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

Sincerely,

Jeffrey M. Eckerd
Program Manager
Indoor and Radiological Health Branch



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Jeffrey M. Eckerd, Program Manager
State of Hawai'i
Department of Health, Indoor and Radiological Health Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Eckerd:

Thank you for your comment letter dated May 17, 2017 concerning the Chapter 25, Revised Ordinances of Honolulu (ROH) Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project.

The project will comply with Chapter 11-46 and Chapter 11-501 of the Administrative Rules, in relation to Community Noise Control and Asbestos Requirements. A discussion on the information pertaining to noise is included in Section 3.15 of the Draft EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

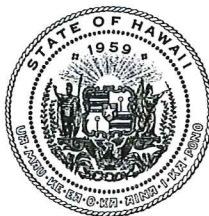
Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII



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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 22, 2017

G70 International, Inc.
Attention: Mr. Jeffrey H. Overton
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

via email: jeff@group70int.com

Dear Mr. Overton:

SUBJECT: Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

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

At this time, enclosed are comments from the (a) Land Division – Oahu District, (b) Division of State Parks, (c) Engineering Division, (d) Office of Conservation & Coastal Lands, and (e) Division of Forestry & Wildlife on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Russell Y. Tsuji".

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

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

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Tsuji:

Thank you for forwarding comments of the Department of Land and Natural Resources Divisions in your cover letter dated May 22, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We appreciate you consolidating comments from the Land Division – O'ahu District, Division of State Parks, Engineering Division, Office of Conservation & Coastal Lands, and Division of Forestry & Wildlife. We will provide responses to each respective office.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII



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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2017

MEMORANDUM

RECEIVED
LAND DIVISION
2017 APR 27 PM 1:33
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

LOCATION:

Pupukea, Island of Oahu; TMK No. (1) 5-9-011:068, 069, 070 & 016

APPLICANT:

Hanapokahu LLC

Transmitted for your review and comment is information on the above-referenced EISPN. We would appreciate your comments on this EISPN. Please submit any comments by **May 19, 2017**.

The EISPN can be found on-line at: <http://health.hawaii.gov/oeqc/> (Click on the Current Environmental Notice in the middle of the page.)

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

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: Darlene Bryant-Takamatsu

Print Name: Darlene Bryant-Takamatsu

Date: 4/27/17 *BC*

cc: Central Files



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Darlene Bryant-Takamatsu
State of Hawai'i
Department of Land and Natural Resources, Land Division O'ahu District
P.O. Box 621
Honolulu, HI 96809

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1) 5-9-011:068, 069, 070, 016
Pūpūkea, O'ahu, Hawai'i

Dear Ms. Bryant-Takamatsu:

Thank you for your comment dated May 27, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We acknowledge that the Land Division - O'ahu District has no comments to offer on the project.

We will provide you a copy of the Draft EIS. Thank you for your participation in the environmental review process.

Sincerely,

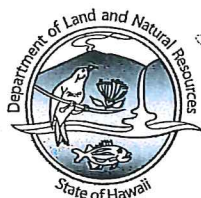
GROUP 70 INTERNATIONAL, INC.

A handwritten signature in black ink, appearing to read 'Jeff Overton', written in a cursive style.

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII

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



RECEIVED
STATE PARKS DIV

'17 APR 27 AM 11:03

DEPT OF LAND &
NATURAL RESOURCES

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2017

MEMORANDUM

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

LOCATION:

Pupukea, Island of Oahu; TMK No. (1) 5-9-011:068, 069, 070 & 016

APPLICANT:

Hanapokahu LLC

Transmitted for your review and comment is information on the above-referenced EISPN. We would appreciate your comments on this EISPN. Please submit any comments by **May 19, 2017**.

The EISPN can be found on-line at: <http://health.hawaii.gov/oegc/> (Click on the Current Environmental Notice in the middle of the page.)

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

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Print Name:

RUSSELL Y. TSUJI

Date:

5.2.17

cc: Central Files

RECEIVED
LAND DIVISION
2017 APR 27 AM 11:02
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Curt Cottrell
State of Hawai'i
Department of Land and Natural Resources, Division of State Parks
P.O. Box 621
Honolulu, HI 96809

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Cottrell:

Thank you for your comment letter dated May 2, 2017 concerning the Chapter 25, Revised Ordinances of Honolulu (ROH) Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project.

We acknowledge that the Division of State Parks has no comments to offer on the project.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

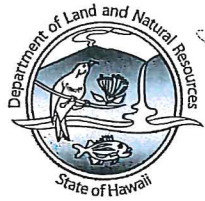
A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

17 APR 26 AM 11:58 ENGINEERING

DAVID Y. IGE
GOVERNOR OF HAWAII

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



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2017

MEMORANDUM

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation

FROM:

- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

LOCATION:

Pupukea, Island of Oahu; TMK No. (1) 5-9-011:068, 069, 070 & 016

APPLICANT:

Hanapokahu LLC

Transmitted for your review and comment is information on the above-referenced EISPN. We would appreciate your comments on this EISPN. Please submit any comments by **May 19, 2017**.

The EISPN can be found on-line at: <http://health.hawaii.gov/oeqc/> (Click on the Current Environmental Notice in the middle of the page.)

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

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Print Name:

Carty S. Chang, Chief Engineer

Date:

5/3/17

cc: Central Files

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LD/Russell Y. Tsuji

**Ref: Environmental Impact Statement Preparation Notice (EISPN) for Pupukea
Rural Community Commercial Center**

COMMENTS

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

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

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

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

Signed: 
CARTY S. CHANG, CHIEF ENGINEER

Date: 5/3/17



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

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

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Chang:

Thank you for providing comments to the Department of Land and Natural Resources' (DLNR) Land Division dated May 3, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We acknowledge that the rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations, are in effect when development falls within a designated Flood Hazard. The Flood Hazard Zone designation for the project is described in *Section 3.3* of the Draft EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

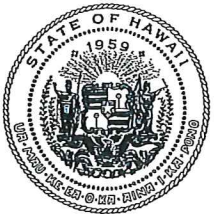
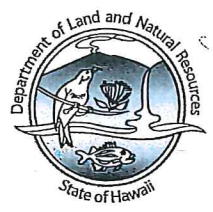
Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

HA 17-195

DAVID Y. IGE
GOVERNOR OF HAWAII



RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS

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

2017 APR 26 A 11:42

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2017

MEMORANDUM

RECEIVED
LAND DIVISION
2017 MAY 11 AM 10:25
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

LOCATION:

Pupukea, Island of Oahu; TMK No. (1) 5-9-011:068, 069, 070 & 016

APPLICANT:

Hanapokahu LLC

Transmitted for your review and comment is information on the above-referenced EISPN. We would appreciate your comments on this EISPN. Please submit any comments by **May 19, 2017**.

The EISPN can be found on-line at: <http://health.hawaii.gov/oeqc/> (Click on the Current Environmental Notice in the middle of the page.)

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

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Not in Cons.
District

Signed:

Michael Cain

Print Name:

Michael Cain, OCCL

Date:

5.09.17

cc: Central Files

ref OA-17-195



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Michael Cain
State of Hawai'i
Department of Land and Natural Resources, Office of Conservation & Coastal Lands
P.O. Box 621
Honolulu, HI 96809

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Cain:

Thank you for your comment dated May 9, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We acknowledge that the Office of Conservation & Coastal Lands has no comments to offer for the project, as the project is not in the Conservation District.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

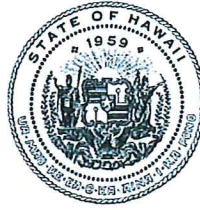
Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

May 16, 2017

TO: Russell Y. Tsuji, Administrator
Land Division

ATTN: Lydia Morikawa

FROM: James Cogswell
Wildlife Program Manager

SUBJECT: Division of Forestry and Wildlife Comments on the Environmental Impact Statement Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center.

The Department of Forestry and Wildlife has received your inquiry regarding the proposed Pupukea Rural Community Commercial Center located along Kamehameha Highway, in Pupukea, Oahu, TMK (1) 5-9-011:068, 069, 070, 016. The proposed action involves construction of three new buildings, one to two stories high and approximately 30,000 square feet. Supporting infrastructure includes driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

The State and Federally listed Hawaiian hoary bat or 'Ōpe'ape'a (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the proposed project. Therefore, DOFAW recommends avoiding using barbed wire, as bat mortalities have been documented as a result of becoming ensnared by barbed wire during flight. Hawaiian hoary bats roost in both exotic and native trees. If any trees are planned for removal during the bat breeding season there is a risk of injury or mortality to juvenile bats. To minimize the potential for impacts to this species, site clearing should be timed to avoid disturbance to breeding Hawaiian hoary bats; woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

Additionally, we note that artificial lighting can adversely impact seabirds that may pass through the area at night causing disorientation which could result in collision with manmade artifacts or grounding of birds. If nighttime lighting is required DOFAW recommends that any lights used be downward facing and fully shielded to minimize impacts.

We appreciate your efforts to work with our office for the conservation of native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Kate Cullison, Conservation Initiatives Coordinator at (808) 587-4148 or Katherine.cullison@hawaii.gov.

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

KEKOA KALUHIWA
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

2017 MAY 17 AM 7:56

RECEIVED
LAND DIVISION



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. James Cogswell, Wildlife Program Manager
State of Hawai'i
Department of Land and Natural Resources, Division of Forestry & Wildlife
1151 Punchbowl Street, Room 325
Honolulu, HI 96809

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Cogswell:

Thank you for providing comments to the Department of Land and Natural Resources' (DLNR) Land Division dated May 16, concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

1. **Hawaiian Hoary Bats:** We note that the State and Federally listed Hawaiian hoary bat ('ōpe'ape'a) has the potential to occur in the vicinity of the project. Use of barbed wire will be avoided in the project area. Site clearing and tree removal of woody plants greater than 15 feet tall will be scheduled to occur outside of the birthing and pup rearing season of June 1 through September 15. A statement regarding these mitigation measures for the Hawaiian hoary bat is included in Section 3.4 of the Draft EIS.
2. **Native Seabirds:** Lighting at the project site will be installed to shine downward and be fully shielded to minimize impacts to seabirds that may pass through the area at night. A statement regarding downward lighting for the project is included in *Section 3.17 Visual Environment* of the Draft EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

DAVID Y. IGE
GOVERNOR



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

FORD N. FUCHIGAMI
DIRECTOR

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

IN REPLY REFER TO:
DIR 0577
HWY-PS 2.4778

May 18, 2017

Mr. Jeff Overton, AICP
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307



Dear Mr. Overton:

Subject: Environmental Impact Statement Preparation Notice
Pupukea Rural Community Commercial Center
Pupukea, Koolauloa, Oahu, TMK: (1) 5-9-022:068, 069, 070, 016

The Hawaii Department of Transportation, Highways Division, Planning Branch appreciates the opportunity to comment on the subject project. We recommend that a Traffic Impact Report (TIR) be included in the Draft Environmental Impact Statement. The TIR should have a traffic circulation site plan with location of access points to Kamehameha Highway and the transportation facilities surrounding the project site. We are particularly interested in any changes that this project may have on the existing transportation infrastructure (i.e., additional vehicle trip generation). The TIR should consider not only vehicle trips, but operational and safety issues for all modes of transportation, such as bike and pedestrian facilities.

To coordinate the construction schedule of this project with our Highways Division and minimize possible conflicts with our scheduled highway and maintenance projects in the area, we request that any Construction Traffic Control Plans prepared for the subject project also be submitted to our office for review.

We look forward to working with the Applicant to ensure that any adverse impacts that the project may have on the State's highway facilities are adequately addressed and mitigation measures are identified through this environmental review process.

If you have any questions, please contact Ken Tatsuguchi, Engineering Program Manager, Highways Division, Planning Branch, at (808) 587-1830 or via email at ken.tatsuguchi@hawaii.gov. Please reference file review number PS 2017-067 in all contacts and correspondence regarding these comments.

Sincerely,

A handwritten signature in blue ink, appearing to read "Ford N. Fuchigami".

FORD N. FUCHIGAMI
Director of Transportation

c: City and County of Honolulu, Department of Planning and Permitting



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Ford N. Fuchigami, Director of Transportation
State of Hawai'i
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

DOT File Review Number PS 2017-067

Dear Mr. Fuchigami:

Thank you for your comment letter dated May 18, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following response is offered to your comments.

A Transportation Impact Analysis Report (TIAR) was prepared to evaluate the potential impact on roadways in the project area. The TIAR is included in *Appendix F* of the Draft EIS. A discussion on traffic and proposed mitigation measures are included in *Section 3.13* of the Draft EIS.

We acknowledge that any Construction Traffic Control Plans for the project are to be submitted to the Department of Transportation, Highways Division for review, to minimize possible conflicts with scheduled highway and maintenance projects in the area.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

cc: Ken Tatsuguchi, Engineering Program Manager DOT-HI



OFFICE OF ENVIRONMENTAL QUALITY CONTROL

DEPARTMENT OF HEALTH | 235 South Beretania Street, Suite 702, Honolulu, HI 96813 | oeqchawaii@doh.hawaii.gov

DAVID Y. IGE
GOVERNOR

SCOTT GLENN
DIRECTOR

(808) 586-4185

May 10, 2017

Kathy Sokugawa, Acting Director
Department of Planning and Permitting
City and County of Honolulu
650 S. King St. 7th Floor
Honolulu, HI 96813

Attention: Ardis Shaw-Kim

Dear Ms. Sokugawa,

Subject: Chapter 25, Revised Ordinances of Honolulu Environmental Impact Statement (EIS)
Preparation Notice (EISPN) for Pupukea Rural Community Commercial Center

We have reviewed the subject EISPN, and have the following comments.

Figure 4: Conceptual Plan of the EISPN depicts a limited area of "GrassPave Parking" in the northeast corner, suggesting that the proposed development will add a considerable amount of "non-GrassPave" or presumably impervious pavement to the site. Given the project's proximity to the shoreline and the adjacent Marine Life Conservation District, in the Draft EIS please show that the impervious pavement is necessary, to what degree the added impervious surface area would increase stormwater runoff, and how those effects will be mitigated.

The OEQC recommends incorporating low impact development (LID) strategies, including minimizing impervious surface areas to help groundwater recharge and decrease stormwater runoff, as well as ensuring source reduction, reuse, and recycling throughout the project life. Resources for LID and green buildings can be found at <http://planning.hawaii.gov/lud/>, as well as across the internet.

Noting the substantial increase in parking capacity of the proposal over current conditions, we believe the impact on traffic deserves careful analysis, with mitigation measures identified in the Draft EIS.

Thank you for your participation in the environmental review process. We look forward to a response that will also be included within the project's Draft EIS.

Should you have any questions regarding these comments, please contact our office as noted in the letterhead.

Sincerely,

Tom Eisen

Tom Eisen
Acting Director

cc: Andrew Yani, Jeff Overton



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Tom Eisen
State of Hawai'i
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 97813

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Eisen:

Thank you for your comment letter dated May 10, concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

1. Impervious Surface and Low Impact Development Controls

The owners of the rural center support the preparation of a thorough Environmental Impact Statement, given the site's proximity to the public beach park and the Marine Life Conservation District. The EIS is a disclosure document that presents detail on the rural center project, the existing environmental conditions, and identifies potential impacts and mitigative measures. *Chapter 3* of the Draft EIS is dedicated to evaluating impacts of the rural center on groundwater, the nearshore marine environment, and traffic, among other topics.

The current conceptual site plan is contained in Chapter 2.0. Technical studies were conducted to evaluate the proposed site plan design impacts to drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

2. Traffic Impacts

A Transportation Impact Analysis Report (TIAR) was prepared to evaluate the potential impact on roadways in the project area. The TIAR is included in *Appendix F* of the Draft EIS. A discussion on traffic, connectivity with existing multi-modal pathways in the area, and proposed improvements for the area are included in *Section 3.13* of the Draft EIS.

Mr. Tom Eisen, Office of Environmental Quality Control
Responses to Comments on EISPN
November 1, 2017
Page 2 of 2

Thank you for your participation in the environmental review process. Your office will receive the Draft EIS when it is ready for publication.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read "Jeff Overton". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

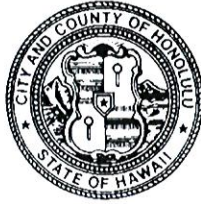
Jeff Overton, AICP, LEED AP
Principal

CITY AND COUNTY OF HONOLULU AGENCIES

DEPARTMENT OF PARKS & RECREATION
CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
Phone: (808) 768-3003 • Fax: (808) 768-3053
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR



MICHELE K. NEKOTA
DIRECTOR

JEANNE C. ISHIKAWA
DEPUTY DIRECTOR

June 28, 2017



Mr. Jeff Overton, AICP, LEED AP
Group 70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: Environmental Impact Statement, Preparation Notice
Pupukea Rural Community Commercial Center
Pupukea, Haleiwa, Hawaii

Thank you for the opportunity to review and comment on the subject EIS Preparation Notice.

The Department of Parks and Recreation is concerned that there is inadequate parking being proposed for this development and that customers of the Community Commercial Center will utilize the limited (28) parking stalls at the nearby Pupukea Beach Park, which would significantly impact park users.

Please address this concern in the Environmental Impact Statement.

Should you have any questions, please contact Mr. John Reid, Planner at 768-3017.

Sincerely,

A handwritten signature in black ink that reads "Michele K. Nekota".

Michele K. Nekota
Director

MKN:jr
(687760)

cc: Miles Hazama, District IV
Department of Parks and Recreation



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Michele K. Nekota, Director
City and County of Honolulu
Department of Parks and Recreation
1000 Uluohia Street, Suite 309
Kapolei, HI 96707

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Ms. Nekota:

Thank you for your comment letter dated June 28, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following response is offered to your comment.

The City and County Land Use Ordinance requires one off-street parking stall per per 400 square feet of commerce and business space; applying this to the proposed 30,000 square-foot center results in a requirement for 75 spaces. The project anticipates providing approximately 126 parking spaces. Further, the project proposes to install curb and sidewalk along the makai property edge, which will narrow the shoulder of Kamehameha Highway and reduce parking along the highway fronting the parcels. Additional information can be found in the EIS *Chapter 2* and *Appendix H*.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honolulu.dpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR



KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. T. HIU
DEPUTY DIRECTOR

2017/ED-6(ASK)

June 9, 2017

Mr. Jeff Overton, AICP LEED AP
G70
925 Bishop Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Overton:

SUBJECT: Environmental Impact Statement Preparation Notice (EISPN) for
Pupukea Rural Community Commercial Center,
Pupukea, Haleiwa, Oahu
Tax Map Keys 5-9-011: 016, 068, 069, and 078

The Department of Planning and Permitting (DPP), has reviewed the above-named EISPN and offers the following comments:

1. Pages 3 and 12 of the EISPN indicate that the DPP is the "Approving Agency" for the Project. The Draft EIS should clarify that the DPP is the accepting authority for purposes of the Environmental Impact Statement, and the Honolulu City Council is the approving authority for the Special Management Area (SMA) Use Permit.
2. Page 6 of the EISPN states that "the existing Foodland grocery store property is tied to the Project through a 1996 development agreement." This implies that Foodland property is necessarily part of the Project site. If the Project concept is to have all four of the lots treated as one zoning lot, a Conditional Use Permit for a joint development will be required.
3. The Draft EIS should note the proposed interim plan for which the Applicant has submitted an SMA Minor Permit application. Through it, the Applicant seeks to gain authorization to continue certain uses and perform other site work until the site is completely redeveloped with the Project described in the EISPN.
4. The Draft EIS should discuss storm water runoff and noise during the construction period.
5. References to the zoning in the Draft EIS should be consistent. The property is within the B-1 Neighborhood Business District.

6. The Draft EIS should address exterior lighting and solid waste, and the potential impacts associated with these on the surrounding environment.

Should you have any questions, please contact Ardis Shaw-Kim of our staff at 768-8021 or ashaw@honolulu.gov.

Very truly yours,



For Kathy K. Sokugawa
Acting Director



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
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November 1, 2017

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

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Ms. Sokugawa:

Thank you for your comment letter dated June 9, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments:

1. **Approving Agency.** The Draft EIS (*Chapter 1, Project Summary*) lists DPP as the accepting authority for the purposes of the EIS, and lists the Honolulu City Council as the approving authority for the Special Management Area (SMA) Use Permit. These authorities are also reflected in *Chapter 4, Relationship of Proposed Action to Land Use Plans, Policies and Controls for the Affected Area*.
2. **Conditional Use Permit.** As discussed in *Section 2.2*, the private development agreement among the four parcels was established to achieve mutual benefits of an integrated neighborhood shopping center. The *North Shore Sustainable Communities Plan* identifies the Foodland market as part of the Rural Community Commercial Center, as well as the parcels proposed for development by Hanapohaku. We acknowledge that a Conditional Use Permit for joint development would be needed, should it be desired to treat all four of the lots as one zoning unit. *Table 1-1, Required Reviews and Permits* in the EIS identifies the existing Conditional Use Permit joint development agreement among the three Hanapohaku-owned parcels was accepted by DPP in October 2017.
3. **SMA Minor Permit Application.** Section 2.2 of the Draft EIS notes that the existing commercial operations on the property are entitled under a Special Management Area (SMA) Use Permit – Minor (2017/SMA-21), along with corresponding site development and building permits.

Ms. Kathy K. Sokugawa, Acting Director
Department of Planning and Permitting
November 1, 2017
Page 2 of 2

4. **Stormwater Runoff and Noise.** Storm water runoff, for both the construction period and long-term controls, is covered under “*Drainage*” in EIS *Section 3.6 Surface Water and Drainage*. Noise during the construction period is covered in the EIS under *Section 3.15 Noise*.
5. **Zoning.** The EIS provides consistent reference to parcels’ zoning as B-1 Neighborhood Business District.
6. **Exterior Lighting and Solid Waste.** *Section 3.17 Visual Environment* in the EIS discusses exterior lighting compliance with Section 2015-A71(b). Solid waste management will be addressed during the construction phase.

Thank you for your participation in the environmental review process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read "Jeff Overton". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jeff Overton, AICP, LEED AP
Principal

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
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KIRK CALDWELL
MAYOR



WES FRYSZTACKI
DIRECTOR

JON Y. NOUCHI
DEPUTY DIRECTOR

TP4/17-688272R

May 16, 2017

Mr. Jeff Overton, AICP, LEED AP
Principal
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813-4307



Dear Mr. Overton:

SUBJECT: Environmental Impact Statement Preparation Notice (EISPN) for
Pupukea Rural Community Commercial Center, Pupukea, Oahu,
Hawaii

In response to your letter dated April 21, 2017, we have the following comments:

1. The Draft Environmental Impact Statement (DEIS) should include a Traffic Management Plan, which discusses traffic impacts the project may have on any surrounding City roadways, including short-term impacts during construction and long-term impacts after construction with corresponding measures to mitigate these impacts by applying complete streets principles.
2. The DEIS should include a discussion of the existing safety and traffic operational issues from entering and exiting the loading area in back of Foodland off of Pupukea Road with measures to mitigate these issues.
3. We have the following comments regarding loading and unloading at the project site:
 - a. All deliveries and refuse services should be handled on-site. A description of how the delivery and refuse vehicles will safely maneuver their vehicles on the property should be provided and the location marked on the site plan.

- b. The project should be designed to accommodate TheHandi-Van para-transit vehicles on-site, which require a minimum 31-foot turning radius, a 10-foot, 6-inch height clearance, and the ability to exit the site without reversing onto public roadways.
 4. We have the following comments regarding the bus stop on Kamehameha Highway, fronting the existing Foodland Supermarket:
 - a. Locate the bus stop, shelter, and bus bay on the site plan.
 - b. The project should provide a continuous ADA accessible pathway from the "retail pad" to the existing bus stop and ending at the intersection of Kamehameha Highway and Pupukea Road.
 - c. Construction notes should include the following note regarding transit services:

"This project will affect bus operations, bus routes, bus stops, and para-transit operations. **At least two (2) weeks prior to construction**, the Contractor shall provide notification of the scope of work, location, detour, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project to:

Department of Transportation Services, Public Transit Division:
768-8396 and TheBusStop@honolulu.gov
Oahu Transit Services, Inc.:
Bus Operations: 768-9520 and 848-4565 and
Field_Operation_Mgr@thebus.org
Para-transit Dispatch and Operations:
454-5007 and 768-9852"
5. Best Management Practice controls should be included at construction site to prevent trailing of dirt and debris on City roadways.
6. All access driveways to the project site should be designed with the highest pedestrian and bicycle safety measures.
7. The EISPN states that there will be bicycle parking provided. Locate the bicycle parking on the site plan.

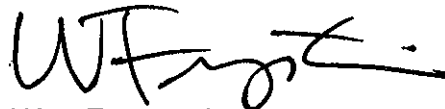
Mr. Jeff Overton, AICP, LEED AP
May 16, 2017
Page 3

8. Any damage to the existing roadway and sidewalk area caused by the project should be repaired to current City standards.
9. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., should be kept apprised of the details of the proposed project and the impacts that the project may have on the adjoining local street area network.
10. Construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets.
11. Plans should be reviewed and approved by the Disability and Communication Access Board to ensure full compliance with the Americans with Disabilities Act.

We reserve further comment pending review of the DEIS.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Renee Yamasaki of my staff at 768-8383.

Very truly yours,



Wes Frysztacki
Director



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5th Floor
Honolulu, HI 96813
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www.g70.design

November 1, 2017

Mr. Wes Frysztacki, Director
City and County of Honolulu
Department of Transportation Services
650 South King Street, 3rd Floor
Honolulu, HI 96813

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Frysztacki:

Thank you for your comment letter dated May 16, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments:

1. **Traffic Management Plan**

A Transportation Impact Analysis Report (TIAR) was prepared to evaluate the potential impact on roadways in the project area. The TIAR is included in *Appendix F* of the Draft EIS. The TIAR identifies project-generated trips and impacts at peak hours, notes the lack of existing multi-modal pathways in the area, and proposes improvements. A summary of its findings is included in *Section 3.13* of the Draft EIS.

2. **Existing Safety and Traffic Operations**

The Draft EIS describes current operations at the loading area behind the existing Foodland and the occasional impacts to Pūpūkea Road in *Section 3.13 Traffic*. Various options to minimize impacts from deliveries to Foodland are under discussion. Consolidated access is proposed for vehicles from Kamehameha Highway to both the new rural center and the existing Foodland parking lot.

3. **Loading and Unloading at the Project Site**

Traffic circulation for the new construction will provide for delivery trucks and refuse services to maneuver on site without reversing onto Kamehameha Highway.

4. **Bus Stop on Kamehameha Highway**

Section 3.13 of the EIS includes a figure identifying potential new northbound bus stop locations, to be finalized with input from DTS. The project proposes an ADA-compliant sidewalk along Kamehameha Highway from the Pūpūkea Road to Pāhoehoe Road, with a new

Mr. Wes Frysztacki, Director
Department of Transportation Services
November 1, 2017
Page 2 of 2

crosswalk proposed at the northwest corner of the project site and Pāhoehoe Road. A multi-modal path is proposed around the center's central green to provide off-street access through the rural community commercial center with links to crosswalks to access Foodland.

We acknowledge your request that notification of bus stop disruption due to construction be provided to Oahu Transit Services prior to the construction period.

5. Best Management Practice Controls

Section 3.2 Geology, Topography, and Soils identifies soil erosion minimization measures and good housekeeping practices to prevent and minimize off site impacts such as dirt and debris on City roadways.

6. Access Driveways

To improve multi-modal safety, the project proposed to provide a pedestrian pathway along the makai edge of the rural center site. A single consolidated access driveway from a dedicated turn lane on Kamehameha Highway will improve safety for pedestrians and bicyclists.

7. Bicycle Parking

The location of bicycle parking will be included in the construction design phase.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

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

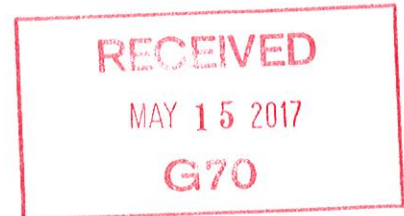
KIRK CALDWELL
MAYOR



MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

May 11, 2017



Mr. Jeff Overton, AICP, LEED AP
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813-4307

Dear Mr. Overton:

Subject: Environmental Impact Statement Preparation Notice
Pupukea Rural Community Commercial Center
Tax Map Keys: 5-9-022: 016, 068, 069, and 070

In response to your letter dated April 21, 2017, regarding the above-mentioned subject, the Honolulu Fire Department determined that there will be no significant impact to fire department services.

Should you have questions, please contact Battalion Chief Wayne Masuda of our Fire Prevention Bureau at 723-7151 or wmasuda@honolulu.gov.

Sincerely,

A handwritten signature in blue ink that reads "Socrates D. Bratakos".

SOCRATES D. BRATAKOS
Assistant Chief

SDB/JL:bh



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

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

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Bratakos:

Thank you for your comment letter dated May 11, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu.

We acknowledge that the Honolulu Fire Department has determined there will be no significant impact to fire department services as a result of the project.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

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



KIRK CALDWELL
MAYOR

LOHIS-M-HEALSHA
CHIEF

CARY OKIMOTO
JERRY INOUE
DEPUTY CHIEFS

OUR REFERENCE MT-DK

May 4, 2017

Mr. Jeff Overton, AICP, LEED AP
Principal
G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Overton:

This is in response to your letter of April 21, 2017, requesting comments on the Environmental Impact Statement Preparation Notice for the Pupukeya Rural Community Commercial Center project.

The Honolulu Police Department has reviewed this project and has concerns regarding the safe flow of vehicular and pedestrian traffic along the project area.

We recommend that the developer evaluate and report the outcome of the traffic and pedestrian flow affected by the development at the property site. The developer should also consider the effects to the community caused by vehicles moving in and out of the area during the construction and after the completion of this project. The contractor should provide a traffic mitigation plan to implement traffic controls and management (e.g., flag persons, clear signage and cones, special duty officers, etc.) for construction vehicles driving to and from the work site, especially on Kamehameha Highway. This will ensure a safe means of ingress/egress for construction vehicles, motorists, and pedestrians in the vicinity.


If there are any questions, please call Major Darren Izumo of District 2 (Wahiawa) at 723-8703.

Thank you for the opportunity to review this project.

Sincerely,

CARY OKIMOTO
Acting Chief of Police

By


MARK TSUYEMURA
Management Analyst VI
Office of the Chief



925 Bethel Street November 1, 2017

5th Floor

Honolulu, HI 96813

808.523.5866

www.g70.design

Mr. Cary Okimoto
Acting Chief of Police, Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, HI 96813

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Okimoto:

Thank you for your comment letter dated May 4, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments:

The Draft Environmental Impact Statement (EIS) describes proposed changes to improve traffic flow along Kamehameha Highway in *Section 3.13 Traffic*. The existing Foodland driveways off Kamehameha Highway will be consolidated to reduce the total number of access points and improve pedestrian safety. The existing driveway connection to Pūpūkea Road will be retained. A center two-way left-turn lane is proposed to provide a refuge area for traffic turning left into and out of the rural center. A Transportation Impact Analysis Report (TIAR) was prepared to analyze existing traffic and future traffic conditions with the project, and evaluates the proposed improvements to minimize traffic impacts. The TIAR is included in *Appendix F* of the EIS.

We acknowledge your request that traffic controls and management be implemented during construction.

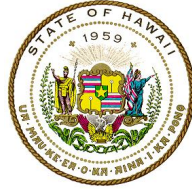
Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

ELECTED OFFICIALS



The Senate

STATE CAPITOL
HONOLULU, HAWAII 96813

May 24, 2017

Honolulu City & County
Department of Planning and Permitting
650 s King St, 7th Floor
Honolulu, HI 96813

G70
925 Bethel Street, 5th Floor
Honolulu, HI 96813

Hanapohaku LLC
59-716 Kamehameha Hwy
Haleiwa, HI 96712

RE: Pupukea Rural Community Commercial Center EISPN

Dear Sir/Madame:

Please accept these comments and questions regarding the Environmental Impact Statement Preparation Notice for Pupukea Rural Community Commercial Center EISPN.

Section 1.2 Overview of Project Site

"The Hanapohaku LLC parcels contain a mix of commercial ocean recreational rental concessions including Seamajds Beach Boutique and North Shore Surf Shop, a real estate office, dentist office and mobile food trucks."

COMMENT 1: The description should include discussion of the existing violations that DPP has cited against the land and its owner. In particular, the ongoing violations regarding illegal grubbing and development without SMA permits should be discussed, as well as the number of mobile food trucks legally permitted and number presently onsite. The new food commissary and the recently installed wastewater treatment system should be noted and identified as permitted, or not permitted. The Overview of Project Site should accurately reflect the existing elements and uses of the subject property.

Section 1.3 Proposed Action and Purpose of EISPN

The Plan defines the Rural Community Center as a: "small cluster commercial and services businesses located on major thoroughfares that provide a range of goods and services to meet the needs of the surrounding residential communities."

COMMENT 2: Thorough analysis of direct and indirect impacts to residents of the surrounding communities is warranted. Particular attention should be paid to the estimated mix of residential versus visitor commerce and needs. To meet the spirit of the North Shore Communities Sustainable Plan guideline, benefits to area residents should exceed those of visitors. How will this be accomplished?

Section 2.1 Existing Conditions

The project site currently houses small surfboard rental and swimwear concession, a real estate office, and seven outdoor food truck establishments.

COMMENT 3: Why is this description different from Section 1.2? I restate Comment 1 about the Existing Conditions.

Page 10 Proposed Action

The planned floor area of the facilities will be approximately 27,500 sf of leasable area.

Page 14 Short Term Impacts

The project will include grubbing and grading of the current site, and development of the 29,000 sf (leasable floor area).

COMMENT 4: What is the correct leasable floor area?

Figure 4 Concept Plan

COMMENT 5: The visualization indicates parking in the Foodland parking lot over the leech field near the bus stop. Is that permitted? Will Foodland have less, the same amount, or more parking in its own parking lot, if the proposed access points between projects are built? What impacts will the proposed action have on traffic circulation and parking in the Foodland parking lot?

COMMENT 6: It looks like lunch wagons are planned for the project, but this is not clear because there is no discussion. There appears to be no provision for lunch trucks other than to locate them in available parking spaces. Is any commitment being made by the developer to have lunch wagons on the property for years to come? If lunch wagons are being contemplated, how much fresh water, electricity, gray water, wastewater, food waste, grease, and other garbage will be consumed or generated; and how will these be accommodated?

Section 2.3 Required Permits and Approvals

COMMENT 7: The EIS should clearly describe the status of existing violations, permits and actions required to get into compliance, and timeline to complete requires actions.

Section 5.1 No Action Alternative

The No Action Alternative would maintain the property in its existing condition, with limited allowed commercial uses per the existing SMA minor permit. The uses include the real estate office, dentist office, surf and clothing store, and one food truck establishment.

COMMENT 8: The existing conditions are not as described. Will Hanapohaku LLC return the property to the "existing condition," as described, before beginning to study impacts? How else can baseline impacts be measured for this alternative, if the actual use and activity on the site are different than stated? Accurate analysis of impacts now and projected in the future for the No Action Alternative is essential for credible comparison with the proposed action. Great care must be taken to accurately describe, measure and discuss impacts for this alternative.

If Hanapohaku LLC will not return the property to the "existing condition," a robust justification must be presented along with clarity on what is No Action Alternative.

Section 5.2 Commercial Shopping Center Alternative

This alternative would contemplate development of a 45,000 to 50,000 SF shopping center.

COMMENT 9: Page 10, Proposed Action states: The planned floor area of the facilities will be approximately 27,500 sf of leasable area (30,000 sf gross floor area). Are these numbers consistent with each other? Is the size of the shopping center synonymous with the gross floor area or does the 45,000 to 50,000 SF include more than gross floor area? Please clarify.

COMMENT 10: Should there be a third alternative? Is there no other contemplated outcome besides the "existing conditions" as described in the No Action Alternative and the Commercial Shopping Center Alternative?

Please include me as a consulted party. Thank you for this opportunity to share my thoughts.

Respectfully submitted,



Gil Riviere
Senator, District 23
Oahu's North and Windward Shores



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Senator Gil Riviere
The Senate, District 23
State of Hawai'i
1151 Punchbowl Street, Room 325
Honolulu, HI 96809

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1) 5-9-011:068, 069, 070, 016
Pūpūkea, O'ahu, Hawai'i

Dear Senator Riviere:

Thank you for your comment letter dated May 24, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center. The following responses are offered to your comments.

1. Overview of Project Site

The elements of the project site are described in Section 2.0 of the Draft EIS. The existing conditions are based on the commercial activities approved for this site by the City and County of Honolulu Department of Planning and Permitting (DPP) in the August 2017 Special Management Area (SMA) Use Permit Minor (SMA/2017-21).

2. Direct and Indirect Impacts

The North Shore Sustainable Communities Plan emphasizes the provision of goods and services to residents of the surrounding communities. As stated previously, the commercial tenants of the rural center will have a primary focus of delivering goods and services for the local community. The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and financial services. Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists. The Draft EIS Section 3.0 presents the potential impacts associated with the rural center, including both direct and indirect effects.

3. Proposed Action and Purpose

The elements of the proposed action are described in Chapter 2.0 of the Draft EIS, and we apologize for inconsistencies in the EISPN project description. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP) in the

creation of this Rural Community Commercial Center. The landowners are committed to pursuing Hawai'i-based businesses as tenants of the center. This commitment underlies the objectives of the owners to support local businesses that complement and strengthen commerce on the North Shore, while preserving its identity as a rural community. The offering of goods and services to the surrounding community will include a second branch of the Waialua Federal Credit Union, an urgent care medical clinic, a pharmacy, professional services (dentistry, legal, chiropractic, etc.), fitness studio and child day care, as well as business center and health food market/deli.

4. Leasable Floor Area

A major emphasis is limiting the scale of development, in keeping with the surrounding rural community context. The planned gross building floor area of 30,000 square feet (SF) will yield a net leasable floor area of approximately 27,500 SF. This represents less than 25% of the allowable commercial floor area for the subject properties, reflecting a great sensitivity to establishing an appropriate scale for this rural center.

5. Concept Plan

Section 2.4.1 provides a description of the internal driveway circulation and parking, including the adjoining Foodland Pūpūkea property. The State of Hawai'i Department of Health allows for construction of a parking lot above a subsurface wastewater disposal field. With the closure of the current ingress and egress driveways off Kamehameha Highway, there will be some reconfiguration of the parking lot. The parking spaces in the Foodland lot are estimated to increase by eight stalls.

Internal circulation for the Foodland Pūpūkea parking lot will improve with the provision of two interconnections between the parking lot and the primary access driveway. Access to and from Kamehameha Highway will improve with a left-turn storage lane that will consolidate ingress to one driveway. A discussion on future traffic conditions is provided in Section 3.13 of the Draft EIS.

6. Food Trucks

The rural center will make provisions for supporting mobile food establishments ("food trucks") on the property. Mobile food trucks may be among the tenant mix periodically using the central gathering space. While in practice the number may be much lower, the wastewater and parking capacity for the rural center are sized to support up to eight mobile food trucks, their patrons, and employees. The food trucks will be fully mobile and compliant with DOH and DPP regulations. The trucks will not be connected to, nor utilize, the on-site wastewater system. Per current DOH rules, food trucks are required to have liquid wastes removed at an approved waste servicing area or by a licensed commercial pumping contractor. By rule, the mobile food establishment must operate in conjunction with a designated food establishment for servicing.

7. Required Permits and Approvals for Existing Use Compliance

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

8. Alternatives Descriptions/Third Alternative

The evaluation of alternatives presented in the Draft EIS Chapter 5.0 includes the No-Action Alternative, the Commercial Shopping Center Alternative, and the Alternative Development Timetable (Deferral). The No-Action Alternative is based on utilization of the subject properties in compliance with the existing SMA Minor Permit (SMA/2017-21). The Shopping Center Alternative is described as a viable project with a gross floor area of 46,000 SF, which is approximately 40% of the LUO development capacity under its B-1 commercial zoning. Such a center would provide a wider range of goods and services for residents of the surrounding neighborhoods and their visitors. Another alternative that is addressed is the Alternative for Deferred Action, which would delay the development of the rural center to some future date several years from now. Until future development, the property would continue operations under the existing SMA Minor Permit (SMA/2017-21).

We appreciate your service to the North Shore community for many years, and thank you for your participation in the environmental review process.

This letter serves as a response to your EISPN comment letter, and we will notify you of the availability of the Draft EIS and Final EIS. Please contact our office if you have questions or other issues you wish to be addressed during this process.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

COMMUNITY INTEREST GROUPS AND ORGANIZATIONS



NORTH SHORE NEIGHBORHOOD BOARD NO. 27

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: <http://www.honolulu.gov/nco>

April 18, 2016

Mr. George Atta
Director, Department of Planning and Permitting
630 S. King Street
Honolulu, HI 96813

Aloha Mr. Atta:

At the Wednesday, April 6, 2016 North Shore Neighborhood Board No. 27 Special Meeting, the board voted, 9-0-0 on the following motion regarding the Sharks Cove Development:

That the North Shore Neighborhood Board Strongly supports the statement of the Sharks Cove Coalition and urges the City & County of Honolulu Department of Planning & Permitting to fully enforce the Special Management Area ordinances and building code for the Sharks Cove Commercial Development.

Attached is the statement the Board supported. Please keep us informed regarding any actions the Department of Planning and Permitting takes on this project.

Please call or email if you have any questions.

Mahalo,

Kathleen M. Pahinui
Chair, North Shore Neighborhood Board No. 27

cc: Art Challacombe, Deputy Director, Department of Planning and Permitting
Council Chair Martin



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Kathleen M. Pahinui, Chair
City and County of Honolulu
North Shore Neighborhood Board No. 27
530 South Street, Room 406
Honolulu, HI 96813

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Ms. Pahinui:

Thank you for your comment letter dated April 18, 2016 reflecting your view on the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project. The following responses are offered to your comments.

We acknowledge that the North Shore Neighborhood Board strongly supports the statement of the Sharks Cove Coalition. In August 2017, the Department of Planning and Permitting issued a Special Management Area (SMA) Use Permit Minor (SMA/2017-21) for existing uses. The approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

The nearby presence of the public beach park and the sensitive resources at the Marine Life Conservation District were examined by technical experts; findings are summarized in *Chapters 2.0* and *3.0*, and technical appendices to be published in the Draft EIS. The EIS is a disclosure document that presents detail on the rural center project, the existing environmental conditions, and identifies potential impacts and mitigative measures.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal



Mālama Pūpūkea-Waimea
Post Office Box 188
Hale'iwa, HI 96712

Board of Directors

Denise Antolini
Colette Coty
John Cutting
Bob Leinau
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Staff

Maxx Elizabeth Phillips,
Managing Director
Jenny Yagodich, Director of
Educational Programs &
Community Outreach

Federal Nonprofit Organization
501(c)(3) FEIN 27-0855937
www.pupukeawaimea.org

May 22, 2017

Ardis Shaw-Kim, (808) 768-8021, ashaw@honolulu.gov
Andrew Yani, (808) 779-5733, hanapohakullc@gmail.com
Jeff Overton, AICP LEED AP, (808) 523-5866, pupukea@g70.design

Re: Pūpūkea Rural Community Commercial Center EISPN Comments

Dear Ms. Shaw-Kim, Mr. Yani, and Mr. Overton:

Since 2005, Mālama Pūpūkea-Waimea (MPW) has worked “to replenish and sustain the natural and cultural resources of the Pūpūkea and Waimea ahupua‘a for present and future generations through active community stewardship, education, and partnerships.”

Our organization was created thirteen years ago in response to the serious threats to the community and marine ecosystem in these ahupua‘a that arose from the commercial “mall” development by the Honu Group on the same parcels that are the subject of this EISPN.

We have since dedicated thousands of hours of volunteer and staff time, and substantial resources, in particular to protecting the State Marine Life Conservation District (MLCD) at Pūpūkea and stewarding Pūpūkea Beach Park.

We are deeply concerned about the environmental and community impacts of the proposed Pūpūkea Rural Community Commercial Center, and about the existing illegal development of the property, and therefore provide the following comments on the EISPN:

Consulted Party

MPW requests to be a formally consulted party in the EIS process going forward. Please provide all future documents and correspondence to both Denise Antolini (antolinid@gmail.com) and Maxx Elisabeth Phillips (maxxephillips@gmail.com) and mail hard copies to MPW address indicated.

Section 1.3 Proposed Action and Purpose of the EISPN

The North Shore Sustainable Communities Plan’s definition of Rural Community Commercial Center requires that development of these parcels be “small cluster” and “meet the needs of the surrounding residential communities.”

The Concept Plan presented by Hanapohaku LLC (HP) exceeds the “small cluster” level because the proposed development – through buildings, parking lots, roadways, and food trucks – takes up nearly all empty space on the three parcels. Sprawl is not small. The total proposed gross *floor* area is 30,000 (p. 10). But this number is a substantial under-estimate of the footprint because the EISPN does not provide information about the total footprint of the development from the proposed paved parking lots, paved roadways, drainage systems, and the food trucks (with associated tables, chairs, decks, walkways,

and spillover equipment areas).

The Concept Plan violates the spirit and letter of the NSSCP because it does not cater to “the needs of the surrounding residential communities.” Instead, HP proposes a commercial center that is focused on attracting tourists and non-residential customers.

HP acknowledges that Rural Community Commercial Centers “also attracts residents and visitors outside the immediate community.” (P. 10.) This is a gross under-statement of (a) the focus of the HP owners on the quick-turnover, drive-by tourism market as indicated by their past almost two years of kapahahi commercial activity with hundreds if not thousands of tourists a day (far outweighing resident customers), (b) the major impacts on the Pūpūkea community caused by the kind of development that will attract more tourism, more traffic, and more pollution to this small area, and (c) the conclusion that catering to tourists is not consistent with the NSSCP, which focuses on the needs of “*surrounding residential communities.*”

While HP may claim that they will rent to local businesses with local owners, and cater to local residents, this is an illusory promise. HP is not going to be bound to do any catering to local needs once the development is completed. All of the retail units can, and likely will be, flipped to high-traffic tourism-focused businesses on a dime.

2.1 Project Setting and Description

MPW notes that most of the existing commercial uses on the H property are not legal because HP does not have a Special Management Area (SMA) permit for the myriad of activities on the property that constitute development. The City and County of Honolulu Department of Planning & Permitting (DPP) has imposed fines for multiple violations of building codes and currently has HP under an Notice of Order whereby HP is accumulating fines of over \$500 per day. This important information was omitted from this section and must be acknowledged in the DEIS, accurately and fully.

In describing the proposed action, p. 10, the EISPN says “[b]uildings will be set back from the highway to provide a large park-like green space, walkways, and bicycle parking.” Although that sounds attractive, it is not what is indicated by the Concept Plan, which shows a narrow setback from the Highway and no “large park-like green space,” but rather eight crammed in food trucks, which are not drawn realistically because the canopies, decks, service counters, fake grass, picnic tables, umbrellas, garbage bins, hoses, electrical lines, pipes, outdoor lighting, signage, outside equipment, and other “spillover” from *each* of these trucks as currently operating on the property is not indicated. The other “green area” is overshadowed and surrounded by what looks like six two-story buildings. This is hardly the “community gathering space” suggested by the EISPN.

3.1 Physical and Natural Environment

The EISPN notes the project’s proximity to “the ocean located a distance of 500 feet across Kamehameha Highway.” Oddly, given that MPW has consistently raised numerous concerns about the impact of the current and future development on the Pūpūkea MLCD and Pūpūkea Beach Park for over a year with HP, the EISPN *does not mention the direct runoff connection to the MLCD, the importance of the MLCD itself, or the sensitive nature of the marine environment and beach park.* A similar lack of appropriate focus and analysis of the sensitivity of this special marine protected area was a serious and fatal omission from the EA for the Honu project in 2004.

MPW also has concerns that HP will not conduct an adequate marine impact survey. MPW has already objected in communications with G70 to HP's decision to retain Steve Dollar as its marine consultant. MPW now makes that objection formal. Given his track record of always working for developers, and other questionable work in the past, Dollar does not appear to be impartial, capable, or inclined to conduct an accurate and credible survey of the potential impacts of this project or alternatives on the MLCD.

4.3 Significance Criteria

MPW does not agree with HP's statement (p. 14) that "Due to substantial environmental improvements to these properties, the project is anticipated to result in negligible adverse effects and beneficial impacts to the environment." MPW expects that the project will have major, long-term, and irreversible impacts to the MLCD, the Beach Park, and to litter, traffic, pedestrian hazard, noise, aesthetic, and the view planes. These impacts are not offset by proposed amenities such as a EV charging station for HP's owner or solar panels that offset the owner's electrical bill for substantial new consumptive uses on the property. The environment cannot be traded off in this manner like three-card Monte.

Indeed, most likely because G70 recognizes that there are significant potential impacts, G70 has made the wise decision advise HP to go "direct to the EIS" instead of claiming that the impacts can be mitigated down to the EA/FONSI level. However, the "no net negative impact" language of the EISPN does not match the fact that this is an EISPN and is therefore this section is misleading.

5.1 No Action Alternative

The No Action Alternative is incorrectly framed. This section incorrectly states that there is an "existing SMA Minor permit." (p. 17) No such permit exists for uses other than the pre-existing (pre-HP-purchase) buildings. The development currently on the property that is post-"baseline" (post-purchase by HP) *does not have a SMA permit*. This needs to be stated correctly.

If HP contends that "no action" refers to only those current uses with an SMA permit, then HP must take the property back to the baseline condition. This means removing all of the food trucks and related development on the property. In other words, No Action does not mean "leave all the current food trucks and mess" on the property. Under HEPA, No Action cannot mean an illegal action. Because HP's current development (post-purchase) is illegal due to the lack of an SMA, *No Action means taking the property back to the pre-purchase baseline conditions*.

5.2 Commercial Shopping Center Alternative

HP describes only one alternative, a Commercial Shopping Center, and this alternative is a false one because it is not feasible under the NSSCP, given that (as described on p. 6) the NSSCP limits development on these lots to a "small cluster" and a development that "meet the needs of the surrounding residential communities." This kind of straw-person alternative is not reasonable.

MPW EISPN Comments

May 22, 2017

Page 4 of 4

HP should come up with alternatives that conform to the NSSCP and that involve *less* not *more* development that proposed by the Concept Plan. These alternatives could include conservation of a substantial portion of the property and development that truly focuses on serving the needs of the immediate residential community.

Sincerely,

A handwritten signature in black ink that reads "Denise Antolini". The signature is written in a cursive, flowing style.

Denise Antolini
President

Cc: Maxx E. Phillips



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Denise Antolini, President
Mālama Pūpūkea-Waimea
via email: antolinid@gmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1) 5-9-011:068, 069, 070, 016
Pūpūkea, O'ahu, Hawai'i

Dear Ms. Antolini:

Thank you for your comment letter dated May 22, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

1. Consulted Party

We thank you for your input to the EIS process and welcome your involvement. We will notify you via email, per your request, of the availability of the Draft EIS and Final EIS. This letter serves as a response to your EISPN comments. Please contact our office if you have questions or other issues you wish to be addressed in this process.

2. Proposed Action and Project Purpose

The elements of the proposed action are described in *Chapter 2.0* of the Draft EIS. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP) in the creation of this Rural Community Commercial Center. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area for the subject properties. The planned gross building floor area of 30,000 square feet (SF) will yield a net leasable floor area of approximately 27,500 SF. This reflects sensitivity to establishing an appropriate scale for this rural center.

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale'iwa or Central O'ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai'i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O'ahu. Many of these businesses are Hawai'i-based, and some of these businesses are owned by North Shore residents.

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

Chapter 3 of the Draft EIS is dedicated to evaluating impacts of the rural center on groundwater, the nearshore marine environment, and traffic, among other topics. No significant impacts to these or other resources are anticipated.

3. Project Setting and Description

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

The themes for the rural center concept plan include the creation of a gathering place, a desired feature element which emerged from discussions with community members. The small-scale clustered buildings linked by meandering walkways and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will create pedestrian connectivity across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. The parking area is placed behind the buildings to deemphasize the vehicular environment. Pervious paving will be integrated, and permanent low impact development (LID) features such as bioswales, rain gardens, planter boxes, and sand filters will be installed to detain storm water on site and reduce and filter urban pollutants. An overview of the supporting elements of the property, such as walkways and infrastructure, are presented in *Chapter 2.0* of the Draft EIS; further details are provided in *Chapter 3.0*.

Sustainability is a core element reflected in the concept plan, and supports a core philosophy of North Shore residents. On-site solar energy production will occur with photovoltaic canopies erected over the parking spaces. Native plants will be used in the landscaping, and rain gardens will utilize storm water runoff thus reducing irrigation water demand. Building design will utilize shade elements to lower cooling demand, and integrate sustainable materials in the specifications. On-site recyclable materials collection will minimize solid waste production. Electric vehicle charging stations will be provided on-site. Locally raised food will be promoted in the food venues at the property. In short, the rural center seeks to become a living model example for sustainable principals.

4. Physical and Natural Environment

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life

Conservation District, as well as other environmental resources. Technical studies evaluate the proposed site plan design, and address drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment.

Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

5. Significance Criteria

The owners of the rural center support the preparation of a thorough Environmental Impact Statement. As discussed in Chapters 2.0 and 3.0 of the Draft EIS, the nearby presence of the public beach park and the sensitive resources at the Marine Life Conservation District, the EIS is a disclosure document that presents detail on the rural center project, the existing environmental conditions, and identifies potential impacts and mitigative measures. The impacts draw on the technical studies mentioned under #4, above.

6. Alternatives

The evaluation of alternatives in the Draft EIS Chapter 5.0 includes the No-Action Alternative, the Commercial Shopping Center Alternative, and the Alternative Development Timetable (Deferral). The No-Action Alternative is based on utilization of the subject properties in compliance with the existing SMA Minor Permit (SMA/2017-21). The Shopping Center Alternative is described as a viable project with a gross floor area of 46,000 SF, which is approximately 40 percent of the LUO development capacity under its B-1 commercial zoning. Such a center would provide a wider range of goods and services for residents of the surrounding neighborhoods and their visitors. Another alternative that is addressed is the Alternative for Deferred Action, which would delay the development of the rural center to some future date several years from now. Until future development, the property would continue operations under the existing SMA Minor Permit (SMA/2017-21).

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

cc: maxxephillips@gmail.com

Save Sunset Beach Coalition
DBA: Save Sharks Cove Coalition
P.O. Box 301
Haleiwa, HI 96712
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Ardis Shaw-Kim, (808) 768-8021, ashaw@honolulu.gov
Andrew Yani, (808) 779-5733, hanapohakullc@gmail.com
Jeff Overton, AICP LEED AP, (808) 523-5866, pupukea@g70.design

May 23, 2017

Re: Pūpūkea Rural Community Commercial Center EISPN Comments
regarding: TMK(s) (1) 5-9-011:068, 069, 070, 016

Dear Ms. Shaw-Kim, Mr. Yani, and Mr. Overton:

Since 2004, Friends Of Sharks Cove (FOSC) has followed a stated mission of Building Community Support For Protecting Sharks Cove" M.L.C.D. And To Preserve & Enhance The Environmental Integrity, Cultural Heritage, and Economic Well-Being Of Sunset Beach And The North Shore Of Oahu.

Our organization was expanded from the original Save Sunset Beach Coalition (incorporated in 1995) thirteen years ago in response to the serious threats to the community and marine ecosystem in these ahupua'a that arose from the Inappropriate proposed commercial development by the Honu Group on the same three parcels that are now the subject of this EISPN.

We [in conjunction with many North Shore residents] have since dedicated substantial volunteer time, and resources, in particular to protecting the State Marine Life Conservation District (MLCD) at Pūpūkea and stewarding Pūpūkea Beach Park.

Our organization is one of several organizations which are very concerned about the environmental and community impacts of the proposed Pūpūkea Rural Community Commercial Center, and the related existing illegal development of the property, and therefore provide the following comments on the EISPN:

Consulted Party

FOSC requests to be a formally consulted party in the EIS process going forward. Please provide all future documents and correspondence to FOSC Main email address (savesharkscovecoalition@gmail.com) and mail hard copies to FOSC mailing address indicated above.

Section 1.3 Proposed Action and Purpose of the EISPN

The North Shore Sustainable Communities Plan's (NSSCP) definition of Rural Community Commercial Center requires that development of these parcels be "small cluster" and "meet the needs of the surrounding residential communities."

The Concept Plan presented by Hanapohaku LLC (HPLLC) exceeds the "small cluster" level because the proposed development – through buildings, parking lots, roadways, and food trucks – takes up nearly all empty space on the three parcels. Sprawl is not small. The total proposed gross floor area is 30,000 (p. 10). But this number is a substantial underestimate of the footprint because the EISPN does not provide information about the total footprint of the development from the proposed paved parking lots, paved roadways, drainage systems, and the food trucks (with associated tables, chairs, decks, walkways, and spillover equipment areas).

The Concept Plan violates the spirit and letter of the NSSCP because it does not cater to "the needs of the surrounding residential communities." Instead, HPLLC proposes a commercial center that is focused on attracting tourists and non-residential customers.

HPLLC acknowledges that Rural Community Commercial Centers "also attracts residents and visitors outside the immediate community." (P. 10.) This is a gross under-statement of (a) the focus of the HPLLC owners on the quick- turnover, drive-by tourism market as indicated by their past almost two years of "kapakahi" commercial activity with hundreds if not thousands of tourists a day (far outweighing resident customers), (b) the major impacts on the Pūpūkea community caused by the kind of development that will attract more tourism, more traffic, and more pollution to this small area, and (c) the conclusion that primarily catering to tourists is not consistent with the NSSCP, which focuses on the needs of "surrounding residential communities."

While HPLLC may claim that they will rent to local businesses with local owners, and cater to local residents, this is an illusory promise. HPLLC is not going to be bound to do any catering to local needs once the development is completed. All of the retail units can, and likely will be, flipped to high-traffic tourism-focused businesses on a dime.

2.1 Project Setting and Description

FOSC notes that most of the existing commercial uses on the H property are not legal because HPLLC does not have a Special Management Area (SMA) permit for the myriad of activities on the property that constitute development. The City and County of Honolulu Department of Planning & Permitting (DPP) has imposed fines for multiple violations of building codes and currently has HPLLC under a Notice of Order [C&C DPP Notice of Order: 2017/NOO-062] whereby HPLLC is accumulating fines of over \$500 per day. This important information was omitted from this section and must be acknowledged in the DEIS, accurately and fully.

In describing the proposed action, p. 10, the EISPN says “[b]uildings will be set back from the highway to provide a large park-like green space, walkways, and bicycle parking.” Although that sounds attractive, it is not what is indicated by the Concept Plan, which shows a narrow setback from the Highway and no “large park-like green space,” but rather eight crammed in food trucks, which are not drawn realistically because the canopies, decks, service counters, fake grass, picnic tables, umbrellas, garbage bins, hoses, electrical lines, pipes, outdoor lighting, signage, outside equipment, and other “spillover” from each of these trucks as currently operating on the property is not indicated. The other “green area” is overshadowed and surrounded by what looks like six two-story buildings. This is hardly the “community gathering space” suggested by the EISPN.

3.1 Physical and Natural Environment

The EISPN notes the project’s proximity to “the ocean located a distance of 500 feet across Kamehameha Highway.” Oddly, given that FOSC has consistently raised numerous concerns about the impact of the current and future development on the Pūpūkea MLCD and Pūpūkea Beach Park for over a year with HPLLC, the EISPN does not mention the direct runoff connection to the MLCD, the importance of the MLCD itself, or the sensitive nature of the marine environment and beach park. A similar lack of appropriate focus and analysis of the sensitivity of this special marine protected area was a serious and fatal omission from the EA for the Honu project in 2004.

FOSC also has concerns that HPLLC will not conduct an adequate marine impact survey. FOSC [in conjunction with Mālama Pūpūkea-Waimea] has already objected in communications with G70 to HPLLC’s decision to retain Steve Dollar as its marine consultant. FOSC now makes that objection formal. Given his track record of always working for developers, and other questionable work in the past, Dollar does not appear to be impartial, capable, or inclined to conduct an accurate and credible survey of the potential impacts of this project or alternatives on the MLCD.

4.3 Significance Criteria

FOSC does not agree with HPLLC’s statement (p. 14) that “Due to substantial environmental improvements to these properties, the project is anticipated to result in negligible adverse effects and beneficial impacts to the environment.” FOSC expects that the project will have major, long-term, and irreversible impacts to the MLCD, the Beach Park, and to litter, traffic, pedestrian hazard, noise, aesthetic, and the view planes. These impacts are not offset by proposed amenities such as a EV charging station for HPLLC’s owner or solar panels that offset the owner’s electrical bill for substantial new consumptive uses on the property. The environment cannot be traded off or repaired in this manner like a “band-aid over grenade wound”.

Indeed, most likely because G70 recognizes that there are significant potential impacts, G70 has made the wise decision advise HPLLC to go “direct to the EIS” instead of claiming that the impacts can be mitigated down to the EA/FONSI level. However, the “no net negative impact” language of the EISPN does not match the fact that this is an EISPN and is therefore this section is misleading.

5.1 No Action Alternative

The No Action Alternative is incorrectly framed. This section incorrectly states that there is an “existing SMA Minor permit.” (p. 17) No such permit exists for uses other than the pre-existing (pre-HPLLC-purchase) buildings. The development currently on the property that is post-“baseline” (post-purchase by HPLLC) does not have a SMA permit. This needs to be stated correctly.

If HPLLC contends that “no action” refers to only those current uses with an SMA permit, then HPLLC must take the property back to the baseline condition. This means removing all of the food trucks and related development on the property. In other words, No Action does not mean “leave all the current food trucks and mess” on the property. Under HEPA, No Action cannot mean an illegal action. Because HPLLC’s current development (post-purchase) is illegal due to the lack of an SMA, No Action means taking the property back to the pre-purchase baseline conditions.

5.2 Commercial Shopping Center Alternative

HPLLC describes only one alternative, a Commercial Shopping Center, and this alternative is a false one because it is not feasible under the NSSCP, given that (as described on p. 6) the NSSCP limits development on these lots to a “small cluster” and a development that “meet the needs of the surrounding residential communities.” This kind of straw-person alternative is not reasonable.

HPLLC should come up with alternatives that conform to the NSSCP and that involve LESS not more development than the proposed by the Concept Plan. These alternatives could include conservation of a substantial portion of the property and development that truly focuses on serving the needs of the immediate residential community.

Sincerely,



Ian Anderson, President
Save Sunset Beach Coalition
DBA: Save Sharks Cove Coalition
P.O. Box 301 Haleiwa, HI 96712
savehaleiwabeachpark.org@gmail.com

President: Ian Anderson / Vice President: Cora Sanchez / Treasurer: William Howes



Sharks Cove Coalition

is a network of community groups, neighbors, and individuals united



to protect and enhance the ecological integrity, natural beauty, and low-impact recreational uses of Sharks Cove, the jewel of Pūpūkea Beach Park and the Pūpūkea Marine Life Conservation District, for the benefit of local residents, visitors, and future generations.

Our statement is that Sharks Cove Coalition seeks to ensure that all federal, state, and county laws including the 1978 Unilateral Agreement are followed by **Hanapohaku LLC**, the owners developing the three contiguous B-1 "neighborhood commercial" properties on Kamehameha Highway and Pahoe Road, mauka of Sharks Cove.

The Coalition *does not oppose* current or future commercial uses or users on the property that fit the B-1 "neighborhood commercial" zoning, which is designed to serve the "daily retail and other business needs of the surrounding population," so long as:

(1) **proper planning and permitting processes** that protect the community and the environment are followed, starting now;

(2) **adequate environmental review** is completed prior to any further development to fully assess the **potentially significant and cumulative impacts** on the community, culture, and environment, especially Sharks Cove, the Pūpūkea Beach Park, and the Pūpūkea Marine Life Conservation District MLCD, including: litter, sanitation, surface and subsurface runoff, water or ocean contamination, traffic, pedestrian safety, noise, odors, and overuse of protected areas; and

(3) the owners engage immediately in **good faith hearings, presentations, and discussions** with the residents and community concerned about and affected by the present and future development.

For more information, go to: savesharkscove.org

- Mālama Pūpūkea-Waimea
- Save Sunset Beach Coalition
- Friends of Sharks Cove
- Sierra Club - O'ahu Group
- Surfrider - O'ahu
- Defend O'ahu Coalition
- Hawai'i's Thousand Friends
- Life of the Land
- Keep the North Shore Country
- Pahoe Road Residents Hui
- Sunset Beach Community Association
- KAHEA - The Hawaiian-Environmental Alliance





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Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Ian Anderson, President
Save Sunset Beach Coalition
P.O. Box 301
Haleiwa, HI 96712

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1) 5-9-011:068, 069, 070, 016
Pūpūkea, O‘ahu, Hawai‘i

Dear Mr. Anderson:

Thank you for your comment letter dated May 11, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

1. Consulted Party

We thank you for your input to the EIS process and welcome your involvement. This letter serves as a response to your EISPN comment letter, and we will notify you when the Draft EIS and Final EIS are available for review. Please contact our office if you have questions or other issues you wish to be addressed in this process.

2. Proposed Action and Project Purpose

The elements of the proposed action are described in Chapter 2.0 of the Draft EIS. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP) in the creation of this Rural Community Commercial Center. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area for the subject properties. The planned gross building floor area of 30,000 square feet (SF) will yield a net leasable floor area of approximately 27,500 SF. This reflects sensitivity to establishing an appropriate scale for this rural center.

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking services. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale‘iwa or Central O‘ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai‘i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O‘ahu. Many of these businesses are Hawai‘i-based, and some of these businesses are owned by North Shore residents.

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

3. Project Setting and Description

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

The themes for the rural center concept plan include the creation of a gathering place, a desired feature element which emerged from discussions with community members. The small-scale clustered buildings linked by meandering walkways and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will create pedestrian connectivity across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. The parking area is placed behind the buildings to deemphasize the vehicular environment. Pervious paving will be integrated, and permanent low impact development (LID) features such as bioswales, rain gardens, planter boxes, and sand filters will be installed to detain storm water on site and reduce and filter urban pollutants. An overview of the supporting elements of the property, such as walkways and infrastructure, are presented in Chapter 2.0 of the Draft EIS; further details are provided in Chapter 3.0.

Sustainability is a core element reflected in the concept plan, and supports a core philosophy of North Shore residents. On-site solar energy production will occur with photovoltaic canopies erected over the parking spaces. Native plants will be used in the landscaping, and rain gardens will utilize storm water runoff thus reducing irrigation water demand. Building design will utilize shade elements to lower cooling demand, and integrate sustainable materials in the specifications. On-site recyclable materials collection will minimize solid waste production. Electric vehicle charging stations will be provided on-site. Locally raised food will be promoted in the food venues at the property. In short, the rural center seeks to become a living model example for sustainable principals.

4. Physical and Natural Environment

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life Conservation District, as well as other environmental resources. Technical studies evaluate the proposed site plan design, and address drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment. Through use of best

management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment. No significant impacts are anticipated to result from the rural center.

5. Significance Criteria

The owners of the rural center support the preparation of a thorough Environmental Impact Statement. As discussed in Chapters 2.0 and 3.0 of the Draft EIS, the nearby presence of the public beach park and the sensitive resources at the Marine Life Conservation District, the Draft EIS is a disclosure document that presents detail on the rural center project, the existing environmental conditions, and identifies potential impacts and mitigative measures. The impacts draw on the technical studies mentioned under #4, above.

6. Alternatives

The evaluation of alternatives in the Draft EIS Chapter 5.0 includes the No-Action Alternative, the Commercial Shopping Center Alternative, and the Alternative Development Timetable (Deferral). The No-Action Alternative is based on utilization of the subject properties in compliance with the existing SMA Minor Permit (SMA/2017-21). The Shopping Center Alternative is described as a viable project with a gross floor area of 46,000 SF, which is approximately 40% of the LUO development capacity under its B-1 commercial zoning. Such a center would provide a wider range of goods and services for residents of the surrounding neighborhoods and their visitors. Another alternative that is addressed is the Alternative for Deferred Action, which would delay the development of the rural center to some future date several years from now. Until future development, the property would continue operations under the existing SMA Minor Permit (SMA/2017-21).

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

cc: savesharkscovecoalition@gmail.com

PRIVATE ENTITIES

From: Thielst, John <Thielst@coffman.com>
Sent: Monday, May 22, 2017 2:58 PM
To: ashaw@honolulu.gov; pupukea
Cc: Maxx Phillips; Denise Antolini; Thielst, John
Subject: Pahoe Rd Resident Comments - Hanapohaku Sharks Cove Development Interim Plan & Pupukea EIS Prep

Attention: Jeff Overton

Firm: Group 70 International, Inc.

Subject: Comments on the:

- Hanapohaku Sharks Cove Development Interim Plan
- Pupukea EIS Prep

From: Pahoe Road Residents Hui

Hanapohaku Sharks Cove Development Interim Plan:

1. Does not comply with the DPP letter dated May 2, 2016 Revocation of Minor Special management Area Use Permit. Last paragraph states “ Therefore. by this letter, the permits identified by File Numbers 2015/SMA-24. 2015/SMA-47 and 2015/SMA-61, **are hereby revoked**. Consequently, **all improvements which were authorized by these approvals must be removed, and the area restored to its pre-approval condition**. Any outstanding violations associated with those approvals must also be resolved (i.e., grading, etc.). As requested, we are also closing the application received on March 3, 2016 (File No. 2016/ELOG-511) for a Minor SMP for the Tax Map Key 5-9-11: 70.” That is over a year ago and there has been no change to activity or removal of said improvements.
2. Until the community trust is regained and above is met to the letter of the law, development should be put on hold.
3. Interim plan is still much too dense for the area and is nothing less then what is in place now.
4. Currently and with interim plan traffic congestion, Pedestrian safety in the immediate area will remain the same, and build up mores so depending on time of year and season for tourism. All of which have significantly affected immediate local neighbors some of who have lived in the same spot for 60 years.
5. No noise or lighting attenuation has been addressed currently or in interim plan. Both the noise and increased lighting have significantly affected immediate local neighbors some of who have lived in the same spot for 60 years.
6. Interim plan should be scaled back to less than three food trucks at a maximum, with all remaining activity’s significantly curtailed
7. Current set back need to be enlarged and currently and with interim plan significantly. Needs to be a clear view plane looking both North and South in front on Maki side of property mauka side of Kam Hwy for entrance to and from Pahoe road and Foodland parking lot
8. Any food truck that remains must be mobile and comply with all rules and regulations for DOH for food trucks

9. Security to ensure cars do not park long Kam hwy in no parking area from entrance to both side of Pahoe rd.
10. Plan needs secured fence along Pahoe Rd with no access.
11. No turning lanes of any kind are addressed in this plan and needs to be.
12. Assurances and a commitment the interim plan does not become the final plan! How will this be guaranteed?
13. The impact to the environment or the study that is to be conducted, will only be valid or accurate if the developers/business owners are realistic about their numbers regarding their projected customer traffic.
 For example: according to the Hanapohaku SMA minor permit application, currently, "the activity associated with each food truck varies 30-50 customers per day" However, according to declarations on Yelp on different days made by the owner of The Elephant Truck, they "typically cook over 250 dishes within 3 hours, so that's well-over one dish per minute"....."we were extremely busy yesterday and cooked for over 500 people".....
 That amount of customers for just that one food truck exceeds their estimate for 8 food trucks total. This is not just unrealistic, but wildly unrealistic. Can their waste water really handle 10x their projected estimate? We are sure the parking will not handle that many people.
 What other elements/facilities of the project are contingent on those numbers

Pupukea EIS Prep:

1. Design of new and final plan is still much too dense for the local rural areas and especially being directly across the street from a marine sanctuary.
2. Haleiwa is the business hub of the area and should remain that way as the infrastructure already in place. There is no infrastructure in place in the Sharks Cove area that can functionally and actually hand the load that this development would put on it and the surrounding area even with its own waste water treatment facility.
3. This development will serve more the visitors then the local community as is the agreement that is in the stainable area plan.
4. The North shore is a rural area and does not need a development of this size and scale to serve the local residents as is required by the original master plan.
5. This size development will significantly increase the noise, lighting and trash debris in the local area.
6. Significate traffic congestion, Pedestrian safety in the immediate area will increase, and build up mores so depending on time of year and season for tourism.
7. Two story business buildings are not something that belongs along Kam Hwy directly across from Sharks cove.
8. Although the local community might get a meal at a food truck every once in a while, 90% of the customers, now & in the future plan are & will be tourists
9. 5.1 No Action Alternative "Maintain the property in its existing condition, with limited allowed commercial uses per the existing SMA minor permit....."
 Why are they referring to the Elephant Shack as a dentist office? If they are calling it a dentist office and not recognizing/admitting it's been converted to a commercial kitchen, are they accurately showing building costs and permits? How can they misrepresent as fact in their official declaration of plans in the EIS draft.

Thank you,

John W. Thielst
58-081 Pahoe Rd
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thielst@coffman.com
14 year Pahoe Rd owner & resident
TMK 5-9-11-066



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November 1, 2017

Mr. John Thielst
Pāhoe Road Residents Hui
58-081 Pāhoe Road
Haleiwa, HI 96712

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Thielst:

Thank you for your comment letter dated May 22, 2017. The following responses are offered to your comments concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). As allowed under Hawai‘i Administrative Rules §11-200 Environmental Impact Statement Rules, the draft EIS shall include reproductions of all substantive comments and responses made during the consultation process. The following responses are restricted to the comments in your letter specific to the EIS Preparation Notice.

1. Design

The elements of the proposed action are described in *Chapter 2.0* of the Draft EIS. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP) in the creation of this Rural Community Commercial Center. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area for the subject properties. The planned gross building floor area of 30,000 square feet (SF) will yield a net leasable floor area of approximately 27,500 SF. This reflects sensitivity to establishing an appropriate scale for this rural center.

2. Infrastructure

Because City sewer systems are limited to a small subdivision in the Waialua area, nearly all North Shore businesses and residents utilize on-site disposal systems. *Section 3.5 Groundwater* in the EIS identifies more than 500 wastewater systems upgradient of the project site, including 279 cesspools and 159 aerobic, septic and soil treatment systems. A conservative estimate of total wastewater volume from the residential area mauka of the site is greater than 100,000 gallons per day. The existing groundwater quality conditions at the site reflect the inputs from individual wastewater disposal systems serving the Pūpūkea and Sunset Beach community.

The site lies outside of the Honolulu Board of Water Supply No Pass zone, where installation of waste treatment facilities is allowed. An existing on-site individual wastewater system was permitted by the State of Hawai'i Department of Health (DOH) Wastewater Branch (WWB). The project includes removal and replacement of the existing system, which will require review and approval from DOH WWB. *Section 3.5 Groundwater* of the EIS presents an evaluation of the slight increase of nutrients anticipated from the new wastewater system compared to the existing nutrients from the upgradient residential wastewater systems and other area sources. *Section 3.7 Marine Environment* evaluates the impact of the small nutrient increase from the project on the nearshore environment.

3. Community Served

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking services. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale'iwa or Central O'ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai'i entrepreneurs, and by adding jobs within the region.

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

4. Rural Area

Please see information provided under #1 above. The elements of the proposed action are described in *Chapter 2.0* of the Draft EIS. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP), and will occupy the area designated in the North Shore SCP for a rural community commercial retail center and is consistent with the policy of "infill." The three parcels to be developed, along with the existing Foodland grocery store, are commercially-zoned parcels zoned B-1 Neighborhood Business District. The North Shore SCP guidelines for a Rural Community Commercial Center limits the center to "existing zoned areas between Pūpūkea Road and Pāhoehoe Road that currently serve the commercial needs of residents and visitors." Additional land use policies and guidelines documented in the North Shore SCP supporting a rural center are shown in the EIS *Chapter 2* and *Chapter 4*.

5. Noise and Lighting

Section 3.15 Noise in the EIS addresses potential noise, as well as mitigation measures to minimize noise; *Section 3.17 Visual Environment* addresses night lighting. The project design is sensitive to the neighbors along Pāhoehoe Road.

6. Traffic and Pedestrian Safety

A Transportation Impact Analysis Report (TIAR) summarizes the evaluation potential impact from traffic related to the proposed project. The TIAR is included in *Appendix F* of the Draft EIS. A discussion on traffic, connectivity with existing multi-modal pathways in the area, and proposed improvements for the area are included in *Section 3.13* of the Draft EIS.

7. Building Scale

The design of the Rural Community Commercial Center will be consistent with the surrounding North Shore country setting. Under the North Shore SCP, rural community commercial centers are smaller in scale than a typical "Country Town," incorporating one- and two-story building heights and clustered rather than spread along the highway. The architectural design will reflect the area's rural character and surrounding beach homes that recall classic plantation-style architecture (*Section 2.4* of the EIS).

8. Mix of Patrons

Please see the response to #3, previous.

9. Alternatives

The Draft EIS presents the current uses of the site in Chapter 2.0.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

INDIVIDUALS

From: Alessandra Bezzi <alessandrabezzi@hotmail.com>
Sent: Wednesday, May 31, 2017 3:47 PM
To: ashaw@honolulu.gov; hanapohakullc@gmail.com; pupukea
Subject: Hanapohaku amazing project

Aloha!

I just would like to say I feel words regarding Hanapohaku amazing project.

I live on the sharks cove area and enjoy taking my family to have a meal in one of the food trucks over there, enjoying the beautiful view, tasty food next home, friendly staff, and so forth.

It would be super hard after a work day if my family and I had to go until Mililani just to have a relaxing meal at the end of the day or during the weekends.

So, I would like to let you know that this project is amazing and it is also a must have project to whom live there.

Thank you for your time and attention,

Alessandra Bezzi
(808)721-4398



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Alessandra Bezzi
via email: alessandrabezzi@hotmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Ms. Bezzi:

Thank you for your comment letter dated May 31, concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

We acknowledge your support for the project.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Environmental Impact Statement Preparation Notice

Hanapohaku LLC is proposing to develop a rural community commercial center in Pūpūkea, Oahu to provide a mix of goods and services to residents and visitors of the community. The property is in the Special Management Area and this EISPN is being prepared pursuant to Chapter 25-3.3, Revised Ordinances of Honolulu, related to procedural guidelines and assessment requirements. The Property is classified as Urban in the State Land Use Designation, is zoned in the B-1 Neighborhood Business District established by the City and County of Honolulu Zoning Maps, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking facing Kamehameha Highway. Mobile food trucks are also proposed. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

COMMENTS ON EIS PREPARATION NOTICE

Submitted comments will be published in the Draft EIS

Name: CHIP HARTMAN
Organization: SELF
Address: 54-208 B KAM. HWY HALEIWA 4672
Phone: 638 7210 Email: _____

Comments: I FEEL THE PROJECT IS TOO LARGE FOR OUR AREA / THAT LOCATION WITH BEACH PARK AND FOODLAND ALSO DRAWING SO MANY TO THAT LOCATION. HANAPOHAKU'S PROPOSAL FOR A COMMUNITY CENTER IS SIMILAR TO KAMEHAMEHA'S HALEIWA "IMPROVEMENTS", MEANING THE LOCAL POPULACE HAS LOST THEIR TOWN AND AVOID GOING MORE OFTEN THAN NOT. LET'S ALL BE HONEST AND SAY THAT THESE DEVELOPMENTS ARE ABOUT \$\$\$ AND NOT ABOUT KEEPING IT A COMMUNITY.

TRAFFIC @ CONJESTION, PEDESTRIANS, PARKING, WASTE WATER, WASTE, LITTER, LIGHTING AT NIGHT, NOISE AND LUNCH WAGONS ARE ALL CONCERNS NEEDING TO BE FIXED BEFORE MOVING AHEAD.

MAHALO

REQUESTED – Submit Tonight DEADLINE: Email or US Mail - Postmarked by May 23, 2017 to the following:

City/County Honolulu, Dept. of Planning and Permitting, 650 South King St, 7th Fl, Honolulu, HI 96816
Ardis Shaw-Kim, 768-8021, ashaw@honolulu.gov

G70, 925 Bethel Street, 5th Floor, Honolulu, HI 96813
Jeff Overton (808) 523-5866 Pupukea@g70.design



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017
Mr. Chip Hartman
59-208B Kamehameha Highway
Hale'iwa, HI 96712

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Hartman:

Thank you for your comment letter concerning the concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH).

The proposed project is described in *Chapter 2.0* of the Draft EIS, and its scale is consistent with the community's vision for the area, as documented in the *North Shore Sustainable Communities Plan* (SCP). The parcels to be used for the rural center are specifically designated in the North Shore SCP for a Rural Community Commercial Center, as they have been used for commercial purposes for decades and are appropriately zoned B-1 Neighborhood Business District. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area under the City and County of Honolulu Land Use Ordinance. Chapter 2.0 and *Section 3.10 Land Use* of the EIS provide additional information.

We acknowledge your concerns regarding traffic and pedestrian safety, parking, solid waste and wastewater, night lighting, noise, and food trucks. *Chapter 3.0* of the Draft EIS provides an evaluation of each environmental issue along with appropriate mitigation measures for foreseeable impacts.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

PUPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Environmental Impact Statement Preparation Notice

Hanapohaku LLC is proposing to develop a rural community commercial center in Pupukea, Oahu to provide a mix of goods and services to residents and visitors of the community. The property is in the Special Management Area and this EISPN is being prepared pursuant to Chapter 25-3.3, Revised Ordinances of Honolulu, related to procedural guidelines and assessment requirements. The Property is classified as Urban in the State Land Use Designation, is zoned in the B-1 Neighborhood Business District established by the City and County of Honolulu Zoning Maps, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking facing Kamehameha Highway. Mobile food trucks are also proposed. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

COMMENTS ON EIS PREPARATION NOTICE

Submitted comments will be published in the Draft EIS

Name: Danielle Filmer
Organization: ~~XXXXXXXXXXXXXXXXXXXX~~ resident
Address: 50-423 Leleuli St Kaneohe HI 96731
Phone: 808-312-2130 Email: dhannig3@hotmail.com

Comments: I support this I think it will be good for the community providing jobs for residents and good for tourism. please pass this.

REQUESTED – Submit Tonight DEADLINE: Email or US Mail - Postmarked by May 23, 2017 to the following:

City/County Honolulu, Dept. of Planning and Permitting, 650 South King St, 7th Fl, Honolulu, HI 96816
Ardis Shaw-Kim, 768-8021, ashaw@honolulu.gov

G70, 925 Bethel Street, 5th Floor, Honolulu, HI 96813
Jeff Overton (808) 523-5866 Pupukea@g70.design

From: danielle hannig <dhannig3@hotmail.com>
Sent: Wednesday, May 31, 2017 3:35 PM
To: ashaw@honolulu.gov; hanapohakullc@gmail.com; pupukea
Subject: Pūpūkea Rural Community Commercial Center EISPN Comments

Hello,

Just writing in to express my interest in the Pupukea Community Commercial center. I think it is great. I enjoy all of what is there now. There isn't much on the north shore to choose from so these trucks are nice to have and great variety of foods to choose from. It is so convenient after getting out of the water at sharks cove to walk over and eat without having to pack food for a day at the beach. So good for locals that need employment. Close to home and not open too late for the younger kids that want to work. Please consider granting the permit for these so we can all continue to enjoy these great businesses.

Thank you!!



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Danielle Hannig Fullmer
via email: Dhannig3@hotmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Ms. Hannig Fullmer:

Thank you for the comments provided during a May 17, 2017 meeting and your letter dated May 31, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu. This response addresses both.

We acknowledge your interest in the Pūpūkea Rural Community Commercial Center and your support for food trucks in the area for food options and local employment.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'.

Jeff Overton, AICP, LEED AP
Principal

COMMENTS AND QUESTIONS ON EIS PREPARATION NOTICE FOR
“PUPUKEA RURAL COMMUNITY COMMERCIAL CENTER”

Overview

Hanapohaku LLC purchased a 2.7 acre lot at Sharks Cove in 2014 with plans to develop it into a commercial center. **They should have applied for appropriate permits and performed the necessary evaluations before they made any changes**, as required by the zoning and permitting rules and regulations that they were aware of.

They did not. Instead, they quickly turned the lot from a quiet, peaceful little area into a gaudy food truck carnival that is the loudest and most visible tourist trap all the way from Kahuku to Haleiwa. They did get some minor permits, but these were obviously insufficient and were subsequently withdrawn.

Why did Hanapohaku decide it was “easier to ask forgiveness than permission?” Perhaps it was because their lot lies within a Special Management Area right across the road from an important and sensitive marine conservation district that requires especially careful (and expensive) development. Or perhaps it was because a previous plan to develop the same lot had failed due to widespread community opposition and environmental concerns.

Whatever the reason, the current situation is clear: Hanapohaku continues to carry out illegal operations at Sharks Cove, has publicly stated that it has no intent of complying with DPP's directive to restore the area, and has not paid any of its fines.

And now they want permission for **more** development?

I realize that the DPP cannot send in bulldozers to rip down the illegal development at Sharks Cove, nor can they seize Hanapohaku's assets to pay fines, nor can they throw the owners or their consultants in jail for ignoring the law.

But DPP can do one very simple thing: **Please inform Hanapohaku that they cannot even begin to collect data for their EIS, much less apply for a major permit, until they are in full compliance with the law and have paid all fines.**

Once the area has been restored, the proper minor permits obtained, and the fines paid, it will be time to think about larger plans.

In addition to this over-riding concern, I have additional questions and comments pertaining to the initial development plan. Many of these require baseline data collection that should be started before a permit application is even considered.

1. Function of the Development

The North Shore Sustainable Communities Plan defines a rural community-based commercial center as one that “meet the needs of the surrounding residential communities.” **A requirement for considering an SMA permit should be that the development will serve residents. This will require consideration of the precise retail activities planned and collecting external data on the likely customers.**

Current Questions: What percentage of customers at the site are expected to be residents? How does this break down in terms of each retail activity planned? What data sources and methods are you using for these projections?

Future Questions: What guarantee is there that the proposed retail activities are what will actually happen in the area? If a tenant leaves, what will be the requirements for the replacement? Does DPP currently enforce such regulations?

2. Congestion

The number of visitors to the site is of major importance for traffic hindrance by pedestrian crossings, potential pollution from toilet use, etc. **A requirement for considering an SMA permit should be an accurate projection of congestion caused by the development.**

Questions: What number of customers are expected to visit the site? How was this number determined, and for what specific times periods? How does this compare to the current number of visitors?

3. Traffic Control

Traffic is one of the most serious concerns of north shore resident. **A requirement for considering an SMA major permit should be accurate, data-based projections of traffic.**

Questions: What are the (1) total number of vehicles; (2) throughput; (3) time headway; (4) average and maximal delay period expected at the site of the development? How are these numbers determined and modeled, and for what specific times periods?

4. Environmental Concerns

There is considerable debate among marine conservationists about the appropriate means to measure and predict the environmental impacts of developments such as the proposed Sharks Cove commercial center that will exist and probably grow for many years past the immediate permitting period. For example, while the immediate effects of the development on water quality might be quantifiable, what about the long term effects of years and decades of car exhaust, runoff from commercial areas, etc etc?

Given Hanapohaku's recent history of ignoring the law, there is justifiable concern that they will select environmental evaluators that place more value of giving a "clean" recommendation than on those that have more long-term concerns and approaches.

Questions: Who will choose the evaluators for each section of the SMA permit? Would Hanapohaku allow environmental organizations to be involved in the process? Would Hanapohaku agree to accept recommendations from an outside, objectively chosen experts?

I hope these comments and questions will be useful as the DPP decides whether to consider Hanapohaku's application to permanently change the character of the rural north shore of O'ahu.

Sincerely yours,
Dean Hamer
Haleiwa, Hawai'i
email: deanhamer@aol.com



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Dean Hamer
via email: deanhamer@aol.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Hamer:

Thank you for your comment letter dated May 11, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

1. Function of the Development

Chapter 2.0 of the Draft EIS includes the specific language from the North Shore Sustainable Communities Plan (SCP) in its summary of policies and guidelines related to a Rural Community Commercial Center:

- Range of Goods & Services to Meet the Needs of Surrounding Residential Communities
- Center attracts Visitors & Residents from Outside the Immediate Community
- Commercial Establishments may Include: Grocery Stores, Sundries Stores, Restaurants, and Other Services and Shops Catering to Residents and Visitors

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking services. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale‘iwa or Central O‘ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai‘i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O‘ahu. Many of these businesses are Hawai‘i-based, and some of these businesses are owned by North Shore residents.

Mr. Dean Hamer
via email: deanhamer@aol.com
November 1, 2017
Page 2 of 2

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

2. Congestion and Traffic Control

Technical studies conducted for the EIS included an analysis of existing traffic in the area, and projected additional trips as a result of the rural center. *Section 3.13* of the Draft EIS summarizes the study's findings, and makes recommendations to improve flow in and out of the center and along Kamehameha Highway, as well as increase pedestrian safety. No significant impacts are anticipated as a result of the rural center's construction. Details of methods and data collected are contained in *Appendix F, Transportation Impact Analysis Report*.

3. Environmental Concerns

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life Conservation District, as well as other environmental resources. Technical studies evaluate the proposed site plan design, and address drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

From: Devon Dailey <hawaiipolo@gmail.com>
Sent: Thursday, May 11, 2017 11:20 AM
To: pupukea; ashaw@honolulu.gov
Cc: Michael Dailey; Mariah Dailey; Mike Gallagher; Becca Dailey
Subject: Pupukea's descent into Kapolei.

The north shore community cannot afford to continue to expand into a larger and larger strip mall, the reason tourists come to this area is to get away from the overbuilt nature of the waikiki tourist trap that we all know too well. The North Shore is one of the last nice pieces of this island, our remaining 'un-overbuilt' areas need to be protected before more of our visitors bypass oahu entirely for a slice of 'old hawaii' on the outer-islands. The slow rot of our agricultural and residential areas into steadily higher-density use needs to stop. The population, growth, and use of these areas need to be controlled by the residents and their representatives, I don't drive past Haleiwa anymore for the traffic, imagine how many more locals will give up on the sunset side after this goes in (and the other 8 projects in line after that). When's the rail station going to go in connecting this to ala moana? The infinity growth model for the north shore economy isn't tenable even in the medium term.

Zoning needs to be better enforced.

It appears the fines for repeated non-compliance aren't high enough.

Aloha, Devon Dailey, north shore resident for life.



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Devon Dailey
via email: hawaiipolo@gmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. Dailey:

Thank you for your comment letter dated May 11, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

The proposed project is described in *Chapter 2.0* of the Draft EIS, and its scale is consistent with the community’s vision for the area as documented in the *North Shore Sustainable Communities Plan* (SCP). The parcels to be used for the rural center are specifically designated in the North Shore SCP for a Rural Community Commercial Center, as they have been used for commercial purposes for decades and are appropriately zoned B-1 Neighborhood Business District. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area under the City and County of Honolulu Land Use Ordinance.

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking services. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale‘iwa or Central O‘ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai‘i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O‘ahu.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Environmental Impact Statement Preparation Notice

Hanapohaku LLC is proposing to develop a rural community commercial center in Pupukea, Oahu to provide a mix of goods and services to residents and visitors of the community. The property is in the Special Management Area and this EISPN is being prepared pursuant to Chapter 25-3.3, Revised Ordinances of Honolulu, related to procedural guidelines and assessment requirements. The Property is classified as Urban in the State Land Use Designation, is zoned in the B-1 Neighborhood Business District established by the City and County of Honolulu Zoning Maps, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking facing Kamehameha Highway. Mobile food trucks are also proposed. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

COMMENTS ON EIS PREPARATION NOTICE

Submitted comments will be published in the Draft EIS

Name: Elen Alton
Organization: NORTH SHORE JACOS
Address: _____
Phone: 808-293-4440 Email: _____

Comments: I support the Hanapohaku LLC proposing
to develop commercial center in pupukea and
also support the food trucks

REQUESTED – Submit Tonight DEADLINE: Email or US Mail - Postmarked by May 23, 2017 to the following:

City/County Honolulu, Dept. of Planning and Permitting, 650 South King St, 7th Fl, Honolulu, HI 96816
Ardis Shaw-Kim, 768-8021, ashaw@honolulu.gov

G70, 925 Bethel Street, 5th Floor, Honolulu, HI 96813
Jeff Overton (808) 523-5866 Pupukea@g70.design



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Ms. Elen Atlas
c/o North Shore Tacos

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Ms. Atlas:

Thank you for the comments provided during a May 17, 2017 meeting concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu.

We acknowledge your support for the Hanapohaku LLC proposal to develop the Pūpūkea Rural Community Commercial Center, and your support for food trucks in the area.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read 'Jeff Overton'. The signature is fluid and cursive.

Jeff Overton, AICP, LEED AP
Principal

**Comments on the Pupukea Rural Community Commercial Center
Environmental Impact Statement Preparation Notice
Special Management Area (SMA) – Minor & Major Permits
prepared by G70 on behalf of Applicant Hanapohaku LLC, April 2017**

submitted by:
Joe Wilson
North Shore O'ahu
e: QwavesJoe@yahoo.com

May 22, 2017

I request to be a consulted party on all matters related to this development project.

While other community residents and respondents are likely focusing on the environmental, health, public safety, traffic, zoning, and design concerns associated with this Environmental Impact Statement Preparation Notice, I have questions regarding the process itself; unpermitted activities that have taken place, and continue, on the sites owned and operated by Hanapohaku LLC; and, whether, or NOT, Hanapohaku LLC is eligible to submit such permit applications before complying with the Feb. 27, 2017 Notice of Order from the City and County of Honolulu Department of Planning and Permitting.

These questions are an attempt to ascertain a broader understanding of the comprehensive physical and natural environmental impacts of this development scheme, the broader impacts on the community, and the precedent would set for future development bids on the North Shore, and across O'ahu.

An April 8, 2017 Honolulu Star-Advertiser article by business reporter Andrew Gomes stated that:

“A North Shore property owner that has racked up city fines for unpermitted construction and food truck operations is proposing to redevelop the site with more retail use after withdrawing a smaller development plan a year ago in the face of community opposition.

Development firm Hanapohaku LLC [led by Andrew Yani and Lawrence “Cully” McCully Judd III] wants to build several one- and two-story buildings, space for eight food trucks and covered parking in a new bid to redevelop the 2.7-acre property across from Sharks Cove in Pupukea.”

The community opposition the article referred to was articulated by local environmental organization Malama Pupukea Waimea (MPW) in the December 2016 issue of Paumalu Press:

“In 2015, Hanapohaku LLC purchased three acres between the Pupukea Foodland and Pahoe Road – the old Niimi property, currently zoned as B-1 Neighborhood Commercial. Without warning or consultation with the community, and without proper permitting, the new owners began to develop in a haphazard, kapakahi style, with a wide range of unpermitted activities and violations. Ten food trucks appeared virtually overnight, and an unmanaged circus of customers and explosion in traffic followed them.

Despite having no valid Special Management Area permits for any activities on the property, for more than a year, Hanapohaku has illegally developed the property with unpermitted renovations, food trucks, lights, decks, utilities, commissaries, wastewater units, grading-grubbing, parking lots, fences, signs, and tents. Only recently, after months of community pressure, did Hanapohaku even put portable toilets on site, attempt to manage some of the parking problems, or hire a project coordinator or a professional planner. Hanapohaku has racked up a large number of apparent and reported

violations under federal, State, and County laws – many of which are resulting in double fines because they remain unresolved. The developer's deliberate strategy of seeking numerous after-the-fact permits, instead of complying with the law up front, and its disrespect for the community's voice have created significant problems for its neighbors, and posed reckless pollution threats to our environment.”

On May 2, 2016, the City and County of Honolulu Department of Planning and Permitting (DPP) issued a letter stating:

“This responds to your request received April 13, 2016, to “cancel” the Minor SMA Use Permits issued to Hanapohaku LLC ... and to withdraw a pending application seeking a site plan modification.”

The DPP letter continued:

*“Therefore, the permits identified by File Numbers 2015/SMA-24, 2015/SMA-47 and 2015/SMA-61, are hereby revoked. Consequently, **all improvements which were authorized by these approvals must be removed, and the area restored to its pre-approval condition. Any outstanding violations associated with those approvals must also be resolved.**”*

Why did Hanapohaku LLC and owners Andrew Yani and Cully Judd not comply with that May 2, 2016 DPP directive?

Since then, over the past twelve months, as noted by reports on Hawaii News Now, KITV, and additional articles in the Honolulu Star-Advertiser and Pacific Business News, Hanapohaku LLC's illegal operations have continued, documented by the numerous Notices of Violation (NOV) issued by the City's DPP, with fines estimated to total more than \$65,000.

When those NOV's were ignored, the City's DPP issued a Notice of Order (No. 2017/NOO-062) to Hanapohaku LLC on February 27, 2017 stating that:

“There are multiple violations in Special Management Area (SMA) without an SMA Use Permit. Structures include food trucks, shipping containers, loading trucks, septic tanks, wooden decks and stairs, tents, eating areas with tables and benches, signs and sheds, temporary toilets, fences, walls, parking areas, and all other unpermitted structures. Grading work was undertaken without the requires permit. Commercial activities lack an SMA Use Permit.”

The Notice of Order continued:

“The Department of Planning and Permitting inspected the above-described structure(s) and/or premises and found a violation of one or more ordinances of the City and County of Honolulu. As a result, Notice of Violation 2016/NOV-12-137 was issued on January 23, 2017. As of the date of this order, the violation described in the NOV has not been corrected. Because this is a recurring violation, accordingly, pursuant to the authority granted by the Revised Ordinances of Honolulu, you are hereby ordered to 1) Pay a fine of \$2,000 by March 30, 2017, and 2) Correct the violation by March 14, 2017. If corrective action has not been completed by this date, a daily fine of \$500 will be assessed until the correction is completed.”

Did Hanapohaku LLC and its owners, Andrew Yani and Cully Judd, comply with this Notice of Order?

If not, why not?

In a March 1, 2017 meeting, attended by Linda Schatz, Michael Hodge, Cully Judd, Andrew Yani, Dean Hamer, and myself, Yani told me that he “*needed to continue the [unpermitted] food truck operations in order to generate revenue to fund the cost of the SMA permit application process.*”

Why does Yani believe that he is exempt from DPP zoning rules and regulations, ie. the law, in order to further his personal business interests?

If he and Hanapohaku LLC are exempted, why should other business owners who already, or want to, operate on the North Shore, or anywhere on O'ahu, comply with DPP zoning rules and regulations?

What should be the process to determine who is exempt and who is not? And who makes those decisions? Should there be community input into that process? If not, why not?

During his presentation on the development scheme at the May 17, 2017 meeting of the Sunset Beach Community Association, Hanapohaku LLC representative Jeff Overton said:

“In 2014, Hanapohaku came and purchased the property and there were some changes on the property over the last couple years. They began to operate on the property. There were some food trucks added, some more commercial uses, structures that were built without permits there, other operations, and that's not the way things are supposed to be done ... It was kind of the wild west there...”

What kind of precedent would be set for future development on the North Shore, or anywhere on O'ahu, if Hanapohaku LLC was not held accountable for its documented (“wild west”) violations, ongoing illegal activities, and the disruptions it has caused to neighbors, pedestrian safety and vehicular traffic along the Kamehameha Highway corridor, as well as to the physical and natural environment surrounding the Pupukea Marine Life Conservation District?

Does Mr. Overton, and other project consultants paid by Hanapohaku LLC, including lawyer Terrence Lee, believe that such illegal behavior is acceptable and that Hanapohaku LLC should be exempt from compliance?

If so, why in this case? Should future development projects on the North Shore, or anywhere on O'ahu, also be exempt from the DPP's zoning rules and regulations? If not, why not?

In which circumstances should a developer comply with the law, and in which not? Who is to make such determinations?

If a developer was engaging in similar activities on parcels adjacent to Mr. Overton's, Mr. Lee's, Mr. Yani's, Mr. Judd's, and/or other paid project consultants' home properties, would they tolerate and support it? If so, why? If not, why not?

Now, well past the 30-day deadline set by the DPP in its February 27, 2017 Notice of Order, Hanapohaku LLC has still not paid its fine(s).

The DPP Notice of Order states:

“If the fine is not paid by the due date, this matter may be referred to the Department of the

Corporation Counsel for civil remedy and/or the Prosecuting Attorney's Office for criminal prosecution. When this order becomes final, all unpaid civil fines imposed by this order shall be added to the taxes, fees, and charges specified in Section 20-3-4 of the Department of Planning and Permitting's Rules Relating to Administration of Codes. Such taxes, fees, and charges include, but are not limited to, driver's license and vehicle registration fees, fees for permits issued under the City Land Use Ordinance (e.g. sign permits, conditional use permits, and variances) and fees for building, demolition, grading, grubbing, stockpiling, trenching, and excavation permits."

Why has Hanapohaku LLC not paid the fine(s)?

During his May 17, 2017 Sunset Beach Community Association presentation, Mr. Overton said "Tomorrow's not too soon. We've really got to get to these things because they're affecting people on a daily basis."

What's the delay?

Since Hanapohaku LLC is refusing to comply with the NOO, and refusing to pay the fine(s), why should this developer be allowed to continue in a Minor or Major SMA application process?

Would exempting Hanapohaku LLC from compliance with the DPP NOO and negotiating the fines down to a lower amount be fair to other businesses or developers who do follow the rules?

If the DPP allows Hanapohaku LLC to continue with its Minor and/or Major SMA permit applications despite its lack of compliance with the DPP NOO, how would Hanapohaku LLC's Environmental Impact Statement assess and quantify the environmental impacts and community disruptions that have occurred over the past year while the project was in violation?

In an April 13, 2017 Editorial titled "Shark's Cove Place Must Regain Trust," the Honolulu Star-Advertiser noted:

"The developers have met with the community to draw up the new plans for a major permit, and that turnabout was a needed first step. But they have seemed unwilling to take the next step toward a legitimate operation by first ending the illicit activity.

They have opposed shutting down the operations because the food trucks that are their tenants would lose business. That argument falls short. The developers fostered this situation. And, the truck owners are free to secure permits for a more mobile business elsewhere while the permit process proceeds. These are operations that are meant to be mobile after all.

Of course, Hanapohaku could no longer collect revenue from tenants during the interim. The whole purpose of land use regulations in the sensitive shoreline area is to allow careful review of environmental impacts before the activity is permitted – not to allow profit-taking in the meantime.

... There's a reason why the City takes a go-slow approach to development. Neighborhoods along the North Shore already are straining to cope with the crowds, including many tourists lured by the rustic charm and natural beauty of the place.

It takes time to define the boundaries for permitted activities. Hanapohaku needs to give the City that time, and the community the respect it deserves."

Since Hanapohaku LLC has chosen to disrespect the community and the City by ignoring DPP

rules and regulations thus far, what guaranty does the community and the DPP have that Hanapohaku LLC and its consultants will follow rules and regulations going forward?

Based on Hanapohaku LLC's past actions, why should the community and the DPP trust Hanaophaku LLC and/or its consultants on this project going forward?

During his presentation at the May 17, 2017 Sunset Beach Community Association meeting, Hanapohaku LLC representative Jeff Overton asserted that “*Malama Pupukea Waimea... said to pull back, don't go to zero*” - in reference to the number of food trucks allowed to operate on the property.

When the accuracy of his statement was challenged by community member Larry McElheny, Overton tried to walk it back by saying: “*We have no stamped document that says exactly what was agreed to.*”

When asked for comment on Overton's assertion, Malama Pupukea Waimea spokesperson Denise Antolini said: “*MPW has always said to go back to baseline (conditions at time of purchase) and then going forward, only what is legal.*”

If Overton's statement was not verifiably accurate, and an arrangement had not been “agreed to,” was he deliberately attempting to mislead or confuse the public on these details in order to achieve a more beneficial outcome for his client?

If not, what was the intention of the statement he made at the Sunset Beach Community Association meeting about Malama Pupukea's position?

Another misleading statement was included in the EISPN, prepared on behalf of Hanapohaku LLC by G70. Section 5.1 NO-ACTION ALTERNATIVE of the EISPN states: “*The No-Action Alternative would maintain the property in its existing condition, with the limited allowed commercial uses per the existing SMA Minor permit. The uses include the real estate office, dentist office, surf and clothing store, and one food truck establishment.*”

As has been clearly established, the real estate office and dental office have been gone from the property for some time, replaced by approximately eight unpermitted food trucks.

What was the intent of including the inaccurate and misleading statement about the property's existing condition in the EISPN?

What other inaccuracies are contained within this EISPN? What is being done to correct them?

Should such inaccuracies negate this EISPN and require that the applicant go back to the drawing board, prepare, and submit a new one?

With such inaccuracies within the current EISPN, what trust can the public and the DPP place in the process going forward?

Based on these and other outstanding questions and concerns, the City and County of Honolulu Department of Planning and Permitting should NOT allow Hanapohaku LLC to proceed with SMA Minor or Major permit applications or EIS reviews until it complies in full with DPP's original May 2, 2016 directive, the February 27, 2017 Notice of Order, and pays the total amount of fines accrued for its numerous and ongoing violations.

As for the EISPN, I have additional questions and comments pertaining to the initial development plan. Many of these require baseline data collection that should be started before a permit application is even considered.

1. Function of the Development The North Shore Sustainable Communities Plan defines a rural community-based commercial center as one that “meet the needs of the surrounding residential communities.” **A requirement for considering an SMA permit should be that the development will serve residents. This will require consideration of the precise retail activities planned and collecting external data on the likely customers.**

Current Questions: What percentage of customers at the site are expected to be residents? How does this break down in terms of each retail activity planned? What data sources and methods are you using for these projections?

Future Questions: What guarantee is there that the proposed retail activities are what will actually happen in the area? If a tenant leaves, what will be the requirements for the replacement? Does DPP currently enforce such regulations?

2. Congestion The number of visitors to the site is of major importance for traffic hindrance by pedestrian crossings, potential pollution from toilet use, etc. **A requirement for considering an SMA permit should be an accurate projection of congestion caused by the development.**

Questions: What number of customers are expected to visit the site? How was this number determined, and for what specific times periods? How does this compare to the current number of visitors?

3. Traffic Control Traffic is one of the most serious concerns of north shore resident. **A requirement for considering an SMA major permit should be accurate, data-based projections of traffic.**

Questions: What are the (1) total number of vehicles; (2) throughput; (3) time headway; (4) average and maximal delay period expected at the site of the development? How are these numbers determined and modeled, and for what specific times periods?

4. Environmental Concerns There is considerable debate among marine conservationists about the appropriate means to measure and predict the environmental impacts of developments such as the proposed Sharks Cove commercial center that will exist and probably grow for many years past the immediate permitting period. For example, while the immediate effects of the development on water quality might be quantifiable, what about the long term effects of years and decades of car exhaust, runoff from commercial areas, etc etc?

Given Hanapohaku's recent history of ignoring the law, there is justifiable concern that they will select environmental evaluators that place more value of giving a “clean” recommendation than on those that have more long-term concerns and approaches.

Questions: Who will choose the evaluators for each section of the SMA permit? Would Hanapohaku allow environmental organizations to be involved in the process? Would Hanapohaku agree to accept recommendations from an outside, objectively chosen experts?

With regard to an application for a Minor SMA permit:

1. Function of the Development The North Shore Sustainable Communities Plan defines a rural community-based commercial center as one that “meet the needs of the surrounding residential communities.” However, the illegal development at Sharks Cove that Hanapohaku has carried out since 2014 has clearly resulted in attracting tourists rather than local residents, which is obvious from the large number of shiny rental cars that are parked in and across the highway from the development. **A requirement for granting the minor SMA permit should be that the planned activities are aimed at improving the property to meet the needs of residents. This in turn requires baseline data on the current usage of the facility and specific plan for bringing the development into compliance with zoning law.**

Data Questions: What percentage of customers at the site are residents? How was this number determined, and for what specific times periods? If these numbers have not been obtained, what are the developers plans to do so in the future? How and when?

Planning Questions: How will the proposed activities increase the proportion of residential users? How was your estimate obtained?

2. Congestion

The illegal post-2014 development at Sharks Cove has resulted in a large increase in the number of people visiting the site. This contributes to traffic hindrance by pedestrian crossings, potential pollution from toilet use, etc. **A requirement for granting the minor SMA permit should be that the planned activities are aimed at decreasing the congestion. This necessitates baseline data on customer use and demonstration of how the alterations will ameliorate the situation.**

Data Questions: What number of customers visit the site.? How was this number determined, and for what specific times periods? If these numbers have not been obtained, what are the developers plans to do so prior to the minor SMA permit activities? How and when?

Planning Questions: How do the proposed activities reduce congestion. How was your estimate obtained? (Please provide modeling details.)

3. Traffic Control Since the illegal post-2014 development at Sharks Cove there has been an obvious increase in traffic in the area, often resulting in long delays just to get to the stoplight at Pupakea Road. **A requirement for granting the minor SMA permit should be that the planned activities are aimed at decreasing the traffic that has been increased by the illegal development. This necessitates baseline traffic data and quantitative evidence for improvement..**

Data Questions: What number of cars visit the site? How was this number determined, and for what specific times periods? If these numbers have not been obtained, what are the developers plans to do so prior to construction activities.

Planning Questions: How will the proposed activities effect (1) total number of vehicles; (2) throughput; (3) time headway; (4) average and maximal delay period? (Please provide modeling details.)

4. Parking Lot The SMA minor permit request includes permission for an asphalt parking lot. Developers state this is necessary for the amount of traffic they are generating. **This is a classic example of using illegal development as a quasi-rationale for further development.** That is, the developers build a bunch of stuff illegally, then ask for permission to build yet more to satisfy the demand they have generated in violation of the rules and regulations.

Question: If the major SMA permit is not granted (as appears likely based on previous history at this site), will the parking lot be removed? How will the land be restored?

5. Process Issues It is well known, both from multiple articles in the press and from the DPP's publication of multiple violations, that the current mess at Sharks Cove was the result of improperly or

unpermitted, illegal activities. In fact, the owners and developers have confessed and apologized for this at public meetings. They have also openly admitted that they have no intent to comply with the clear May 3, 2016 DPP directive that *“all improvements which were authorized by these (prior) approvals must be removed, and the area restored to its pre-approval condition.”*

I asked the owners, at a private meeting at their offices, why **they are flaunting the law**. The answer was simple: **to generate the cash needed to apply for legal permits.**

This raises a serious question of process going forward. If the DPP allows Hanapohaku to obtain *any* permit for development at Sharks Cove at the current point in time, even while they are in violation of DPP regulations, and making money from it, it sends a clear message to other developers: *“The best way to develop on the north shore is to ignore the law and do it yourself.... You can always fix it up later.”*

Questions: If Hanapohaku is exempt from DPP regulations, why should other business owners on the North Shore, or anywhere on O'ahu, comply with DPP zoning rules and regulations?

Given Hanapohaku's disrespect for the community and the City by ignoring DPP rules and regulations thus far, what guaranty does the community and the DPP have that Hanapohaku and its consultants will follow rules and regulations going forward?



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November 1, 2017

Mr. Joe Wilson
via email: QwavesJoe@yahoo.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Wilson:

Thank you for your comment letter dated May 22, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). As allowed under Hawai'i Administrative Rules §11-200 Environmental Impact Statement Rules, the draft EIS shall include reproductions of all substantive comments and responses made during the consultation process. The following responses are restricted to the comments in your letter specific to the EIS Preparation Notice.

We thank you for your input to the EIS process and welcome your involvement. You have been added to the list of consulted parties, and will notify you via email (per your request) of the availability of the Draft EIS and Final EIS.

1. Status of Land Use Permits

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

2. Function of the Development

Chapter 2.0 of the Draft EIS includes the specific language from the North Shore Sustainable Communities Plan (SCP) in its summary of policies and guidelines related to a Rural Community Commercial Center:

- Range of Goods & Services to Meet the Needs of Surrounding Residential Communities
- Center attracts Visitors & Residents from Outside the Immediate Community
- Commercial Establishments may Include: Grocery Stores, Sundries Stores, Restaurants, and Other Services and Shops Catering to Residents and Visitors

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise

Mr. Joe Wilson
via email: QwavesJoe@yahoo.com
November 1, 2017
Page 2 of 2

require vehicle trips to commercial centers in Hale'iwa or Central O'ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai'i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O'ahu. Many of these businesses are Hawai'i-based, and some of these businesses are owned by North Shore residents.

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

3. Congestion and Traffic Control

Technical studies conducted for the EIS included an analysis of existing traffic in the area, and projected additional trips as a result of the rural center. *Section 3.13* of the Draft EIS summarizes the study's findings, and makes recommendations to improve flow in and out of the center and along Kamehameha Highway, as well as increase pedestrian safety. No significant impacts are anticipated as a result of the rural center's construction. Details of methods and data collected are contained in *Appendix F, Transportation Impact Analysis Report*.

4. Environmental Concerns

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life Conservation District, as well as other environmental resources. Technical studies evaluate the proposed site plan design, and address drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

From: Larry McElheny <lkmcelheny@gmail.com>
Sent: Tuesday, May 23, 2017 7:50 PM
To: ashaw@honolulu.gov; hanapohakullc@gmail.com; pupukea
Subject: EISPN
Attachments: MPW EISPN Comments HP Project - 5.22.17 DEA.pdf

May 23, 2017

Ardis Shaw-Kim, [\(808\) 768-8021](tel:(808)768-8021), ashaw@honolulu.gov

Andrew Yani, [\(808\) 779-5733](tel:(808)779-5733), hanapohakullc@gmail.com

Jeff Overton, AICP LEED AP, [\(808\) 523-5866](tel:(808)523-5866), pupukea@g70.design

Re: Pūpūkea Rural Community Commercial Center EISPN Comments

Dear Ms. Shaw-Kim, Mr. Yani, and Mr. Overton:

Please consider the attached letter as my comments on the EISPN noted above.

Sincerely

Larry McElheny
59-272 Pupukea Road
Haleiwa, Hawaii
96712
[\(808\) 638-8484](tel:(808)638-8484)
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May 22, 2017

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Andrew Yani, (808) 779-5733, hanapohakullc@gmail.com
Jeff Overton, AICP LEED AP, (808) 523-5866, pupukea@g70.design

Re: Pūpūkea Rural Community Commercial Center EISPN Comments

Dear Ms. Shaw-Kim, Mr. Yani, and Mr. Overton:

Since 2005, Mālama Pūpūkea-Waimea (MPW) has worked “to replenish and sustain the natural and cultural resources of the Pūpūkea and Waimea ahupua‘a for present and future generations through active community stewardship, education, and partnerships.”

Our organization was created thirteen years ago in response to the serious threats to the community and marine ecosystem in these ahupua‘a that arose from the commercial “mall” development by the Honu Group on the same parcels that are the subject of this EISPN.

We have since dedicated thousands of hours of volunteer and staff time, and substantial resources, in particular to protecting the State Marine Life Conservation District (MLCD) at Pūpūkea and stewarding Pūpūkea Beach Park.

We are deeply concerned about the environmental and community impacts of the proposed Pūpūkea Rural Community Commercial Center, and about the existing illegal development of the property, and therefore provide the following comments on the EISPN:

Consulted Party

MPW requests to be a formally consulted party in the EIS process going forward. Please provide all future documents and correspondence to both Denise Antolini (antolinid@gmail.com) and Maxx Elisabeth Phillips (maxxephillips@gmail.com) and mail hard copies to MPW address indicated.

Section 1.3 Proposed Action and Purpose of the EISPN

The North Shore Sustainable Communities Plan’s definition of Rural Community Commercial Center requires that development of these parcels be “small cluster” and “meet the needs of the surrounding residential communities.”

The Concept Plan presented by Hanapohaku LLC (HP) exceeds the “small cluster” level because the proposed development – through buildings, parking lots, roadways, and food trucks – takes up nearly all empty space on the three parcels. Sprawl is not small. The total proposed gross *floor* area is 30,000 (p. 10). But this number is a substantial under-estimate of the footprint because the EISPN does not provide information about the total footprint of the development from the proposed paved parking lots, paved roadways, drainage systems, and the food trucks (with associated tables, chairs, decks, walkways,

and spillover equipment areas).

The Concept Plan violates the spirit and letter of the NSSCP because it does not cater to “the needs of the surrounding residential communities.” Instead, HP proposes a commercial center that is focused on attracting tourists and non-residential customers.

HP acknowledges that Rural Community Commercial Centers “also attracts residents and visitors outside the immediate community.” (P. 10.) This is a gross under-statement of (a) the focus of the HP owners on the quick-turnover, drive-by tourism market as indicated by their past almost two years of kapahahi commercial activity with hundreds if not thousands of tourists a day (far outweighing resident customers), (b) the major impacts on the Pūpūkea community caused by the kind of development that will attract more tourism, more traffic, and more pollution to this small area, and (c) the conclusion that catering to tourists is not consistent with the NSSCP, which focuses on the needs of “*surrounding residential communities.*”

While HP may claim that they will rent to local businesses with local owners, and cater to local residents, this is an illusory promise. HP is not going to be bound to do any catering to local needs once the development is completed. All of the retail units can, and likely will be, flipped to high-traffic tourism-focused businesses on a dime.

2.1 Project Setting and Description

MPW notes that most of the existing commercial uses on the H property are not legal because HP does not have a Special Management Area (SMA) permit for the myriad of activities on the property that constitute development. The City and County of Honolulu Department of Planning & Permitting (DPP) has imposed fines for multiple violations of building codes and currently has HP under an Notice of Order whereby HP is accumulating fines of over \$500 per day. This important information was omitted from this section and must be acknowledged in the DEIS, accurately and fully.

In describing the proposed action, p. 10, the EISPN says “[b]uildings will be set back from the highway to provide a large park-like green space, walkways, and bicycle parking.” Although that sounds attractive, it is not what is indicated by the Concept Plan, which shows a narrow setback from the Highway and no “large park-like green space,” but rather eight crammed in food trucks, which are not drawn realistically because the canopies, decks, service counters, fake grass, picnic tables, umbrellas, garbage bins, hoses, electrical lines, pipes, outdoor lighting, signage, outside equipment, and other “spillover” from *each* of these trucks as currently operating on the property is not indicated. The other “green area” is overshadowed and surrounded by what looks like six two-story buildings. This is hardly the “community gathering space” suggested by the EISPN.

3.1 Physical and Natural Environment

The EISPN notes the project’s proximity to “the ocean located a distance of 500 feet across Kamehameha Highway.” Oddly, given that MPW has consistently raised numerous concerns about the impact of the current and future development on the Pūpūkea MLCD and Pūpūkea Beach Park for over a year with HP, the EISPN *does not mention the direct runoff connection to the MLCD, the importance of the MLCD itself, or the sensitive nature of the marine environment and beach park.* A similar lack of appropriate focus and analysis of the sensitivity of this special marine protected area was a serious and fatal omission from the EA for the Honu project in 2004.

MPW also has concerns that HP will not conduct an adequate marine impact survey. MPW has already objected in communications with G70 to HP's decision to retain Steve Dollar as its marine consultant. MPW now makes that objection formal. Given his track record of always working for developers, and other questionable work in the past, Dollar does not appear to be impartial, capable, or inclined to conduct an accurate and credible survey of the potential impacts of this project or alternatives on the MLCD.

4.3 Significance Criteria

MPW does not agree with HP's statement (p. 14) that "Due to substantial environmental improvements to these properties, the project is anticipated to result in negligible adverse effects and beneficial impacts to the environment." MPW expects that the project will have major, long-term, and irreversible impacts to the MLCD, the Beach Park, and to litter, traffic, pedestrian hazard, noise, aesthetic, and the view planes. These impacts are not offset by proposed amenities such as a EV charging station for HP's owner or solar panels that offset the owner's electrical bill for substantial new consumptive uses on the property. The environment cannot be traded off in this manner like three-card Monte.

Indeed, most likely because G70 recognizes that there are significant potential impacts, G70 has made the wise decision advise HP to go "direct to the EIS" instead of claiming that the impacts can be mitigated down to the EA/FONSI level. However, the "no net negative impact" language of the EISPN does not match the fact that this is an EISPN and is therefore this section is misleading.

5.1 No Action Alternative

The No Action Alternative is incorrectly framed. This section incorrectly states that there is an "existing SMA Minor permit." (p. 17) No such permit exists for uses other than the pre-existing (pre-HP-purchase) buildings. The development currently on the property that is post-"baseline" (post-purchase by HP) *does not have a SMA permit*. This needs to be stated correctly.

If HP contends that "no action" refers to only those current uses with an SMA permit, then HP must take the property back to the baseline condition. This means removing all of the food trucks and related development on the property. In other words, No Action does not mean "leave all the current food trucks and mess" on the property. Under HEPA, No Action cannot mean an illegal action. Because HP's current development (post-purchase) is illegal due to the lack of an SMA, *No Action means taking the property back to the pre-purchase baseline conditions*.

5.2 Commercial Shopping Center Alternative

HP describes only one alternative, a Commercial Shopping Center, and this alternative is a false one because it is not feasible under the NSSCP, given that (as described on p. 6) the NSSCP limits development on these lots to a "small cluster" and a development that "meet the needs of the surrounding residential communities." This kind of straw-person alternative is not reasonable.

MPW EISPN Comments

May 22, 2017

Page 4 of 4

HP should come up with alternatives that conform to the NSSCP and that involve *less* not *more* development that proposed by the Concept Plan. These alternatives could include conservation of a substantial portion of the property and development that truly focuses on serving the needs of the immediate residential community.

Sincerely,

A handwritten signature in black ink, appearing to read "Denise Antolini". The signature is written in a cursive, flowing style.

Denise Antolini
President

Cc: Maxx E. Phillips



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November 1, 2017

Mr. Larry McElheny
via email: lkmcelheny@gmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O‘ahu, Hawai‘i)

Dear Mr. McElheny:

Thank you for your comment letter dated May 23, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments, which are the same as those provided by Malama Pūpūkea Waimea:

1. Consulted Party

We thank you for your input to the EIS process and welcome your involvement. This letter serves as a response to your EISPN comment letter, and we will provide you with copies of the Draft EIS and Final EIS. Please contact us if you have questions or other issues you wish to be addressed in this process.

2. Proposed Action and Project Purpose

The elements of the proposed action are described in *Chapter 2.0* of the Draft EIS. The future project emphasizes consistency with the North Shore Sustainable Communities Plan (SCP) in the creation of this Rural Community Commercial Center. In keeping with the guidance of the SCP, the scale of development is approximately 25 percent of the allowable commercial floor area for the subject properties. The planned gross building floor area of 30,000 square feet (SF) will yield a net leasable floor area of approximately 27,500 SF. This reflects sensitivity to establishing an appropriate scale for this rural center.

The center will offer many of the goods and services which are not provided locally, such as medical services, pharmacy and banking. The committed tenants for the rural center reflect an offering of goods and services to the surrounding community that would otherwise require vehicle trips to commercial centers in Hale‘iwa or Central O‘ahu. The project will positively impact economic opportunities by adding business opportunity for Hawai‘i entrepreneurs, and by adding jobs within the region. In turn, area residents that work at the center can avoid long commutes to job centers in urban areas of O‘ahu. Many of these businesses are Hawai‘i-based, and some of these businesses are owned by North Shore residents.

Patronage of the commercial venues by local residents is a primary emphasis. However, as witnessed by the patronage of the Foodland Pūpūkea store, many are attracted to the area by Sharks Cove, Pūpūkea Beach Park, and the Marine Life Conservation District. The rural center must also serve the needs of these visitors to the area, consisting of other O'ahu residents and tourists.

Chapter 3 of the Draft EIS is dedicated to evaluating impacts of the rural center on groundwater, the nearshore marine environment, and traffic, among other topics. No significant impacts to these or other resources are anticipated.

3. Project Setting and Description

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

The themes for the rural center concept plan include the creation of a gathering place, a desired feature element which emerged from discussions with community members. The small-scale clustered buildings linked by meandering walkways and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will create pedestrian connectivity across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. The parking area is placed behind the buildings to deemphasize the vehicular environment. Pervious paving will be integrated, and permanent low impact development (LID) features such as bioswales, rain gardens, planter boxes, and sand filters will be installed to detain storm water on site and reduce and filter urban pollutants. An overview of the supporting elements of the property, such as walkways and infrastructure, are presented in *Chapter 2.0* of the Draft EIS; further details are provided in *Chapter 3.0*.

Sustainability is a core element reflected in the concept plan, and supports a core philosophy of North Shore residents. On-site solar energy production will occur with photovoltaic canopies erected over the parking spaces. Native plants will be used in the landscaping, and rain gardens will utilize storm water runoff thus reducing irrigation water demand. Building design will utilize shade elements to lower cooling demand, and integrate sustainable materials in the specifications. On-site recyclable materials collection will minimize solid waste production. Electric vehicle charging stations will be provided on-site. Locally raised food will be promoted in the food venues at the property. In short, the rural center seeks to become a living model example for sustainable principals.

4. Physical and Natural Environment

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life

Conservation District, as well as other environmental resources. Technical studies evaluate the proposed site plan design, and address drainage, surface runoff, groundwater and connections to the nearshore marine area, as well as provide existing marine water quality conditions and a description of the nearshore marine environment. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

5. Significance Criteria

The owners of the rural center support the preparation of a thorough Environmental Impact Statement. As discussed in Chapters 2.0 and 3.0 of the Draft EIS, the nearby presence of the public beach park and the sensitive resources at the Marine Life Conservation District, the EIS is a disclosure document that presents detail on the rural center project, the existing environmental conditions, and identifies potential impacts and mitigative measures. The impacts draw on the technical studies mentioned under #4, above.

6. Alternatives

The evaluation of alternatives in the Draft EIS Chapter 5.0 includes the No-Action Alternative, the Commercial Shopping Center Alternative, and the Alternative Development Timetable (Deferral). The No-Action Alternative is based on utilization of the subject properties in compliance with the existing SMA Minor Permit (SMA/2017-21). The Shopping Center Alternative is described as a viable project with a gross floor area of 46,000 SF, which is approximately 40 percent of the LUO development capacity under its B-1 commercial zoning. Such a center would provide a wider range of goods and services for residents of the surrounding neighborhoods and their visitors. Another alternative that is addressed is the Alternative for Deferred Action, which would delay the development of the rural center to some future date several years from now. Until future development, the property would continue operations under the existing SMA Minor Permit (SMA/2017-21).

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70



Jeff Overton, AICP, LEED AP
Principal

From: Nancy Salemi <salsalemi@gmail.com>
Sent: Tuesday, May 23, 2017 2:51 PM
To: pupukea; Andrew Yani; ashaw@honolulu.gov
Cc: Denise Antolini; Maxx Phillips
Subject: Sharks Cove Development

As a resident I find it appalling that Hanapohaku, LLC feels they still can bamboozle the community with their smoke and mirrors. For the past four years they have continually and blatantly ignored laws and requests to fix or change their operations and instead have made flimsy and unmet promises to correct them.

As a business owner I am disgusted and appalled that they seem to receive lenient reprimands and skirt the laws time after time when brick and mortar businesses such as retail stores and restaurants would be heavily fined for the same offenses, such as lack of building permits and illegal structures. It has taken them four years to remove only *some* of these illegal structures.

Lastly but most importantly, environmentally it is shamefully and morally wrong that only now they are talking about and doing something about their wastewater. Sharks Cove is a marine life conservation district. What was being done before? And what damage has already been done? It seems that only now they are supposedly adhering to the laws of having their wastewater pumped on a regular basis. If it took this much community opposition to make them pay attention, how can we trust them to follow any plans to protect the environment in the future? If this is indeed passed, how long will it take? And while we wait for this alleged "community" center to be built, is it all just another ruse for the lunch wagons to continue in a carnival fashion?

Unfortunately, in cases such as this, personal gain must take a backseat. As the North Shore is changing rapidly it is imperative that we ensure its natural beauty and resources do not get destroyed, as once the damage is done it is irreparable.

Respectfully,
Nancy Salemi, Cholos Homestyle Mexican

From: Nancy Salemi <salsalemi@gmail.com>
Sent: Wednesday, May 10, 2017 12:35 PM
To: ashaw@honolulu.gov; hanapohakullc@gmail.com; pupukea
Cc: antolinid@gmail.com; maxxephillips@gmail.com
Subject: Shark's Cove Development 30 Day Comment period

To Whom it May Concern:

I believe that the development that is being proposed at Shark's Cove eventually would have the potential to harm the reef, which is a conservation area. Many promises have been made and broken by the owners throughout the previous years, so it is doubtful they would suddenly comply to a brand new plan to make everyone happy, but meanwhile are still breaking rules by continuing to run businesses that were ordered to cease and desist three times already.

Sincerely,

Nancy Salemi
Cholo's Homestyle Mexican
Owner



925 Bethel Street November 1, 2017

5th Floor

Honolulu, HI 96813

808.523.5866

www.g70.design

Ms. Nancy Salemi, Owner
Cholo's Homestyle Mexican
via email: salsalemi@gmail.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Ms. Salemi:

Thank you for your comment letters dated May 10 and 23, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments from both letters.

The Draft EIS presents a summary of the land use plan approved in August 2017 for existing uses under a Special Management Area (SMA) Use Permit Minor (SMA/2017-21). This approval includes a listing of conditions to address prior violations on the property, and permits and actions required for compliance. Actions are being completed by the owners to meet the set of compliance requirements under the approved SMA Minor Permit.

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life Conservation District, as well as other environmental resources. Because City sewer systems are limited to a small subdivision in the Waialua area, nearly all North Shore businesses and residents utilize on-site disposal systems. *Section 3.5 Groundwater* in the EIS identifies more than 500 wastewater systems upgradient of the project site, including 279 cesspools and 159 aerobic, septic and soil treatment systems. A conservative estimate of total wastewater volume from the residential area mauka of the site is greater than 100,000 gallons per day.

The existing groundwater quality conditions at the site reflect the inputs from individual wastewater disposal systems serving the Pūpūkea and Sunset Beach community. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

Ms. Nancy Salemi, Owner
Cholo's Homestyle Mexican
via email: salsalemi@gmail.com
October 11, 2017
Page 2 of 2

The existing groundwater quality conditions at the site reflect the inputs from individual wastewater disposal systems serving the Pūpūkea and Sunset Beach community. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read "Jeff Overton". The signature is fluid and cursive, with the first name "Jeff" being more prominent.

Jeff Overton, AICP, LEED AP
Principal

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Environmental Impact Statement Preparation Notice

Hanapohaku LLC is proposing to develop a rural community commercial center in Pupukeya, Oahu to provide a mix of goods and services to residents and visitors of the community. The property is in the Special Management Area and this EISPN is being prepared pursuant to Chapter 25-3.3, Revised Ordinances of Honolulu, related to procedural guidelines and assessment requirements. The Property is classified as Urban in the State Land Use Designation, is zoned in the B-1 Neighborhood Business District established by the City and County of Honolulu Zoning Maps, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking facing Kamehameha Highway. Mobile food trucks are also proposed. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater treatment facility.

COMMENTS ON EIS PREPARATION NOTICE

Submitted comments will be published in the Draft EIS

Name: Phyllis Shipman
Organization: Resident
Address: 59-054 Paumalu Pl
Phone: 619-395-1184 Email: olyarch@hotmail.com

Comments: - Waste water - How handled.
- egress / entrance exits - Block traffic
- Need turn off like food land
Where is seating - ? Next to
paioe Road?
- archaeological survey? first
for burials etc.

REQUESTED – Submit Tonight DEADLINE: Email or US Mail - Postmarked by May 23, 2017 to the following:

City/County Honolulu, Dept. of Planning and Permitting, 650 South King St, 7th Fl, Honolulu, HI 96816
Ardis Shaw-Kim, 768-8021, ashaw@honolulu.gov

G70, 925 Bethel Street, 5th Floor, Honolulu, HI 96813
Jeff Overton (808) 523-5866 Pupukeya@g70.design



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017
Ms. Phyllis Shipman
59-054 Paumalu Pl.
Hale'iwa, HI 96712

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Ms. Shipman:

Thank you for the comments you provided during the May 17, 2017 meeting regarding the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

Chapter 3 of the Draft EIS evaluates environmental concerns that may have potential to affect the marine environment at the nearby Pūpūkea Beach Park and the Marine Life Conservation District, as well as other environmental resources. Because City sewer systems are limited to a small subdivision in the Waialua area, nearly all North Shore businesses and residents utilize on-site disposal systems. *Section 3.5 Groundwater* in the EIS identifies more than 500 wastewater systems upgradient of the project site, including 279 cesspools and 159 aerobic, septic and soil treatment systems. A conservative estimate of total wastewater volume from the residential area mauka of the site is greater than 100,000 gallons per day.

The existing groundwater quality conditions at the site reflect the inputs from individual wastewater disposal systems serving the Pūpūkea and Sunset Beach community. Through use of best management practices and current engineering compliant with the recently enacted Water Quality Rules (Hawai'i Administrative Rules §20-3), controls will be implemented to minimize effects to the marine environment. The wastewater treatment system proposed for the site will be reviewed and approved by the Department of Health Wastewater Branch.

The Draft Environmental Impact Statement (EIS) describes proposed changes to improve traffic flow along Kamehameha Highway in *Section 3.13 Traffic*. The existing Foodland driveways off Kamehameha Highway will be consolidated to reduce the total number of access points and improve pedestrian safety. The existing driveway connection to Pūpūkea Road will be retained. A center two-way left-turn lane is proposed to provide a refuge area for traffic turning left into and out of the rural center. A Transportation Impact Analysis Report (TIAR) was prepared to analyze existing traffic and future traffic conditions with the project, and evaluates the proposed improvements to minimize traffic impacts. The TIAR is included in *Appendix F* of the EIS.

Ms. Phyllis Shipman
November 1, 2017
Page 2 of 2

The elements of the proposed project are described in *Chapter 2.0* of the Draft EIS. The rural center includes creation of a gathering place, a desired feature element which emerged from discussions with community members. Small-scale clustered buildings will be linked by meandering walkways, and a central green landscaped area will provide a community gathering place for residents and visitors. Pathways will connect across the property from bike paths and bus stops along Kamehameha Highway to the Foodland grocery store, a frequent daily destination for area residents. The parking area is placed behind the buildings to deemphasize the vehicular environment. Pervious paving will be integrated, and permanent low impact development (LID) features such as bioswales, rain gardens, planter boxes, and sand filters will be installed to detain storm water on site and reduce and filter urban pollutants.

Sections 3-8 and *3-9* of the Draft EIS provide a summary of the cultural assessment and archaeological inventory studies conducted for the EIS. The archaeological study included a review of all such studies conducted in the region, and the site survey included sub-surface trenching. No archaeological features were found in the survey. The State Historic Preservation Division (SHPD) reviewed and accepted the findings of the survey. The cultural assessment and the archaeological assessment reports, along with the letter from SHPD, are included as Appendices E and F of the Draft EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

A handwritten signature in black ink, appearing to read "Jeff Overton". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jeff Overton, AICP, LEED AP
Principal

From: wnwcsurf@aim.com
Sent: Sunday, May 21, 2017 10:28 AM
To: pupukea
Subject: "Shark's Cove"

Gentlemen,

After seeing your presentation at the Sunset Beach Community Association last week, I am concerned that what your development is doing is making a road that runs between the Foodland parking lot and the entrance to Foodland. To get into the Foodland parking lot you will have to make a left hand turn accross this road, To get in and out of Foodland, you will have to cross this road two times.

Foodland is a store that is definitely servicing the community. Your parking plan will make it harder to use. It may be easier to drive to Laie.

Sincerely,
Warner R, Wacha



925 Bethel Street
5th Floor
Honolulu, HI 96813
808.523.5866
www.g70.design

November 1, 2017

Mr. Warner Wacha
wnwcsurf@aim.com

Subject: Responses to Comments on EIS Preparation Notice
Pūpūkea Rural Community Commercial Center
TMK: (1)5-9-011:068, 069, 070, 016
(Pūpūkea, O'ahu, Hawai'i)

Dear Mr. Wacha:

Thank you for your comment letter dated May 21, 2017 concerning the Environmental Impact Statement Preparation Notice (EISPN) for the Pūpūkea Rural Community Commercial Center project, prepared pursuant to Chapter 25, Revised Ordinances of Honolulu (ROH). The following responses are offered to your comments.

The Draft Environmental Impact Statement (EIS) describes proposed changes to improve traffic flow along Kamehameha Highway in *Section 3.13 Traffic*. The existing Foodland driveways off Kamehameha Highway will be consolidated to reduce the total number of access points and improve pedestrian safety. The existing driveway connection to Pūpūkea Road will be retained. A center two-way left-turn lane is proposed to provide a refuge area for traffic turning left into and out of the rural center. A Transportation Impact Analysis Report (TIAR) was prepared to analyze existing traffic and future traffic conditions with the project, and evaluates the proposed improvements to minimize traffic impacts. The TIAR is included in *Appendix F* of the EIS.

Thank you for your participation in the environmental review process. We will notify you of the availability of the Draft EIS.

Sincerely,

GROUP 70 INTERNATIONAL, INC., dba G70

Jeff Overton, AICP, LEED AP
Principal

7.0

REFERENCES

7.0 LIST OF REFERENCES AND PREPARERS OF THE EIS

7.1 REFERENCES

Documents

City and County of Honolulu. 1990. Section 21-1.20, Revised Ordinances of Honolulu 1990. Chapter 21 as Amended (The Land Use Ordinance).

_____. Department of General Planning. 1992. *General Plan*.

_____. DPP. 2011. *North Shore Sustainable Communities Plan*. Prepared by Helber Hastert & Fee Planners, Inc. May.

Friedlander, A., G. Aeby, R. Brainard, E. Brown, K. Chaston, A. Clark, P. McGowan, T. Montgomery, W. Walsh, I. Williams and W. Wiltse. 2008. The State of Coral Reef Ecosystems of the Main Hawaiian Islands. pp. 219 – 262. In: J.E. Waddell and A.M. Clarke (eds.), *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2008*. NOAA Technical Memorandum NOS NCCOS 73. NOAA/NCCOS Center for Coastal Monitoring and Assessment's Biogeography Team. Silver Spring, MD. 569 pp.

Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. 2014. Evapotranspiration of Hawai'i. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawai'i.

State of Hawai'i. 1996. *Hawai'i Revised Statutes, Chapter 226, Hawai'i State Plan*.

_____. Hawai'i Revised Statutes, Chapter 205-A, Coastal Zone Management Act.

_____. *Hawai'i 2050 Sustainability Plan*.

_____. Commission on Water Resource Management (CWRM). 2008. Department of Land and Natural Resources. *Hawaii Water Plan: Water Resource Protection Plan*. Prepared by Wilson Okamoto, Corp. June.

_____. Department of Defense, Civil Defense Division, Office of the Director of Civil Defense. 2013. *State of Hawai'i Multi-Hazard Mitigation Plan 2013 Update*.

_____. Department of Business, Economic Development and Tourism (DBEDT). 2014. *Commuter Adjusted Daytime Population on Oahu* Statistics Brief. Research & Economic Analysis Division.

PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER

Draft Environmental Impact Statement

- ____ Department of Health Clean Water Branch (DOH CWB). No Date (n.d.). *Hawai'i's Nonpoint Source Management Plan*. Available on-line: <http://health.hawaii.gov/cwb/clean-water-branch-home-page/polluted-runoff-control-program/prc-hawaiis-implementation-plan/>
- ____ Department of Health Clean Water Branch (DOH CWB). 2017a. *Hawaii Beach Monitoring Program*. May 22. Available on-line: <https://health.hawaii.gov/cwb/files/2017/05/Hawaii-Beach-Monitoring-Program-170508.pdf>
- ____ Department of Health Clean Water Branch (DOH CWB). 2017b. Draft *2016 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress. Pursuant to §303(d) and §305(b), Clean Water Act (P.L. 97-117)*. March 15.
- ____ Department of Health, Clean Water Branch (CWB). 2014. Hawai'i Administrative Rules, Title 11, Chapter 54, *Water Quality Standards* (HAR §11-54). November 15.
- United States Census Bureau / American FactFinder. 2010-2014 *American Community Survey 5-Year Estimates*. U.S. Census Bureau's American Community Survey Office. Web. 26 April 2017. Retrieved from <http://factfinder2.census.gov>.
- United States Department of Agriculture, Soil Conservation Service, Soil Survey for the Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i, August 1972.
- United States Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office. Accessed August 7, 2017: <https://www.fws.gov/pacificislands/fauna/HIhoarybat.html>. Endangered Species in the Hawaiian Islands, Hawaiian Hoary Bat.
- Water Resources Research Center, University of Hawai'i at Manoa, and Engineering Solutions, Inc. 2008. *Onsite Wastewater Treatment Survey and Assessment*. Prepared for: State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT), Office of Planning, Hawai'i Coastal Zone Management Program, and Department of Health. March.

Websites

- City and County of Honolulu, Honolulu Police Department. Police District Data. Retrieved from: <http://www.honolulupd.org/>
- City and County of Honolulu, Emergency Services Department. EMS Data. Retrieved from: <http://www.honolulu.gov/esdems.html>
- State of Hawai'i, Department of Education. School District data. Retrieved from: <http://doe.k12.hi.us/index.php>

7.2 PREPARERS OF THE EIS

Following is a list of individuals that contributed to the preparation and completion of this Environmental Impact Statement (EIS). The list includes the names of individual or company, and role or subfield of professional expertise utilized to conduct and complete the EIS.

G70

Jeffrey H. Overton, AICP, LEED AP	Principal Planner
Paul T. Matsuda, P.E., LEED AP	Principal, Director of Civil Engineering
Steven K. Doo, P.E.	Project Manager
Barrie Fox Morgan, AICP	Environmental Planner
Lauren Esaki-Kua	Planner
Silas Haglund	Graphics and Document Specialist
Stephanie Saephan, GISP	GIS Specialist
Reyna DePonte	Administrative Support

Technical Consultant

AECOS Consultants	<u>Area of Specialty</u> Natural Resources Assessment
Tom Nance Water Resource Engineering	Ground and Surface Water Analyses
Marine Research Consultants, Inc.	Surface Water Quality & Marine Assessment
Keala Pono Consultants	Archaeological Inventory Survey Cultural Impact Assessment
Fehr & Peers	Transportation Impact Analysis Report
Y. Ebisu & Associates	Noise Study
G70, Civil Engineering	Civil Engineering

APPENDICES

APPENDIX A

NATURAL RESOURCES ASSESSMENT FOR THE
PROPOSED PŪPŪKEA RURAL COMMUNITY CENTER, ISLAND OF O‘AHU

Natural resources assessment for improvements proposed for the Pūpūkea Rural Community Commercial Center, Island of O‘ahu¹

September 13, 2017

AECOS No. 1485

Eric B. Guinther and Susan Burr
AECOS Inc.

Kamehameha Hwy., Kāne‘ohe, Hawai‘i 96744

Phone: (808) 235-7770 Fax: (808) 254-3029 Email: guinther@aecos.com

Introduction

Hanapohaku LLC is proposing to make improvements to three lots (TMKs: (1) 5-9-011: 068, 069, & 070 at Pūpūkea on the north shore of O‘ahu (Figure 1). The site is located on Kamehameha Highway between Pahoe Road and the Foodland market and parking lot. The project involves site improvements of existing commercial facilities. This report presents results of biological surveys conducted across the 2.719 ac of land (see Figure 2).

The focus of this report is on determining whether sensitive biological resources occur on the project property. Sensitive biota includes species currently listed or proposed for listing under by the federal Endangered Species Act of 1973 as amended (ESA; see USFWS, 2015), or by state administrative rules (DLNR, 1997, 2015), or species comprising a community of native plants and animals that may or may not be under any specific threat of extirpation, but which would be regarded as special and worthy of preservation. A rare native plant not protected by statute could also be regarded as a “sensitive” or important biological resource, as might a special non-native tree protected by county ordinance. Nearly all of the subject property has been cleared and developed, and the vast majority of plants present there are now landscape plantings.

¹ Report prepared for G70 for use in preparing environmental assessment documents.

of the plant species are present as a result of plantings made to the landscape, no attempt was made to quantify, even in a relative sense, abundances for these essentially ornamental plants. Only a very narrow band (under 12 m or 36 ft in width) located along the *mauka* or east side of the parcels remains in undeveloped scrub growth that previously dominated the parcels. Image in Fig. 2 shows earlier period when about two-thirds of the project area was in scrub growth.



Figure 2. Aerial image of project property (outlined in red).

Any plant not immediately recognized during the survey was photographed and/or a representative feature (flower, fruit, branch) collected for later identification at the laboratory.

Vertebrate Surveys

Two avian count stations were established within the project area and a single six-minute avian point-count was made at each station on April 13, 2017. Field observations were made with the aid of Leica Ultravid 8 X 42 binoculars and by listening for vocalizations. The avian counts were conducted between 0900 and 1030 in the morning. Time not spent counting at point-count stations was used to search the site for species and habitats not detected during the point-counts and any additional species observed are listed as “incidental sightings”. Weather conditions were ideal, with no rain, unlimited visibility, and winds of between 10 and 15 kph.

The survey of mammals and other fauna (i.e., notable insects, obvious reptiles) was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally of all terrestrial vertebrate mammalian species detected within the project area was kept along with notes of general abundances.

Survey Results

Vegetation

All but perhaps 5% or less of the project area is developed as parking and numerous small shops (each of these areas landscaped to a lesser or greater degree). The undeveloped land is a secondary scrub forest dominated by *koa haole* (*Leucaena leucocephala*) or Guinea grass (*Megathyrsus maximus*; see Figure 3) in a few open areas.

Flora

The following checklist of plant species (Table 1) was compiled from observations made during our field survey. The entries are arranged alphabetically under their family names and include scientific name, common name, and status of the species (i.e., native or non-native; see key at end of table). Plants with a status other than ornamental that are used in the landscaping (that is, planted for ornamental reasons) are marked with note <1> in the last column. Although naturalized or native species, none of these occurs naturally on the property. “Status” reflects the state-wide distributional status of a species, so an indigenous species used as an ornamental is still an indigenous species.



Figure 3. Remnant of former vegetation dominated by *koa haole* and Guinea grass beyond a gravel parking area.

Table 1. Checklist of plants observed at the Pūpūkea Rural Commercial Center site in Pūpūkea (April 2017).

Species listed by family	Common name	Status	Notes
<i>FERNS AND FERN ALLIES</i>			
DAVALLIACEAE			
<i>Davallia fejeensis</i> W.J. Hooker	lacy hare’s-foot fern	Orn	
NEPHROLEPIDACEAE			
<i>Nephrolepis cordifolia</i> (L.) C. Presl.	<i>kupukupu</i>	Ind	<1>
PSILOTACEAE			
<i>Psilotum nudum</i> (L.) P. Beauv.	<i>moa</i>	Ind	<1>
<i>GYMNOSPERMS</i>			
CONIFERS AND CYCADS			
CUPRESSACEAE			
<i>Juniperus horizontalis</i> Moench	creeping juniper	Orn	
<i>FLOWERING PLANTS</i>			
DICOTYLEDONES			
ACANTHACEAE			
<i>Asystasia gangetica</i> (L.) T. Anderson	Chinese violet	Nat	<3>
<i>Ruellia brittoniana</i> E. Leonard	---	Nat	<1>
AMARANTHACEAE			
<i>Alternanthera pungens</i> Kunth	khaki weed	Nat	
<i>Amaranthus spinosus</i> L.	spiny amaranth	Nat	
<i>Amaranthus viridus</i> L.	slender amaranth	Nat	
<i>Celosia cristata</i> L.	cockscomb	Orn	
ANACARDIACEAE			
<i>Mangifera indica</i> L.	mango	Nat	<1>
<i>Schinus terebinthefolius</i> Raddi	Christmas berry	Nat	<3>
APOCYNACEAE			
<i>Plumeria rubra</i> L.	graveyard flower	Orn	
<i>Vinca minor</i> L.	common periwinkle	Nat	<1>
ARALIACEAE			
<i>Polycias fruticosa</i> (L.) Harms	parsley panax	Orn	
<i>Polycias guilfoylei</i> (W. Bull) F. Bailey	panax	Orn	
<i>Schefflera actinophylla</i> (Endl.) Harms	octopus tree	Orn	

Table 1 (continued).

Species listed by family	Common name	Status	Notes
ASTERACEAE (COMPOSITAE)			
<i>Calyptocarpus vialis</i> Less.	---	Nat	
<i>Parthenium hysterophorus</i> L.	false ragweed	Nat	
<i>Senecio cineraria</i> A.P. de Cand.	dusty-miller	Orn	
<i>Sonchus oleraceus</i> L.	sow thistle	Nat	
BIGNONIACEAE			
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Nat	<3>
BORAGINACEAE			
<i>Cordia subcordata</i> Lam.	<i>kou</i>	Ind	<1>
<i>Heliotropium currasavicum</i> L.	<i>kīpūkai</i>	Ind	
BRASSICACEAE			
<i>Coronopus didymus</i> (L.) Sm.	swinecress	Nat	
<i>Lepidium virginicum</i> L.	---	Nat	
CACTACEAE			
<i>Hylocereus undatus</i> (Haworth) Brit. & Rose	night-blooming cereus	Nat	<1>
CASUARINACEAE			
<i>Casuarina equisetifolia</i> L.	ironwood	Nat	
CLUSIACEAE			
<i>Clusea rosea</i> Jacq.	autograph tree	Nat	<3>
COMBRETACEAE			
<i>Conocarpus erectus</i> var. <i>sericeus</i> L.	silver buttonwood	Nat	<1>
CONVOLVULACEAE			
<i>Ipomoea obscura</i> (L.) Ker-Gawl	---	Nat	<3>
CUCURBITACEAE			
<i>Coccinia grandis</i> (L.) Voigt	scarlet-fruited gourd	Nat	<2><3>
<i>Momordica charantia</i> L.	wild bitter melon	Nat	
EUPHORBIACEAE			
<i>Codiaeum variegatum</i> (L.) Blume	croton	Orn	
<i>Euphorbia hirta</i> L.	garden spurge	Nat	<3>
<i>Euphorbia hypericifolia</i> L.	graceful spurge	Nat	
<i>Euphorbia leucocephala</i> Lotsy	flor-de-Niño	Orn	
<i>Euphorbia milii</i> Des Moulins	crown-of-thorns	Orn	
<i>Euphorbia prostrata</i> Aiton	prostrate spurge	Nat	
<i>Pedilanthus tithymaloides</i> (L.) Poiteau	Japanese poinsettia	Orn	
<i>Ricinus communis</i> L.	castor bean	Nat	<3>
FABACEAE			
<i>Canavalia cathartica</i> Thouars	<i>maunaloa</i>	Nat	<2>

Table 1 (continued).

Species listed by family	Common name	Status	Notes
FABACEAE (continued).			
<i>Desmanthus pernambucanus</i> (L.) Thellung	virgate mimosa	Nat	
<i>Leucaena leucocephala</i> (Lam.) deWit	koa haole	Nat	<2><3>
<i>Neonotonia wightii</i> (Wight & Arnott) Lackey	glycine vine	Nat	<2><3>
<i>Senna surattensis</i> (N.L. Burm.) H.S/ Irwin & Barneby	scrambled-egg plant	Nat	<1>
GERANIACEAE			
<i>Pelargonium x hortorum</i> L. H. Bailey	bedding geranium	Orn	
GOODINACEAE			
<i>Scaevola sericea</i> Vahl	naupaka kahakai	Ind	<1>
LAMIACEAE			
<i>Lavandula</i> sp.	lavander	Orn	
<i>Mentha</i> sp.	common mint	Orn	
<i>Ocimum basilicum</i> L.	sweet basil	Orn	
<i>Plectranthus amboinicus</i> (Lour.) Spreng.	false oregano	Orn	
<i>Plectranthus amboinicus</i> 'Variegata'	Cuban oregano	Orn	
<i>Plectranthus parviflorus</i> Willd.	'ala'ala wai nui wahine	Ind	<1>
LYTHRACEAE			
<i>Cuphea carthagenensis</i> (Jacq) Macbr.	false heather	Nat	<1>
MALVACEAE			
<i>Hibiscus acetosella</i> Hiern	red-lvd hibiscus	Orn	<4>
<i>Hibiscus rosa-sinensis</i> L.	Chinese hibiscus cult.	Orn	
<i>Malvastrum coromandelianum</i> (L.) Garcke	false mallow	Nat	<3>
MORACEAE			
<i>Ficus elastica</i> Roxb. ex Hornem.	Indian Rubber tree	Nat	
<i>Ficus microcarpa</i> L. f.	Chinese banyan	Nat	<3>
NYCTAGINACEAE			
<i>Bougainvillea</i> cf. <i>spectabilis</i> Willd.	bougainvillea	Orn	
OLEACEAE			
<i>Jasminum sambac</i> (L) W. Aiton	pikake	Orn	

Table 1 (continued).

Species listed by family	Common name	Status	Notes
OXALIDACEAE			
<i>Oxalis corniculata</i> L.	‘ihi‘ai, yellow wood sorrel	Pol?	
PASSIFLORACEAE			
<i>Passiflora edulis</i> Sims	passion fruit	Nat	<3>
<i>Passiflora suberosa</i> L.	huehue haole	Nat	
PHYTOLACCACEAE			
<i>Rivina humilis</i> L.	coral berry	Nat	<2>
PIPERACEAE			
<i>Peperomia obtusifolia</i> (L.) A. Dietrich	peperomia	Orn	
<i>Peperomia obtusifolia</i> ‘variegata’	cult.	Orn	
PLANTAGINACEAE			
<i>Plantago lanceolata</i> L.	English plantain	Nat	
PLUMBAGINACEAE			
<i>Plumbago auriculata</i> Lam.	blue plumbago	Orn	
PORTULACACEAE			
<i>Portulaca oleracea</i> L.	pigweed	Nat	
ROSACEAE			
<i>Rosa odorata</i> x <i>R. chinensis</i>	tea rose	Orn	
<i>Rosa</i> sp.	rose	Orn	<4>
RUBIACEAE			
<i>Gardenia augusta</i> (L.) Merr.	gardenia	Orn	<4>
<i>Ixora</i> sp.	ixora	Orn	
RUTACEAE			
<i>Murraya paniculata</i> (L.) Jack	mock orange	Nat	<3>
SCROPHULARIACEAE			
<i>Russelia equisetiformis</i> Schlecht.	coral plant	Orn	
SOLANACEAE			
<i>Capsicum annum</i> L.	nioi, bird pepper	Nat	
<i>Solanum americanum</i> Mill.	pōpolo	Ind	
FLOWERING PLANTS			
MONOCOTYLEDONES			
AGAVACEAE			
<i>Agave</i> cf. <i>attenuata</i> Salm-Dyck	swan’s-neck agave	Nat	<1><4>
<i>Cordyline</i> cf. <i>australis</i> ‘Purple Tower’	cult.	Orn	
<i>Cordyline fruticosa</i> (L.) A. Chev.	ki, ti	Nat	<1>
<i>Dracaena aubryana</i> E. Morren	lance dracaena	Orn	

Table 1 (continued).

Species listed by family	Common name	Status	Notes
AGAVACEAE (continued).			
<i>Dracaena marginata</i> Lam.	money tree	Orn	
<i>Dracaena marginata</i> ‘Tricolor’	dracaena tricolor	Orn	
<i>Dracaena fragrans</i> (L.) Ker Gawl.	corn plant	Orn	
<i>Dracaena sanderiana</i> M.T. Masters	sanderiana	Orn	
<i>Sansevieria trifasciata</i> Prain	bowstring-hemp	Orn	<3>
<i>Yucca cf. gloriosa</i> L.	Spanish-bayonet	Orn	<4>
ARACEAE			
<i>Calocasia esculenta</i> (L.) Schott	kalo	Pol	<1>
<i>Epipremnum pinnatum</i> (L.) Engler	golden pothos	Nat	<3>
<i>Monstera deliciosa</i> Lieb.	monstera	Orn	
<i>Philodendron xanadu</i> Croat, Mayo & J. Boos	---	Orn	
<i>Spathophyllum</i> sp.	---	Orn	
<i>Syngonium</i> L.	nephtytis	Nat	<3>
ARECACEAE			
<i>Cocos nucifera</i> L.	coconut palm	Nat	
<i>Dypsis decaryi</i> (Jumelle) Beentje & J. Drans.	triangle palm	Orn	
<i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransfield	areca palm	Orn	
<i>Phoenix roebelenii</i> O’Brien	dwarf date palm	Orn	
<i>Pritchardia pacifica</i> Seemann & H. Wendl.	Fiji fan palm	Orn	
<i>Ptychosperma macarthurii</i> (Vietch.) J. D. Hook.	Macarthur palm	Orn	
<i>Rhapis</i> sp.	lady palm	Orn	
<i>Veitchia merrilli</i> (Becarri) H.E. Moore	Manila palm	Orn	
BROMELIACEAE			
<i>Aechmea cf. blanchetiana</i> (J. G. Baker) L. B. Smith	---	Orn	
<i>Tilandsia usneoides</i> (L.) L.	hinahina	Orn	
CANNACEAE			
<i>Canna x generalis</i> L.H. Bailey	garden canna	Orn	
COSTACEAE			
<i>Costus</i> sp.	spiral flag	Orn	
COMMELINACEAE			
<i>Tradescantia spathacea</i> Swartz	oyster plant	Orn	

Table 1 (continued).

Species listed by family	Common name	Status	Notes
CYCLANTHACEAE			
<i>Cyclanthus bipartitus</i> Poit.	cyclanthus	Orn	
CYPERACEAE			
<i>Aechmea cf. blanchetiana</i>		Orn	
<i>Carex wahuensis</i> C.A. Mey.	---	End	<1>
<i>Cyperus gracilis</i> R. Br.	McCoy grass	Nat	
HELICONIACEAE			
<i>Heliconia sp</i>	heliconia	Orn	<4>
IRIDACEAE			
<i>Dietes bicolor</i> (Steudel) Klatt	iris	Orn	
LILIACEAE			
<i>Asparagus densiflorus</i> (Kunth) Jess.	asparagus “fern”	Nat	
<i>Asparagus densiflorus</i> ‘Myers’	foxtail asparagus	Orn	
<i>Chlorophytum comosum</i> (Thunb.) Jacq.	airplane plant	Orn	
<i>Crinum asiaticum</i> L.	giant lily	Nat	
<i>Dianella sandwicensis</i> Hook. & Arnott	‘uki’uki	Ind	<1>
<i>Ophiopogon sp.</i>	---	Orn	<4>
MUSACEAE			
<i>Musa cf. acuminata</i> Colla	banana	Orn	
POACEAE			
<i>Axonopus compressus</i> (Swartz) P. Beauv.	brd-lv carpet grass	Nat	
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	Nat	
<i>Chloris radiata</i> (L.) Sw.	plushgrass	Nat	
<i>Cymbopogon citratus</i> (C. Nees) Stapf	lemon grass	Orn	
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Nat	
<i>Dactyloctenium aegypticum</i> (L.) Willd.	beach wiregrass	Nat	
<i>Digitaria ciliaris</i> (Retz.) Koeler	Henry’s crabgrass	Nat	
<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	Nat	
<i>Lolium multiflorum</i> Lam.	Italian ryegrass	Nat	
<i>Megathyrsus maximus</i> (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	<2><3>
<i>Sporobolus sp.</i>	dropseed, rattail grass	Nat	
<i>Stenotaphrum secundatum</i> (Walter) Kuntze	St. Augustine grass	Nat	<1>

Table 1 (continued).

Species listed by family	Common name	Status	Notes
STRELITZIACEAE			
<i>Strelitzia nicolai</i> Regel & Körnicke	white bird-of-paradise	Orn	
ZINGIBERACEAE			
<i>Alpinia purpurata</i> (Vieil.) K. Schum.	red ginger	Nat	<1>

Legend to Table 1

STATUS = distributional status for the Hawaiian Islands:

Ind = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.

Table 1 (continued).

Nat = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

Orn = A cultivated plant; a species not thought to be naturalized (spreading on its own) in Hawai‘i.

Pol = An early Polynesian introduction. Introduced before 1778.

NOTES: <1> - Planted here as a landscape plant.
 <2> - Found mostly in the *koa haole* scrub forest.
 <3> - Also reported by Char (2004) from the same property.
 <4> - Plant lacking key diagnostic characteristics (flower, fruit); identification, therefore, uncertain.

The vascular flora of the project site comprises a mix of alien, native, and ornamental species of trees, shrubs, grasses, and forbs, comprising 135 taxa in 56 families. Nine of the 135 taxa (7%) are considered native (8 indigenous; one endemic), and these are common, widely distributed species. Each is planted as part of the landscaping or volunteering due to regular landscape watering (e.g., *moa* or *Psilotum nudum*). Two are weedy volunteers: *kīpūkai* (*Heliotropium currasavicum*) and *pōpolo* (*Solanum americanum*).

Two species (1%) of early Polynesian introductions (so-called “canoe plants”) are present. The canoe plants—*‘ihi‘ai* (*Oxalis corniculata*) and *kalo* (*Calocasia esculenta*)—are widely distributed throughout the Hawaiian Islands.

Inclusion of the ornamentals on the property obviously accounts for the high species count; and it is likely that a few ornamentals planted here were not encountered (planting beds are extensive close to the numerous small buildings; see Figure 4) or were unrecognized (not in flower or fruit). A total of 63 species



S. Burr photo

Figure 4. Typical view across portion of site showing typical access road, parking, and one of the landscaped commercial venues.

(47%) with the status of “ornamental” is listed in Table 1. However, another 19 species (14%) are planted here as a landscape plants.

Avifauna

During the 6-minute visual surveys, we identified 36 individual birds of 9 alien or domesticated species representing 7 families (Table 2). Common Myna (*Acridotheres tristis*) was the most common species observed at the project site. The only other bird observed at both count stations was Red-vented Bulbul (*Pycnonotus cafer*). Three domestic chicken (*Gallus* sp.) were observed at Sta. 2. All remaining birds were observed once or twice at one of the two stations: Cattle Egret (*Bubulcus ibis*), Spotted Dove (*Streptopelia chinensis*), Zebra Dove (*Geopelia striata*), Red-whiskered Bulbul (*Pycnonotus jocosus*), Japanese White-eye (*Zosterops japonicus*), and Common Waxbill (*Estrilda astrild*). A single Saffron Finch (*Sicalis flaveola*) was recorded as an incidental observation.

Table 2. Avian survey counts for project site on April 13, 2017
(6-min visual surveys).

Scientific name	Common name	Status	6-minute Counts		RA (total/Stas.)
			Sta. 1	Sta. 2	
GALLIFORMES					
PHASIANIDAE – Pheasants & Allies					
<i>Gallus</i> sp.	Domestic Chicken	D	--	3	1.5
PELECANIFORMES					
ARDEIDAE – Herons, Bitterns, & Allies					
<i>Bubulcus ibis</i> L.	Cattle Egret	A	--	1	0.5
COLOMBIFORMES					
COLUMBIDAE – Pigeons & Doves					
<i>Streptopelia chinensis</i> Scopoli	Spotted Dove	A	2	--	1.0
<i>Geopelia striata</i> L.	Zebra Dove	A	--	2	1.0
PYCNONOTIDAE – Bulbuls					
<i>Pycnonotus cafer</i> L.	Red-vented Bulbul	A	2	2	2.0
<i>Pycnonotus jocosus</i> L.	Red-whiskered Bulbul	A	1	--	0.5
ZOSTEROPIDAE – White-eyes					
<i>Zosterops japonicas</i> Temminck & Schlegel	Japanese White-eye	A	1	--	0.5

Table 2 (continued).

Scientific name	Common name	Status	6-minute Counts		RA (total/Stas.)
			Sta. 1	Sta. 2	
	STURNIDAE – Starlings				
<i>Acridotheres tristis</i> L.	Common Myna	A	8	13	10.5
	PASSERIFORMES				
	ESTRILDIDAE – Estrildid Finches				
<i>Estrilda astrild</i> L.	Common Waxbill	A	1	--	0.5

Legend to Table 2

Status = distributional status for the Hawaiian Islands:

D Domestic – Domesticated species not considered established in the wild on O‘ahu

A Alien – Introduced to the Hawaiian Islands by humans

RA Relative abundance – number of birds detected divided by number of count stations.

Mammals

We observed a single pet cat (*Felis catus*) resting near a food truck on the site. Small Indian Mongoose (*Herpestes a. auropunctatus*) and any of the four rodents naturalized in the Hawaiian Islands (Family Muridae) are likely to inhabit the project vicinity.

Other Notable Fauna

Sonoran Carpenter Bee (*Xylocopa sonora*) was ubiquitous throughout the Project site. Brown Anole (*Anolis sagrei*) was abundant in shrubbery and in the scrub forest on the south end of the project site. We observed a single Green Anole (*Anolis carolinensis*) and the caretaker reported Jackson’s Chameleon (*Chamaeleo jacksonii xantholophus*) as present in the area.

Discussion

Botanical Resources

This project site was previously surveyed for plants by Winona Char (Char, 2004). At the time, the subject parcels (then a single parcel) comprised “a few small shops, but most of the parcel [wa]s covered in dense koa haole (*Leucaena leucocephala*) thicket” generally similar to what appears in the aerial image (Fig. 2). In the intervening years, most of the scrub has been cleared. Areas not yet cleared are essentially as described by Char; areas recently cleared are either bare

ground or support a thick growth of Guinea grass (*Megathyrsus maximus*), also described by Char for open areas within the *koa haole* scrub. Char found no plants of any particular interest or conservation concern (indeed, “no native species”).

During our survey, no plant species listed as threatened or endangered or proposed for listing as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543; USFWS, 2015; DLNR, 1997) were seen, and none have been documented historically from the Project area. For plants, state listing follows the federal listing. The vegetation over the 2.3 ac is neither pristine nor unique and is not considered worthy of conservation.

Avian Resources

The findings of the avian survey are consistent with those that would be expected in a highly disturbed area at this elevation on O‘ahu. The only birds observed in the project area are naturalized, urban dwelling birds. Of the ten species observed in 2017, six (Cattle Egret, Red-vented Bulbul, Red-whiskered Bulbul, Common Myna, Spotted Dove, and Japanese White-eye) are listed as injurious species—animals known to be harmful to agriculture, aquaculture, indigenous wildlife or plants, or constitute a nuisance or health hazard (HDLNR, 2015). The property was previously surveyed by Phil Bruner (Bruner, 2004), listing 12 species: 7 in common with our results. Five species observed by Bruner, but not seen in 2017, are all common, non-native birds: White-rumped Shama (*Copsychus malabaricus*), Red-crested Cardinal (*Paroaria coronata*), Northern Cardinal (*Cardinalis cardinalis*), House Finch (*Carpodacus mexicanus*), and House Sparrow (*Passer domesticus*).

No species listed as state or federally endangered or threatened (HDLNR, 2015; USFWS, 2017) are present. The project is not expected to adversely impact avian resources extant in the project vicinity.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitats present on or adjacent to the site. Although no rodents were recorded in our survey, some, if not all, of the four established alien Muridae found on Hawai‘i—roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), black rat (*Rattus exulans hawaiiensis*), and European house mouse (*Mus musculus domesticus*)—could use various resources within the project area. All of these introduced rodents are deleterious to native ecosystems and native species. No mammalian species currently protected or proposed for protection under either the federal or State of Hawai‘i endangered species

programs were detected during the course of this survey (DLNR, 2015; USFWS, 2015).

The only native terrestrial mammal in Hawai'i is the endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*). No Hawaiian hoary bats were detected during the course of our survey. This bat is known from O'ahu, but only in small numbers at low elevations. It is possible that this species may use some of the taller trees at the project site as roost trees. Hawaiian hoary bat is a foliage roosting, widely-dispersed mammal: individuals typically roost widely separated from one another.

Other Fauna

Brown Anole, Green Anole, and Jackson's Chameleon are listed as injurious species (HDLNR, 2015). No species listed as state or federally endangered or threatened (HDLNR, 2015; USFWS, 2017) are present.

Potential Impacts to Protected Species

Seabirds - Although no seabirds were detected during our survey, it is possible that the endemic sub-species of Newell's Shearwater (*Puffinus auricularis newelli*) also known as 'a'o, over-fly the Project site between April and the middle of December each year in small numbers (USFWS, 1983). Newell's Shearwaters are not known to breed on the Island of O'ahu, though seabirds likely to be this species have been recorded on ornithological radar in low numbers flying over parts of the island. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, these birds may collide with man-made structures, and either killed outright, or injured to become easy prey for feral mammals. If the Project includes installation of outdoor lights, fixtures should be directional and point down and away from the ocean shore; all lights need to be properly shielded and aimed towards the ground. Outdoor lighting guidelines are provided by HDLNR-DOFAW (2016). Minimizing lighting directed towards the ocean is also an important consideration.

Hawaiian Hoary Bat - The principal potential impact that construction activity poses to bats is if larger trees are removed for anticipated construction. The removal of tall vegetation within the project area may temporarily displace individual bats using the vegetation for roosting. However, bats use multiple roosts within their home territories, so disturbance to one roost is unlikely to be significant. During the pupping season, between June 1 and September 15, females carrying pups may be less able to rapidly vacate a roost site if the tree is

being trimmed or felled. Further, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 m (15 ft) during the pupping season.

Federal Jurisdictional Waters / Critical Habitat

Our survey revealed no federal jurisdictional waters (streams or wetlands) on the subject property. No federal Critical Habitat exists for any species on or adjacent to the project area. Thus, modification of habitats on all or any part of the site will not result in an impact to federally designated Critical Habitat. There is no equivalent statute under state law.

References

- American Ornithologists' Union (AOU). 2017. AOU Checklist of North and Middle American Birds (7th Edition and Supplements). Available online at: <http://www.americanornithology.org/content/aou-checklist-north-and-middle-american-birds-7th-edition-and-supplements>; last visited April 14, 2017.
- Bruner, P. L. 2004. Avifaunal and feral mammal field survey of TMK 5-9-11:17 Pupukea, Oahu. Prp. for Belt Collins Hawaii Ltd. 6 pp.
- Char, W. 2004. Untitled, letter report. Prep. for Belt Collins Hawaii Ltd. Char & Associates. 4 pp.
- Hawai'i Department of Land and Natural Resources (HDLNR). 1997. Chapter 107. Threatened and Endangered Plants. Department of Land and Natural Resources. State of Hawaii. Administrative Rule under Title 13. Subtitle 5, Part 1, dated February 17, 2015.
- _____. 2015. Chapter 124. Indigenous Wildlife, Endangered, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. Department of Land and Natural Resources. State of Hawaii. Administrative Rule under Title 13. Subtitle 5, Part 2, dated February 17, 2015.
- _____. (HDLNR-DOFAW) 2016. Wildlife Lighting. PDF available at URL: <http://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>.

- Imada, C. T. 2012. Hawaiian Native and Naturalized Vascular Plants Checklist (December 2012 update). Bishop Museum Tech. Rept. 60. 380 pp.
- Palmer, D. D. 2003. *Hawai'i's ferns and fern allies*. University of Hawaii Press, Honolulu. 324 pp.
- Staples, G. W. and D. R. Herbst. 2005. *A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places*. Bishop Museum, Honolulu. 908 pp.
- U.S. Fish & Wildlife Service (USFWS). 1983. Hawaiian Dark-Rumped Petrel & Newell's Manx Shearwater Recovery Plan. USFWS, Portland, Oregon. February 1983.
- _____. 2017. Endangered and Threatened Wildlife and Plants. 50 CFR 17:11 and 17:12. Available online at URL: http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=HI&s8fid=112761032792&s8fid=112762573902; last accessed on April 14, 2017.
- Wagner, W. L., D. R. Herbst and S.H. Sohmer. 1990. *Manual of the Flowering Plants of Hawai'i: Volume I and II*. Bishop Museum Special Publication 83. University of Hawai'i Press. 1853 pp.
- _____ and _____. 1999. *Supplement to the Manual of the flowering plants of Hawai'i*, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, *Manual of the flowering plants of Hawai'i*. Revised edition. 2 vols. University of Hawaii Press and B.P. Bishop Museum.

APPENDIX B

ASSESSMENT OF POTENTIAL IMPACTS ON WATER RESOURCES OF THE PROPOSED PUPUKEA RURAL COMMUNITY COMMERCIAL CENTER

Assessment of Potential Impacts on
Water Resources of the
Proposed Pupukea Rural
Community Commercial Center

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Table of Contents

	<u>Page</u>
Introduction.....	1
Proposed Infrastructure Improvement Relevant to the Assessment of the Project's Potential Impact on Water Resources	1
Water Supply	1
Drainage	1
Wastewater Collection, Treatment, and Disposal	4
Groundwater Occurrence in the Vicinity of the Project Site	
Overview of Groundwater Occurrence	5
Regulatory Environment.....	5
Sustainable Yield of the Kawaioloa Aquifer	5
Issued Water Use Permits	8
Actual Water Use.....	8
Characterization of the Groundwater Beneath the Project Site	12
Stratigraphy Encountered at the Monitor Well Sites	12
Salinity Profiles of the Water Columns in the B-1 and B-7 Monitor Wells	12
Water Level Response to Ocean Tides	12
Water Quality Samples from the B-1 and B-7 Monitor Wells.....	19
Shoreline Discharge of Groundwater.....	19
Surface Water Occurrence in the Vicinity of the Project Site	
Overview of Surface Water Occurrence.....	25
Existing Stormwater Runoff Infrastructure.....	25
Potential Impacts on Water Resources of the Pupukea RCCC Project	
Overview.....	25
Additional Consumption of Drinking Water from the BWS System	27
Implementation of the Drainage System	27
Wastewater Collection, Treatment, and Disposal	27
Foodland Onsite Wastewater Treatment System	29
Existing Wastewater Treatment System on TMK 5-9-011:068.....	29
System Proposed for the Pupukea RCCC Project	29
Net Increase of Treated Wastewater to the Groundwater and Marine Environment.....	29
References	
Appendix: Logs of the B-1 and B-7 Boreholes by Geolabs, Inc.	

List of Figures

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Four Contiguous Parcels that Comprise the Pupukea Rural Community Commercial Center Project Site.....	2
2	Pupukea Rural Community Center – Concept Plan	3
3	Wells in the Near Vicinity of the Pupukea Project Site	6
4	Pumpage of Waialua Sugar Company's P4 Well Battery from February 1986 through the Last Reported Pumpage in August 1995.....	10
5	Total Pumpage of Wells in the Kawaioloa Aquifer Compared to Permitted Use for the Period from January 2010 through November 2016.....	11
6	Comparison of Pumpage by BWS' Waialeale Wells and Total Pumpage in the Aquifer	13
7	Locations of the B-1 and B-7 Monitor Wells on the Pupukea Project Site.....	14

List of Figures

(continued)

<u>No.</u>	<u>T i t l e</u>	<u>Page</u>
8	Salinity Profiles through the Water Columns of the B-1 and B-7 Monitor Wells on January 6, 2017	15
9	Sequence of Salinity Profiles through the Water Column of the B-1 Monitor Well on January 6, April 11, and May 24, 2017.....	16
10	Sequence of Salinity Profiles through the Water Column of the B-7 Monitor Well on January 6, April 11, and May 24, 2017.....	17
11	Recorded Water Levels in the B-1 and B-7 Monitor Wells in January 2017 in Comparison to the Predicted Tide at Waialua Bay	18
12	Locations of the Five Offshore Transects Sampled by Marine Research Consultants on May 17, 2017	21
13	Mixing Line Analysis of Total Nitrogen in Shoreline Samples at Transects 1 to 5 (Refer to Figure 12 for Transect Locations)	23
14	Mixing Line Analysis of Total Phosphorus in Shoreline Samples at Transects 1 to 5 (Refer to Figure 12 for Transect Locations)	24
15	Locations of Concentrated Stormwater Discharge in the Near Vicinity of the Project Site	26
16	Residences in the Mauka-to-Makai Corridor Upgradient of the Pupukea RCCC Project.....	31

List of Tables

<u>No.</u>	<u>T i t l e</u>	<u>Page</u>
1	Summary of Wells in the Near Vicinity of the Project Site	7
2	Current Water Use Permits in the Kawaihoa Aquifer System.....	9
3	Water Quality Results of Grab Samples from the B-1 and B-7 Monitor Wells on April 11 and May 24, 2017	20
4	Water Quality Results from the Five Shoreline Transects Shown on Figure 10 as Sampled by Marine Research Consultants on May 17, 2017	22
5	Comparative Runoff Volumes for Pre- and Post-Development of the Three Hanapohaku Parcels for 24-Hour Storms of Varying Recurrence Intervals	28

INTRODUCTION

This report presents an assessment of the potential impact on water resources of the proposed Pupukea Rural Community Commercial Center (Pupukea RCCC). Three contiguous parcels owned by Hanapohaku LLC (TMKs 5-9-011:068, 069, and 070) totaling 2.72 acres would be redeveloped along with a new connection to the adjacent Foodland parcel (TMK 5-9-011:016).

The location of the project site is shown on Figure 1. Its development plan is shown on Figure 2. The Pupukea RCCC would consist of approximately 30,000 square feet of building area, substantial parking, landscaping, and infrastructure to support the new facilities. Access off Kamehameha Highway to the Foodland parking lot would also be reconfigured.

PROPOSED INFRASTRUCTURE IMPROVEMENT RELEVANT TO THE ASSESSMENT OF THE PROJECT'S POTENTIAL IMPACT ON WATER RESOURCES

The August 2017 Preliminary Engineering Report by Group 70 International, Inc. provides detailed descriptions of the project's proposed infrastructure improvements. Those relevant to the assessment of the potential impact on water resources are described in the sections following.

Water Supply

Potable water to the area is supplied by the Honolulu Board of Water Supply (BWS) via a 16-inch main in Kamehameha Highway. Water service to the three Hanapohaku parcels is presently provided by a 1-inch meter to TMK 5-9-011:068. Present use has averaged about 2500 gallons per day (GPD). Based on BWS design guidelines of 3000 GPD/acre, post development water use on the 2.72 acres of the Hanapohaku parcels may average about 8160 GPD. BWS has indicated that its system can accommodate this increase in use (Group 70, 2017).

Water supply from BWS for Foodland is supplied by a 1½-inch meter. Its use has averaged about 2200 GPD. This use may increase by 15 to 20 percent to irrigate the proposed new landscaping at the makai end of its parking lot.

Drainage

At present, there are no drainage improvements on the three Hanapohaku parcels. Stormwater runoff sheet flows off the property to the shallow and generally unimproved gutter on the mauka side of Kamehameha Highway, flows south in the gutter to a grated field inlet, and from there is conveyed in a 24-inch pipe beneath the highway to a discharge point close to the shoreline.

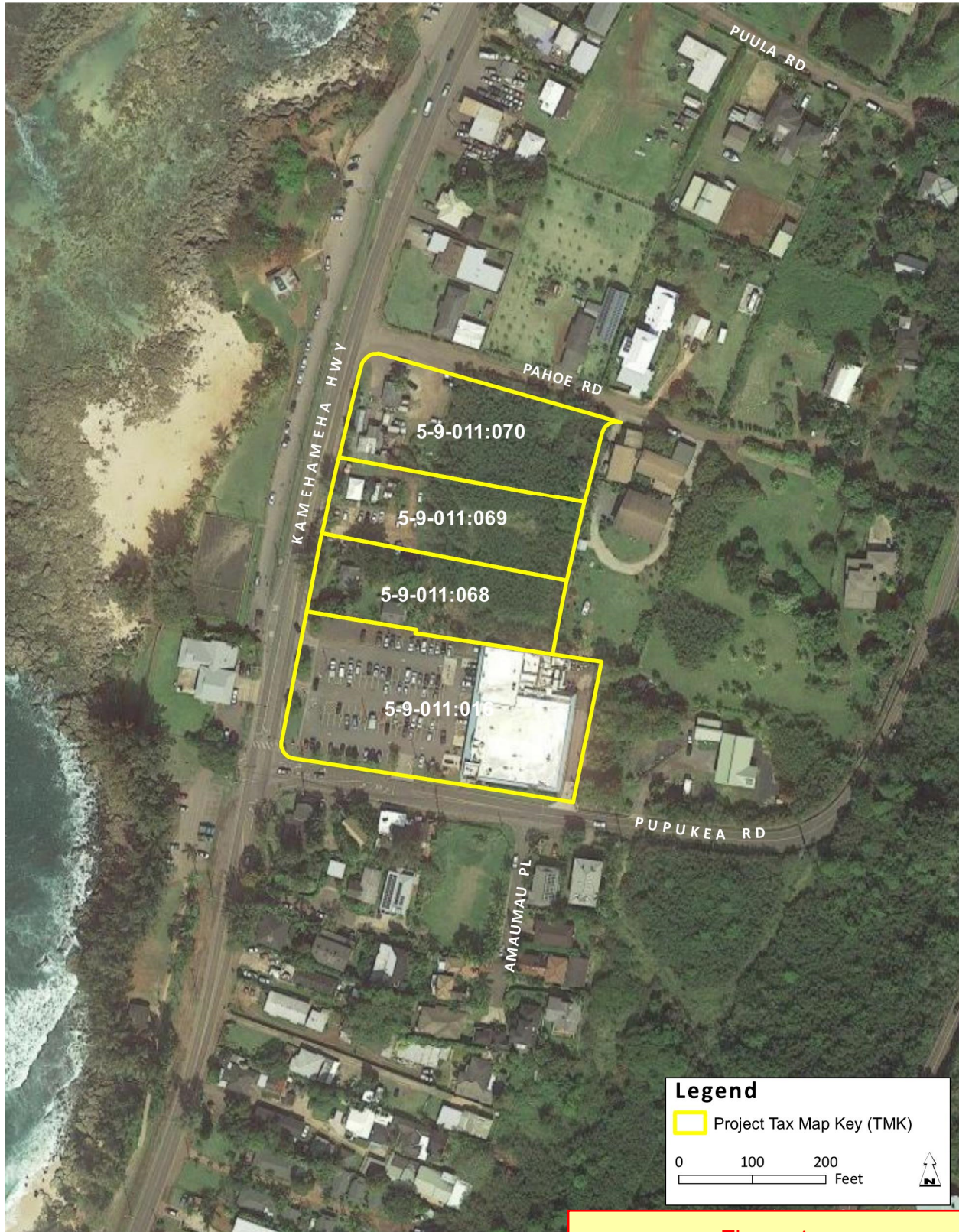


Figure 1
 Four Contiguous Parcels that
 Comprise the Pupukea Rural
 Community Commercial Center
 Project Site

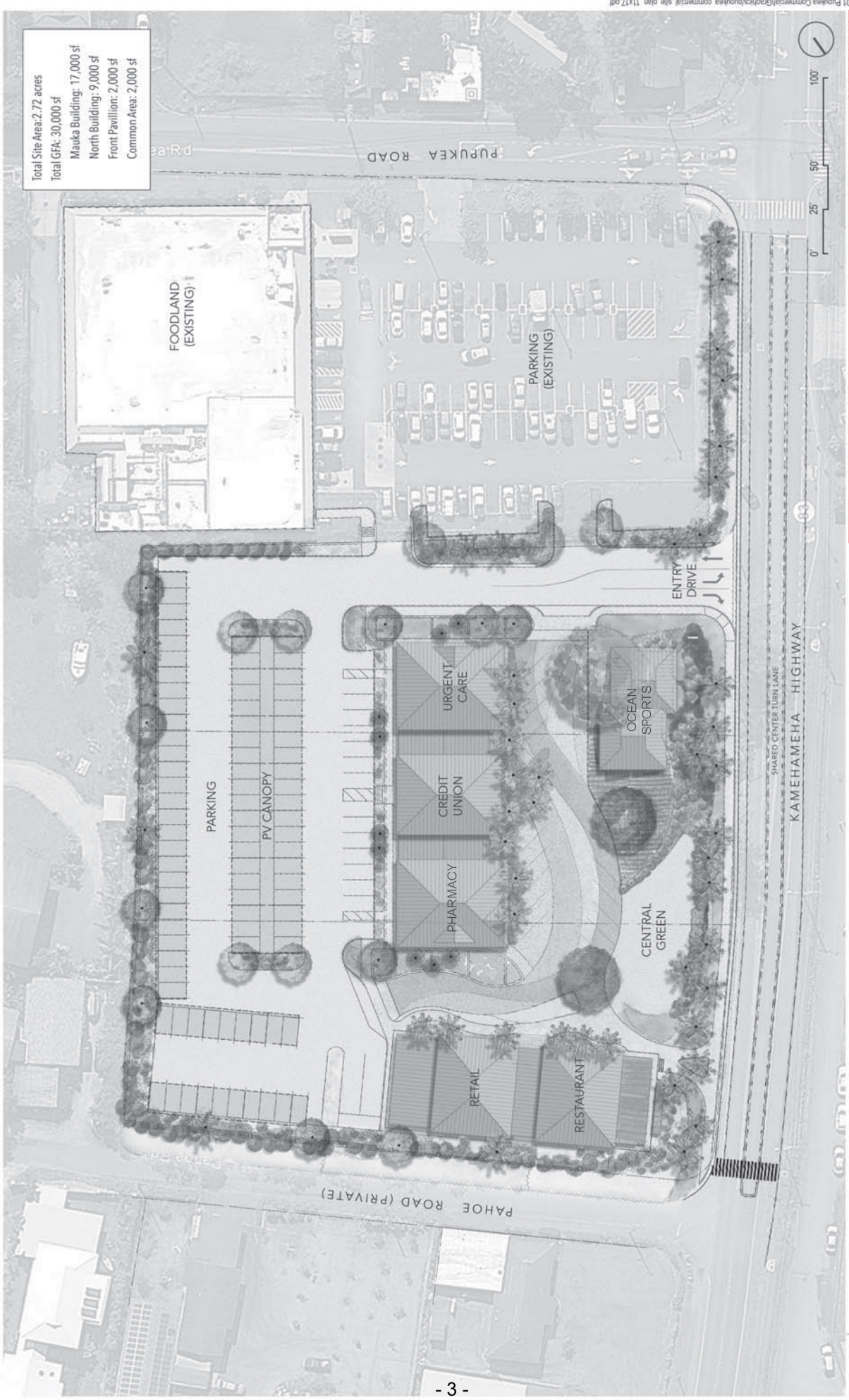


Figure 2
Pupukea Rural Community Commercial Center
Concept Plan

Group 70's Preliminary Engineering Report describes the drainage improvements that would be implemented on the three Hanapohaku parcels. Development of the project, due to the increase in impervious surfaces, will increase the surface runoff. That runoff would be collected in gutters, drain inlets, trench drains, and from paved areas. The collected runoff would be transported through flow and volume based BMP's into a subsurface detention basin at the makai end of the project fronting Kamehameha Highway. Based on the City and County Drainage Standards of January 2000, a detention basin volume of 16,146 cubic feet is required so that the peak discharge from the three Hanapohaku parcels during a 1-hour, 10-year storm rainfall is not increased as a result of the project's development. The calculated required retention volume is 16,146 cubic feet (Group 70, 2017). A detention basin volume of 26,600 cubic feet, much larger than the drainage standards require, is proposed.

Rainfall-runoff from the Foodland parcel leaves the property in two directions. Runoff from most of the parking lot sheet flows down its two access driveways to the mauka gutter of Kamehameha Highway. The balance of runoff from the site is directed into the drainage system at the bottom end of Pupukea Road and is discharged to the shoreline just south of the beach park. The pattern of stormwater runoff will remain the same, except that landscaping along the parking lot's Kamehameha Highway frontage will replace the two driveways. Runoff will flow into this landscaping. BMPs and stormwater detention will be provided such that runoff will be less than present conditions and its quality will be improved by the detention of bed load and suspended solids.

Wastewater Collection, Treatment, and Disposal

At present, there is no existing municipal wastewater collection system serving the area. As such, an onsite wastewater treatment and disposal system will need to be constructed. A description and basis of design of the system is presented in Enviniti LLC (August 2017) and summarized in Group 70 (2017). It would be comprised of an aerobic treatment unit (ATU) with the treated effluent disposed of in six absorption beds located in the parking lot. The combined 27,000 square feet of bed area to be installed would provide 100 percent back up capacity.

Several other points should be noted about the project's proposed wastewater system. First, the design wastewater flowrate in the Enviniti report and repeated in the Group 70 Preliminary Engineering Report is 10,533 GPD, about 30 percent greater than the 8160 GPD of projected water use. This wastewater production rate is used as the basis for sizing infrastructure but is greater than what is likely to actually occur. For the assessment herein, the actual wastewater production is estimated to be the water use of 8160 GPD less the amount of landscape irrigation. That irrigation will be about 2000 GPD per acres on 0.12 acre of grass and 1200 GPD per acre on 0.50 acres of shrubs and trees.

These irrigation rates amount to 840 GPD, meaning the remaining 7320 GPD of water use would become wastewater.

Second, there are two recently installed ATU on TMK 5-9-011:068 with disposal in absorption beds. Its design is described in Laulea Engineering LLC (April 2016). The ATU and absorption beds will be completely removed in the development of the Pupukea RCCC.

Third, Foodland parcel has its own ATU system and absorption beds located in its parking lot. These are described in J³ Engineering LLC (August 2011). No changes to this system are envisioned for the Pupukea RCCC project.

GROUNDWATER OCCURRENCE IN THE VICINITY OF THE PROJECT SITE

Overview of Groundwater Occurrence

Knowledge of the groundwater occurrence in the vicinity of the project site comes primarily from the wells shown on Figure 3 and listed in Table 1. The groundwater occurs as a thin basal lens for at least 1.5 miles inland from the coastline. Water levels are on the order of two feet above mean sea level for up to 2000 feet inland, rising to about 3.7 feet above sea level 6500 to 7000 feet from the shoreline. Groundwater within several thousand feet from the shoreline is typically slightly brackish.

Regulatory Environment

The State Commission on Water Resource Management (CWRM) regulates well construction and groundwater use. The project site is within the CWRM-delineated Kawaihoa Aquifer System. Its area is bounded by the Anahulu River on the south and the ridgeline of the Koolau mountain on the north. Its inland limit is what is thought to be the makai end of the Wahiawa high level aquifer. The aquifer's delineated area is 37.7 square miles and spans the 9-mile coastal segment from Waialua Bay to Kawela Bay.

The CWRM regulates groundwater use of the Kawaihoa Aquifer in two ways: establishment of the aquifer's sustainable yield; and the issuance of water use permits. Both of these are described in the sections below.

Sustainable Yield of the Kawaihoa Aquifer. In the State's first Water Resources Protection Plan (Yuen, 1990), the Kawaihoa Aquifer's sustainable yield was set at 29 million gallons per day (MGD). This was based on a relatively coarse calculation of rainfall-recharge directly on the aquifer itself and that 44

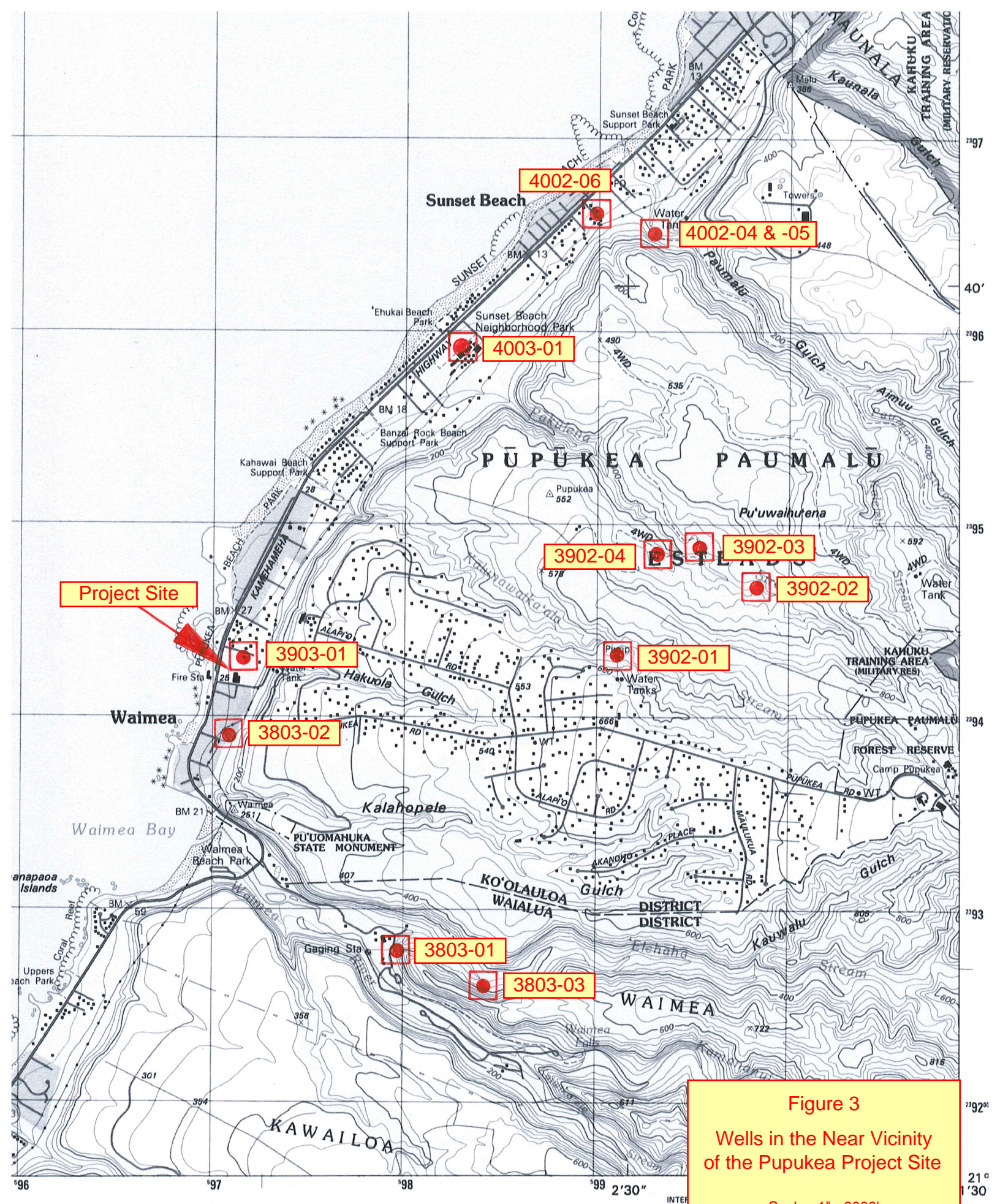


Figure 3
Wells in the Near Vicinity
of the Pupukea Project Site

Scale: 1" - 2000'



Table 1. Summary of Wells in the Near Vicinity of the Project Site

W e l l		Year Drilled	Casing Diameter (Inches)	Ground Elevation (Feet MSL)	Total Depth (Feet)	Elevation at Bottom (Feet MSL)	Water Level (Feet MSL)	Pumped Water Chlorides (MG/L)
State Number	N a m e							
3803-01	Waimea Falls 1	1946	99	42	46	-4	10 (?)	167
3803-02	Waimea	1949	6	36	105	-69	1.8	1,230
3803-03	Waimea Falls 2	1993	12	171	235	-64	4.0	210
3902-01	Wallace	1946	12	499	554	-55	2.8	225 to 285
3902-02	Pupukea	1956	1	511	560	-49	--	--
3902-03	GC-1	1988	12	420	454	-34	3.8	255
3902-04	GC-2	1989	12	466	500	-34	3.7	336
3903-01	Beach Park	1956	8	50	57	-50	2.1	375 to 635
4002-04	Sunset Beach	1948	7	66	129	-59	2.7	66
4002-05	Sunset Beach	1949	10	70	140	-70	2.5	72
4002-06	Sunset	1955	8	32	109	-77	2.1	1,220
4003-01	Sunset Beach	1941	6	46	64	18	2.6	204

percent of this recharge was available as the sustainable yield. The 44 percent was an application of the Robust Analytical Model (RAM) developed by John Mink. The aquifer's recharge did not include subsurface from the upgradient Wahiawa high level aquifer, an amount which is considered to be significant.

In the first update of the WRPP (Wilson Okamoto, 2008), 29 to 31 MGD was listed as the potential range of the sustainable yield but 29 MGD remained as the adopted amount. The aquifer's recharge of 67.39 MGD computed in Shade and Nichols, 1996, was apparently not considered for the 2008 WRPP update.

A draft of the second update of the WRPP is expected to be out for public review and comment in late 2017. For the Kawaioloa Aquifer, the recommendation is to reduce the aquifer's sustainable yield from 29 to 22 MGD based primarily on the recharge calculation in Engott et al, 2015, considered to be the most detailed and accurate calculation available, plus an allowance of "spillover" from the upgradient Wahiawa high level aquifer. The recommended reduction has not yet been adopted.

Issued Water Use Permits. The Kawaioloa Aquifer is a CWRM-designated Groundwater Management Area. For this designation, a Water Use Permit (WUP) is required to use a well. When the WUPs for the aquifer were first issued in 1980, just two permits were issued, one for Waiialua Sugar's Pump 4 well battery in the amount of 5.530 MGD and the other for Meadow Gold's dug shaft (Well No. 3704-01) in the amount of 0.043 MGD. With the closing of Waiialua Sugar, present WUP's for the aquifer total 1.841 MGD (Table 2). This includes the 0.043 MGD for the Meadow Gold Shaft, now named Paniolo Ranch on Table 2.

Actual Water Use

Historically when Waiialua Sugar Company was still active, most of the aquifer's pumpage was from the plantation's Pump 4 well battery which consisted of 23 closely grouped wells located three miles south of the Waimea River. As shown on Figure 4 for its last decade of use (1984 through 1995), monthly pumpage of the well battery reached 10 MGD in some months and its 12-month moving average (12-MAV) was as high as 5.7 MGD.

Since the closure of Waiialua Sugar Company, pumpage from wells in the Kawaioloa Aquifer has been substantially less. The total permitted use of all active wells is just 1.841 MGD, amounting to 8.4 percent of the aquifer's proposed reduced sustainable yield. Actual pumpage has been far less than the authorized use. Over the period from January 10, 2010 through November 2016 shown on Figure 5, reported pumpage averaged 0.434 MGD. This amounts to 24 percent of the permitted use and 2.0



Report Parameters

WUP Type: Water Use Permit, Administrative Modification, Reservation, Transfer, CWRM Decision and Orders,
Court Orders, Other

Island of Oahu

Aquifer System Ground Water Management Area: 30403 Kawaiiloa

Sustainable Yield (mgd): 29

Wup No	Approved	Permittee	Well No	Well Name	WUP (mgd)
00056	09/11/1981	Royal Paniolo Ranch	3-3704-001	Paniolo Ranch	0.430
00173	02/19/1992	Attractions Hawaii	3-3803-001	Waimea Falls 1	0.200
			3-3803-003	Waimea Falls 2	
00179	11/18/1992	c/o Glenn Nakamura (Takemitsu Nakamura Tr EST)	3-4002-009	Sunset-Nakamura	0.001
00323	01/26/1994	Honolulu Board of Water Supply, BWS	3-4101-007	Waialeale I	0.339
00324	01/26/1994	Honolulu Board of Water Supply, BWS	3-4101-008	Waialeale II	0.411
00528	10/26/2000	UH DEPT OF ANIMAL SCIENCE	3-4101-010	Waialeale UH	0.026
00812	11/13/2007	Sean Ginella	3-4100-006	Kawela Mauka	0.102
00861	11/18/1992	Patricia L. Clark	3-4002-006	Sunset-Henry F	0.005
00881	08/25/2010	Sean Ginella	3-3901-001	Paumalu	0.300
00955	09/19/2012	Ted Nakamura	3-3605-030	Thurston 2011	0.024
01015	06/17/2016	Justin & Cynthia Smith	3-3605-029	Kawaiiloa Mauka	0.003

Summary for Kawaiiloa (12 detail records)

Total: 1.841

SY Available: 27.159

Table 2
Current Water Use Permits
in the Kawaiiloa Aquifer System

Figure 4. Pumpage Of Waialua Sugar Company's Pump 4 Well Battery from February 1986 through the Last Reported Pumpage in August 1995

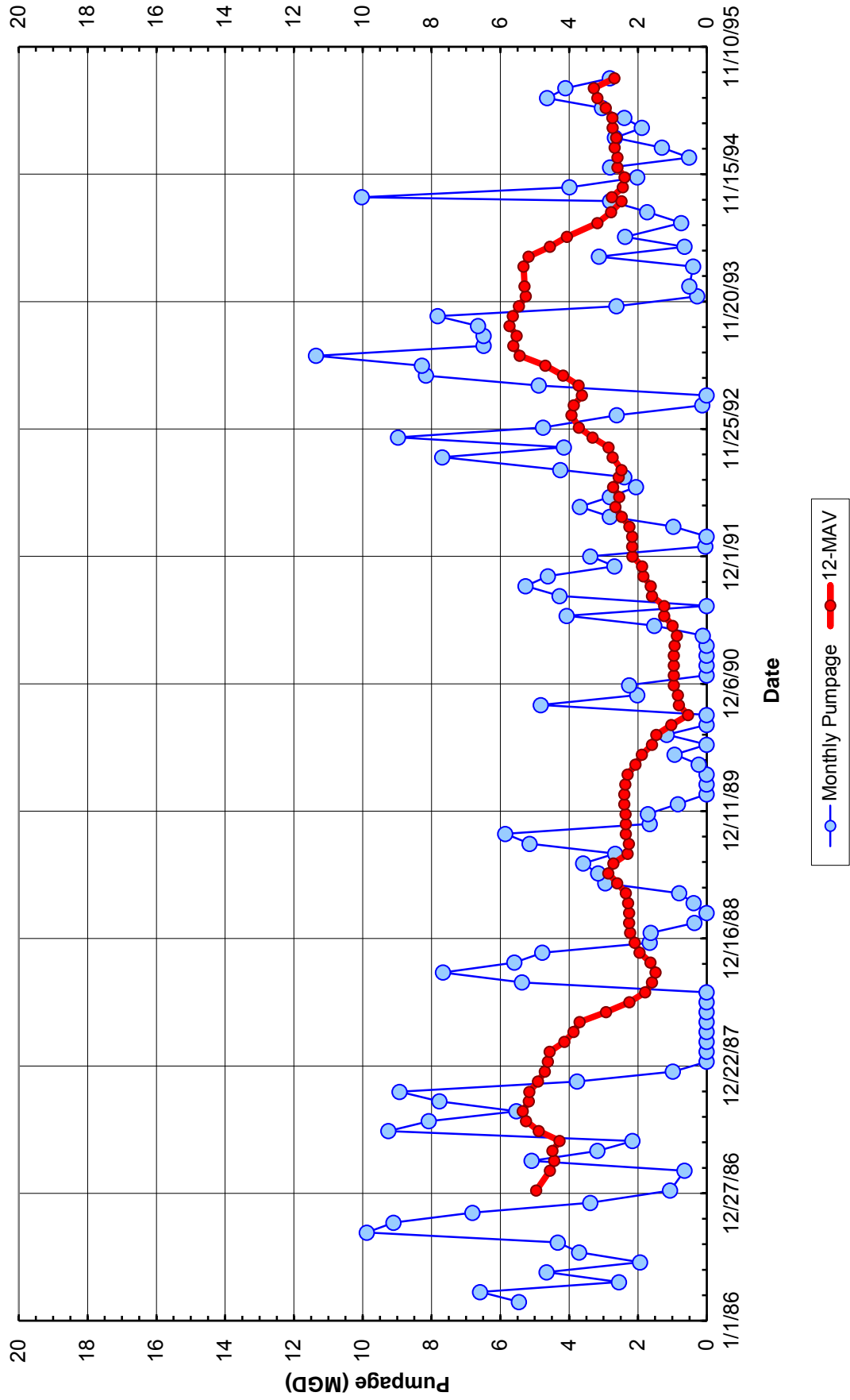
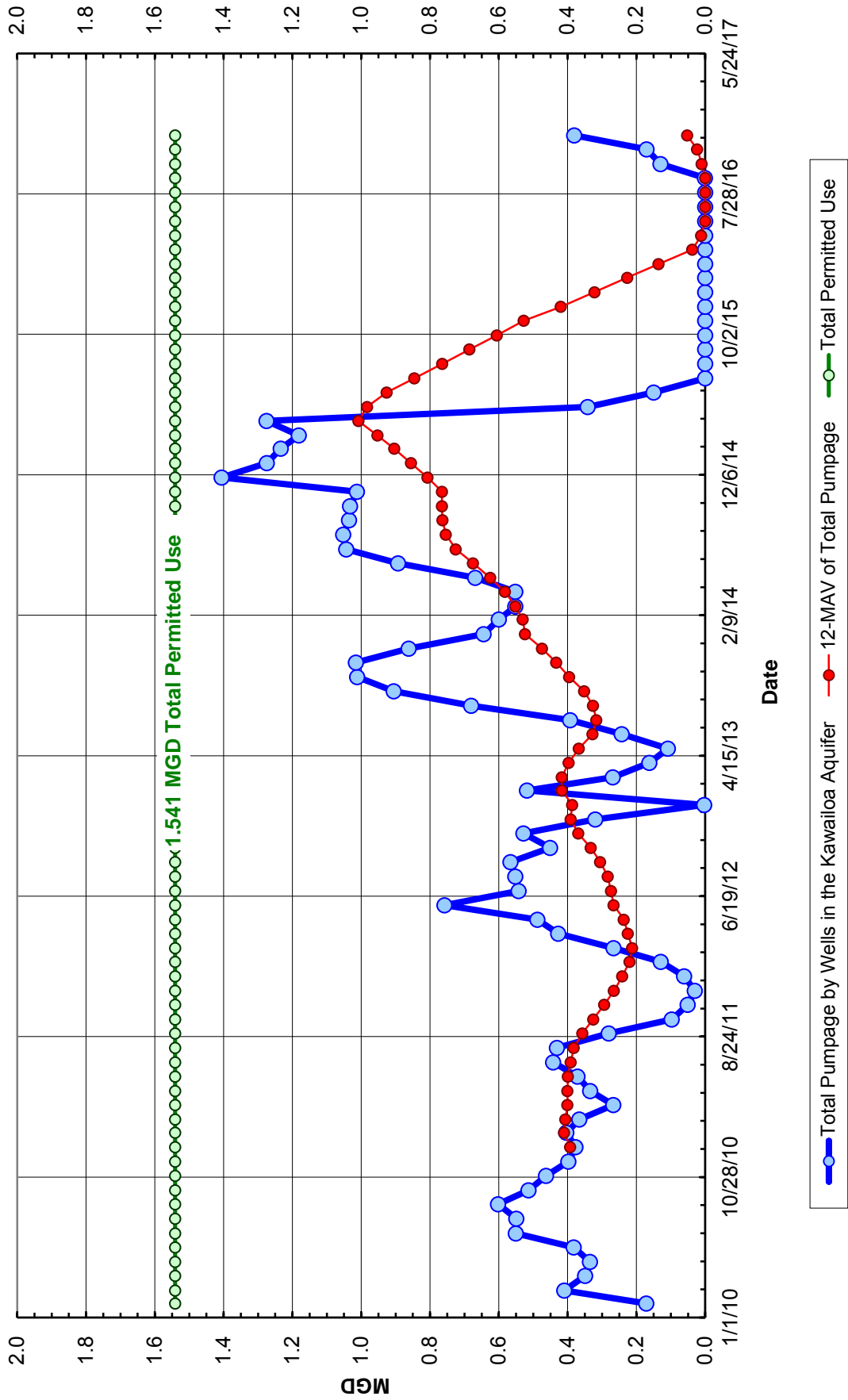


Figure 5. Total Pumpage of Wells in the Kawaiiloa Aquifer Compared to Permitted Use for the Period from January 2010 through November 2016



percent of the Kawailoa Aquifer's 22 MGD proposed sustainable yield. Since June 2013, average pumpage dropped even further to 0.038 MGD. None of the ongoing pumpage is from any of the wells shown on Figure 1. Virtually all of the ongoing pumpage is by the two Board of Water Supply Waialeale wells which are located within the Koolau rift zone at the northern end of the aquifer (Figure 6).

Characterization of the Groundwater Beneath the Project Site

In order to characterize groundwater conditions directly beneath the project site, two 100-foot deep monitor wells were constructed. Their locations on the site are shown on Figure 7. The B-1 well is located toward the inland end of the site at about 45-foot elevation and the B-7 well is located closer to the makai end at about 37-foot elevation.

Stratigraphy Encountered at the Monitor Well Sites. Logs of the formations encountered at the two monitor well sites can be found in the Appendix to this report. At the B-1 site, the upper 18 feet is comprised of silty clay. Below the silty clay to the bottom of the well at 100-foot depth are layers of slightly weathered to unweathered basalt lava flows and clinker. At the B-7 site, silty clay comprises the upper 16 feet. Below that to a depth of 31 feet are coral and coralline sand and gravel. From 31-foot depth to the bottom of the well at 100-foot depth are slightly weathered to unweathered layers of basalt.

Salinity Profiles of the Water Columns in the B-1 and B-7 Monitor Wells. At both well sites, the groundwater resides entirely within the basalts. Figure 8 presents salinity profiles through the water columns of both wells made on January 6, 2017. For the first 30 feet into groundwater, the salinities at both sites are slightly brackish and essentially identical. Below that depth, the salinities increase with a very sharp salinity increase in B-7 at about 52 feet into groundwater. To confirm these initial results, two more sets of salinity profiles were made on April 11 and May 24, 2017. Results of all three sets of salinity profiles are shown on Figures 9 and 10. All three sets are very consistent with each other.

Water Level Response to the Ocean Tide. Water levels were recorded in both monitor wells over the January 3 to 6, 2017 period. These records are shown in comparison to the predicted tide for Waialua Bay on Figure 11. The groundwater levels are to an arbitrary (not sea level) datum, as neither well site has been surveyed to a sea level datum. However, their levels with respect to each other were surveyed and are correct. Two aspects of this water level record are notable. First, there is a strong tidal response at both well sites, with amplitudes on the order of one third to one half of the ocean's tidal amplitude. Permeability of the volcanics in which the groundwater resides is very high. Second, the water level in the B-1 well is consistently 0.115 ± 0.032 feet higher than in the B-7 well. This is equivalent to a gradient toward the shoreline of 0.00055 feet/feet (about 2.9 feet per mile). This relatively steep gradient is indicative of a rapid thinning of the basal lens as it nears its shoreline discharge.

Figure 6. Comparison of Pumpage by BWS' Waialeale Wells and Total Pumpage in the Aquifer

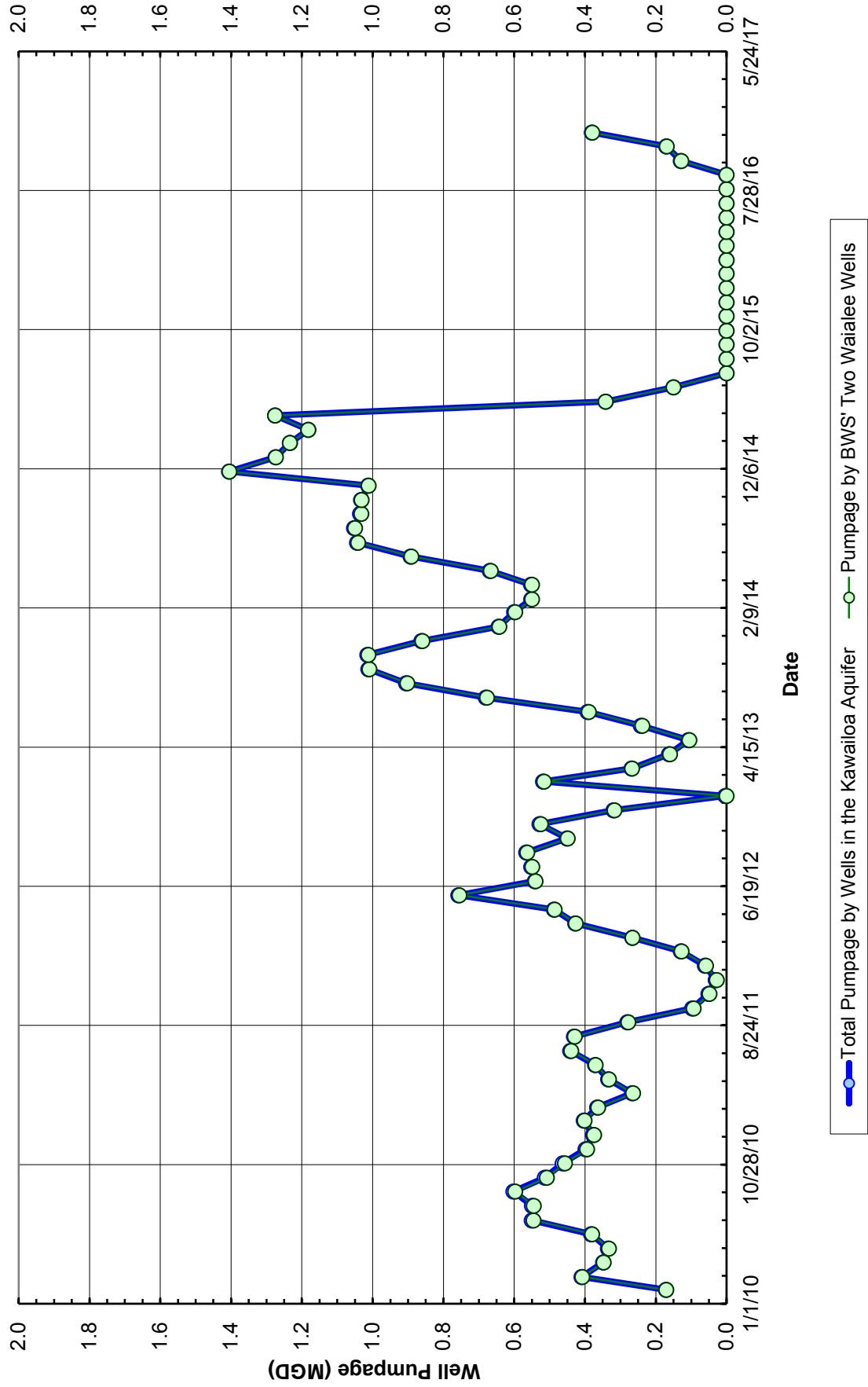


Figure 8. Salinity Profiles through the Water Columns of the B-1 and B-7 Monitor Wells on January 6, 2017

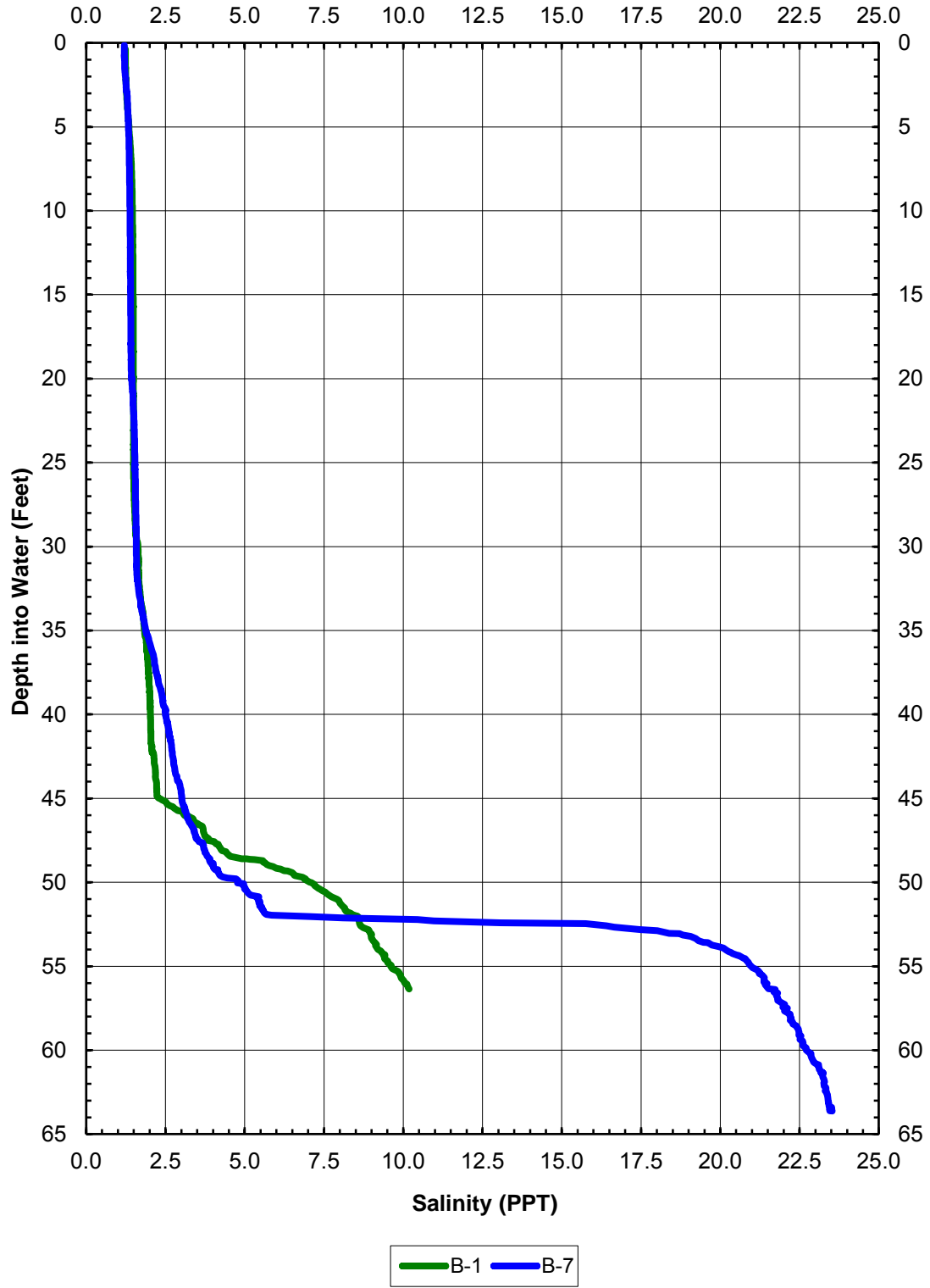


Figure 9
Sequence of Salinity Profiles through the Water Column of the B-1
Monitor Well on January 6, April 11, and May 24, 2017

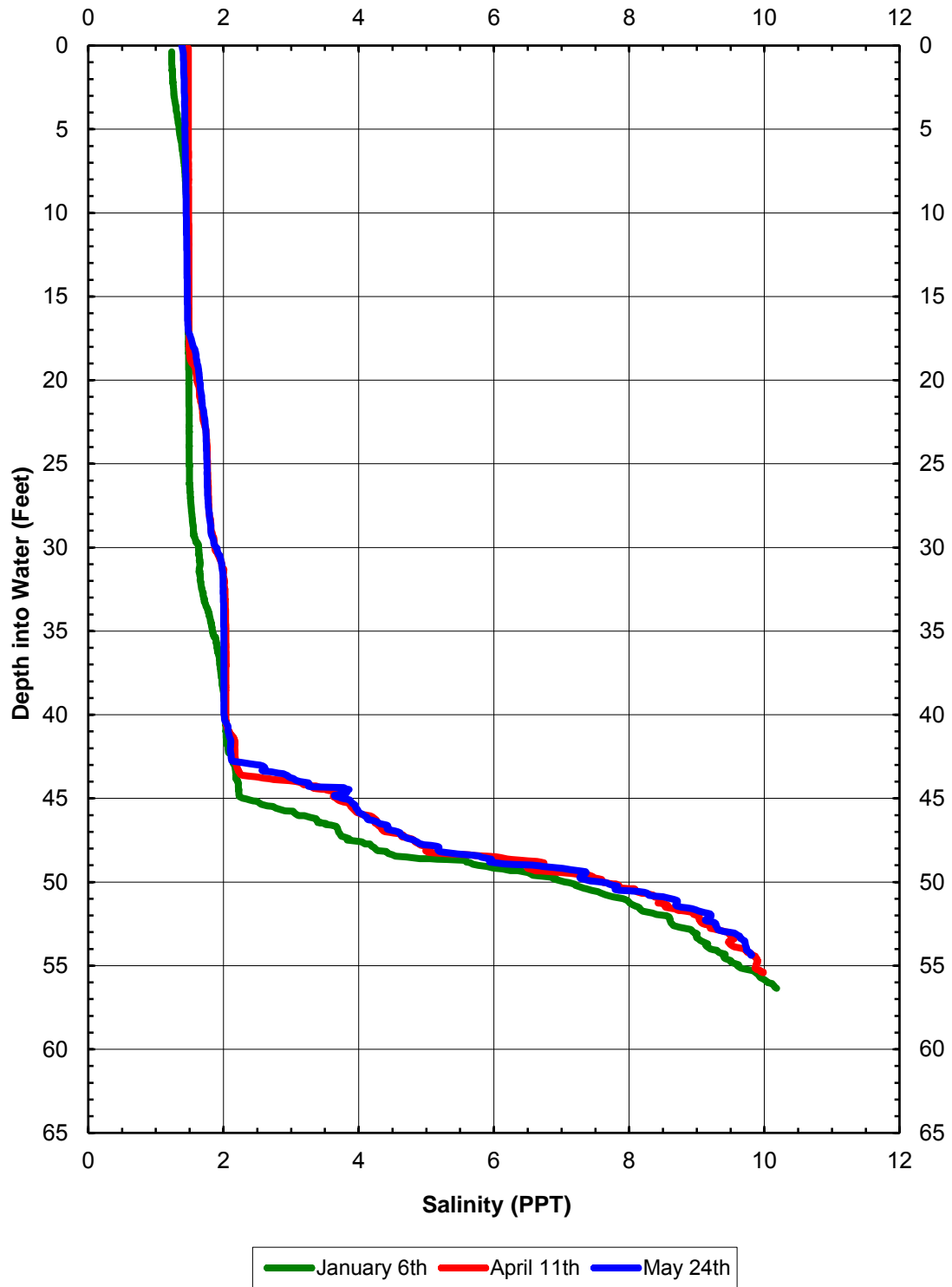


Figure 10
Sequence of Salinity Profiles through the Water Column of the B-7
Monitor Well on January 6, April 11, and May 24, 2017

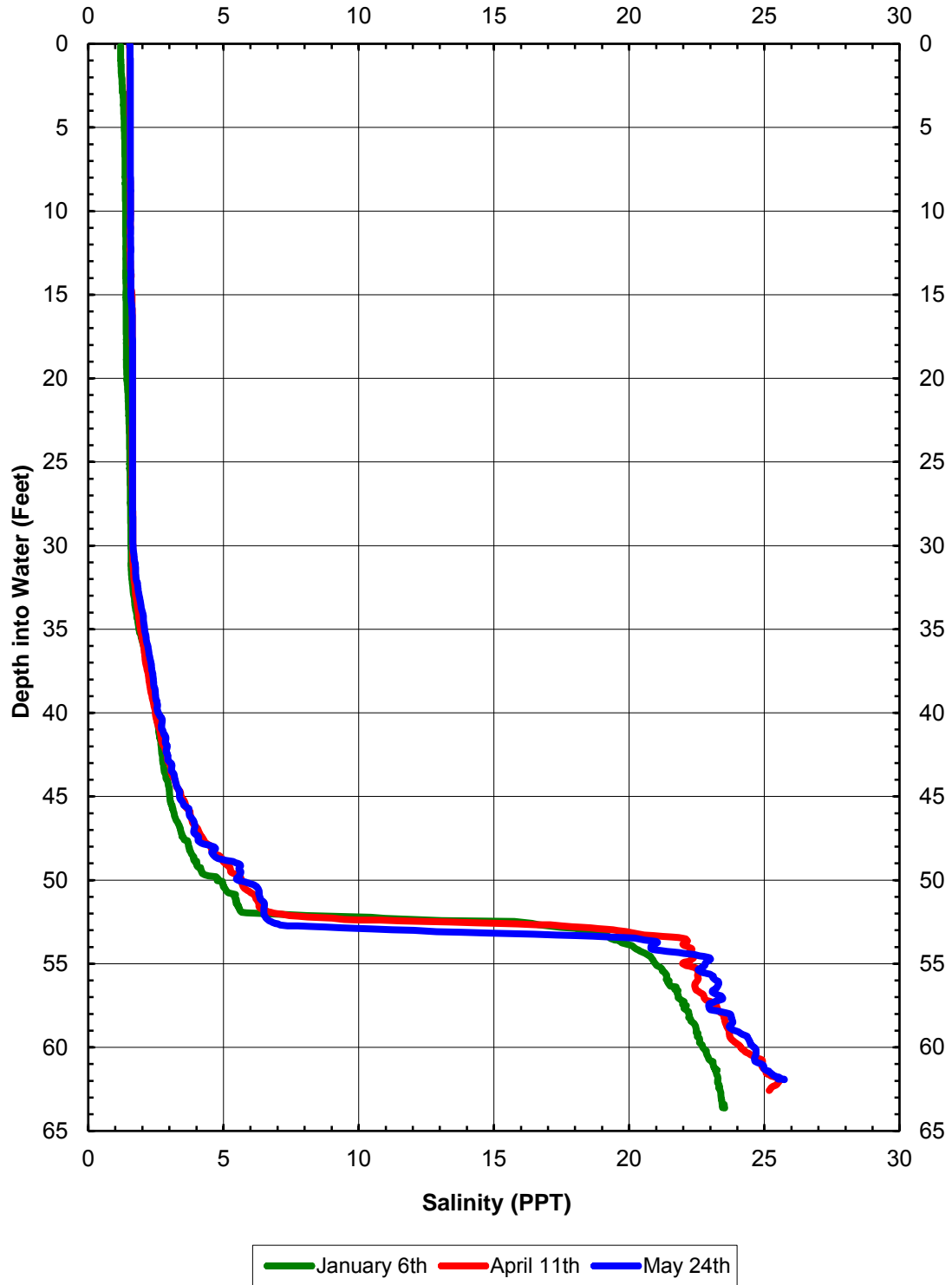
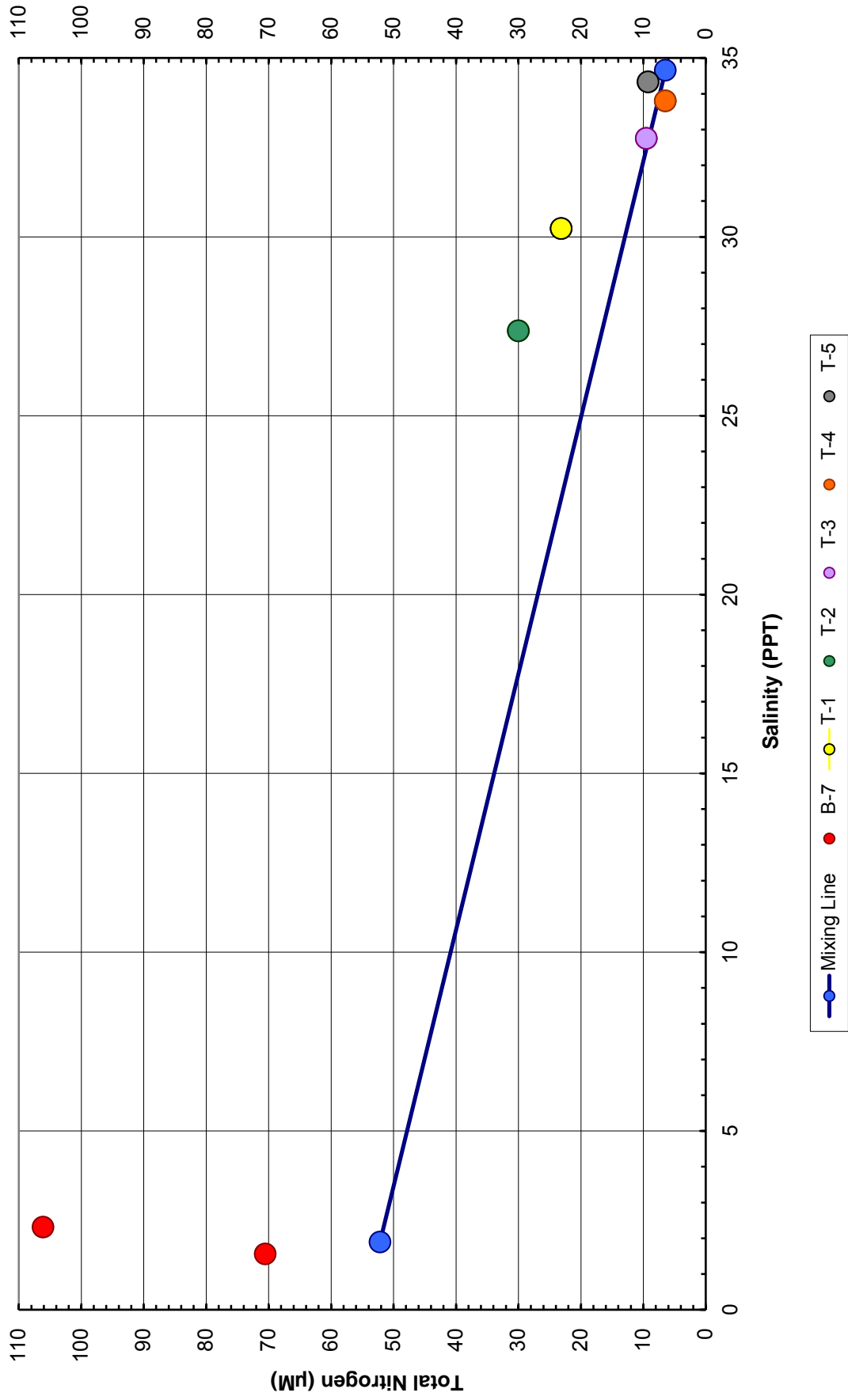


Figure 11. Mixing Line Analysis of Total Nitrogen in Shoreline Samples at Transects 1 to 5
(Refer to Figure 10 for Transect Locations)



Water Quality Samples from the B-1 and B-7 Monitor Wells. Samples were collected from three depths in each of the monitor wells on April 11, 2017 and again on May 24, 2017. All samples were analyzed for their nitrogen, phosphorus, silica, and salinity levels. These results are presented on Table 3. They provide a benchmark of existing groundwater quality against which potential changes of the proposed project can be compared. The somewhat higher nitrogen levels in the downgradient B-7 monitor well in comparison to the B-1 monitor well may reflect the input by the present activities on the site.

Shoreline Discharge of Groundwater. The basal groundwater described in the sections above discharges into and mixes with the ocean water along the shoreline. To depict this discharge and its mixing with the ocean water, water samples were collected by Marine Research Consultants (MRC) along the five transects shown on Figure 12. Along each transect, samples were taken at the shoreline and as far offshore as 1200 feet. The samples at the shoreline, based on lowest salinity and highest nutrient levels (top of Table 4) have the greatest amount of groundwater in them. The samples furthest offshore (bottom of Table 4) show virtually no amount of groundwater present and are considered to be representative of ocean water salinity and nutrient levels.

The best way to depict the changes in groundwater discharging at the shoreline as a result of activities on land is by a mixing line analysis. Based on available data in this case, such an analysis would depict the changes in groundwater chemistry between the B-1 monitor well and in the groundwater discharged along the shoreline. For both nitrogen and phosphorus, the mixing line is created by the average of the top samples in the B-1 monitor well (top of Table 3) and the median value of the offshore samples (bottom of Table 4) plotted against salinity. If there are no changes to the nutrient levels in the groundwater as it moves from the B-1 monitor well to discharges at the shoreline, the shoreline samples would plot directly on or near to the mixing line based on the assumption that the shoreline sample is simply a dilution of the groundwater in the B-1 monitor well and the ocean water as represented by the median of the offshore samples. If onshore activities are adding either nitrogen or phosphorus to the groundwater, the shoreline samples would plot above the mixing line. Conversely, if natural processes are removing either nitrogen or phosphorus, the shoreline samples would plot below the mixing line.

Figure 13 is a mixing line plot of total nitrogen. Clearly, results for the shoreline samples at Transects 1 and 2, as well as in the B-7 monitor well, show an addition of nitrogen in the movement of groundwater across the project site to the shoreline. The shoreline samples at Transects 3, 4, and 5, which are all located to the south of the project site, do not show such an enrichment.

Figure 14 is a similar mixing line plot for total phosphorus. All five of the shoreline samples plot on or below the mixing line. Those plotting significantly below the mixing line (Transects 1, 2, and 3)

Table 3. Water Quality Results of Grab Samples from the B-1 and B-7 Monitor Wells on April 11 and May 24, 2017

Monitor Well	Sample Date	Sample Depth	Forms of Nitrogen (µM)				Forms of Phosphorus (µM)			Silica (µM)	Salinity (PPT)
			NO ₃	NH ₄	TON	TN	PO ₄	TOP	TP		
B-1	4/11/2017	Top	33.80	1.90	17.10	52.80	2.60	0.80	3.40	812	1.52
	5/24/2017	Top	36.80	6.80	7.90	51.50	3.20	0.85	4.05	809	2.29
	4/11/2017	Mid	33.90	3.50	13.10	50.50	3.60	0.30	3.90	830	1.62
	5/24/2017	Mid	31.80	2.50	3.60	37.90	3.20	0.45	3.65	794	2.59
	4/11/2017	Bottom	33.00	3.50	7.00	43.50	3.90	0.20	4.10	827	1.85
	5/24/2017	Bottom	31.50	1.70	5.40	38.60	3.20	1.75	4.95	783	2.55
B-7	4/11/2017	Top	45.80	2.60	22.10	70.50	2.60	0.60	3.20	842	1.57
	5/24/2017	Top	47.10	1.20	57.80	106.10	3.20	0.75	3.95	808	2.32
	4/11/2017	Mid	13.30	3.30	16.30	32.90	4.80	0.10	4.90	530	3.09
	5/24/2017	Mid	20.10	0.70	63.30	84.10	5.30	0.05	5.35	562	3.02
	4/11/2017	Bottom	4.30	5.20	26.30	35.80	4.50	0.10	4.60	455	21.23
	5/24/2017	Bottom	26.80	0.10	65.30	92.20	4.10	0.45	4.55	714	8.63

- Notes:
1. Grab Samples taken by TNWRE with a thief sampler.
 2. Water quality analysis by Marine Analytical Specialists.
 3. Results in micro-molar (µM) can be converted to milligrams per liter (MG/L) by multiplying by the atomic weight and dividing by 1000.



Google Earth

feet
meters

3000
900



Figure 12
Locations of the Five Offshore Transects
Sampled by Marine Research Consultants on
May 17, 2017

Table 4. Water Quality Results from the Five Shoreline Transects Shown on Figure 10 as Sampled by Marine Research Consultants on May 17, 2017

Transect No.	Forms of Nitrogen (μM)			Forms of Phosphorus (μM)			Silica (μM)	Salinity (PPT)
	NO_3	NH_4	TON	TN	PO_4	TOP		
1	8.11	1.32	13.68	23.11	0.14	0.32	83.9	30.24
2	16.29	2.57	11.13	29.99	0.41	0.24	157	27.38
3	1.44	0.25	7.79	9.48	0.18	0.18	53.6	32.76
4	0.60	0.39	5.48	6.47	0.16	0.19	25.9	33.81
5	0.32	0.29	8.61	9.22	0.13	0.20	11.0	34.34

Offshore Surface Samples

Transect No.	Forms of Nitrogen (μM)			Forms of Phosphorus (μM)			Silica (μM)	Salinity (PPT)
	NO_3	NH_4	TON	TN	PO_4	TOP		
1	0.55	0.53	7.36	8.44	0.14	0.19	13.9	34.59
2	0.28	0.33	7.56	8.17	0.12	0.18	5.55	34.67
3	0.10	0.43	5.87	6.40	0.12	0.23	8.00	34.67
4	BDL	0.24	5.26	5.50	0.10	0.23	3.69	34.74
5	0.09	0.53	5.81	6.43	0.13	0.23	5.67	34.68
Median	0.10	0.43	5.87	6.43	0.12	0.23	5.67	34.67

- Notes:
1. Samples taken by Marine Research Consultants on May 17, 2107.
 2. Water quality analysis by Marine Analytical Specialists.
 3. Results in micro-molar (μM) can be converted to milligrams per liter (MG/L) by multiplying by the atomic weight and dividing by 1000.

Figure 13. Mixing Line Analysis of Total Nitrogen in Shoreline Samples at Transects 1 to 5
(Refer to Figure 12 for Transect Locations)

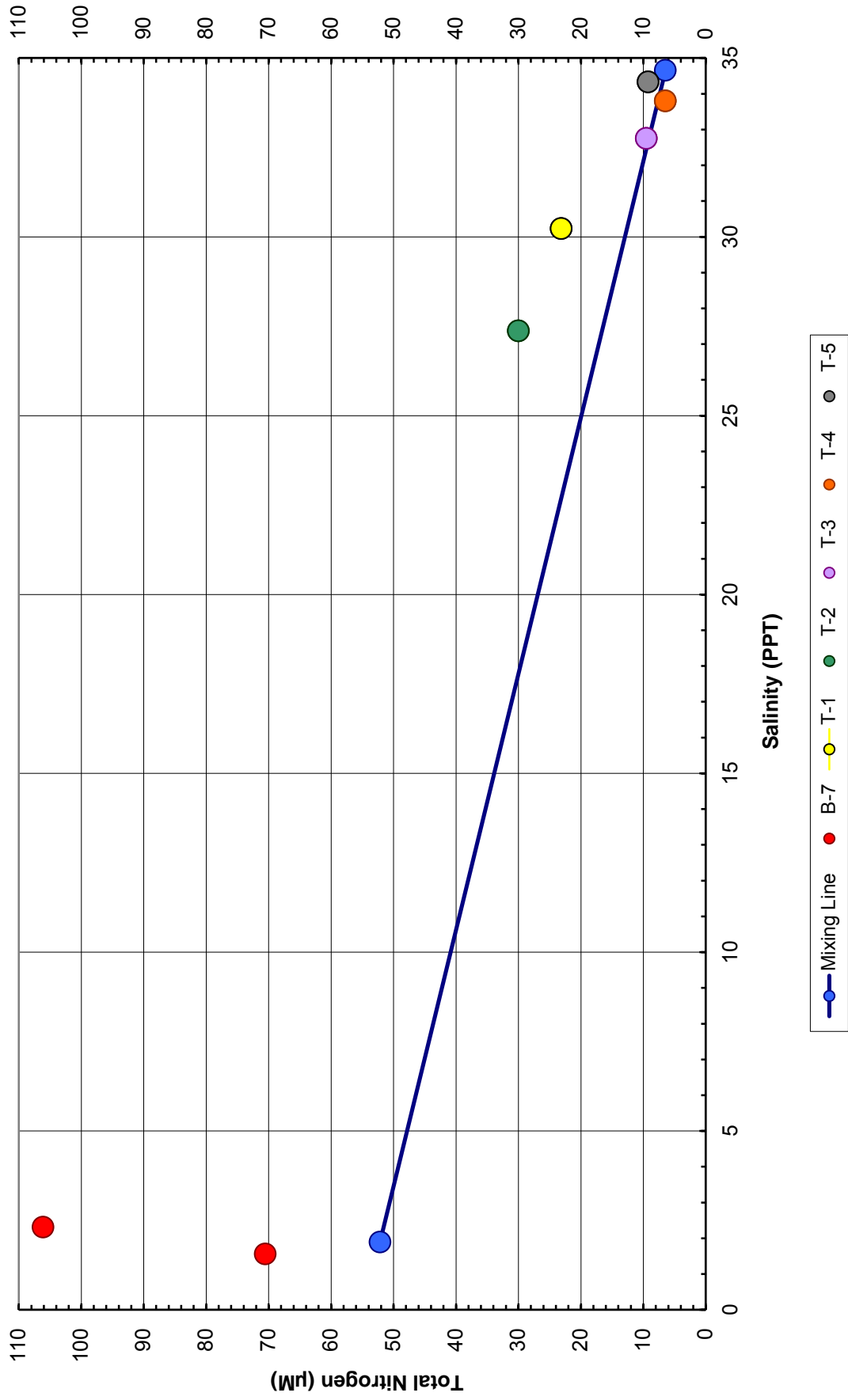
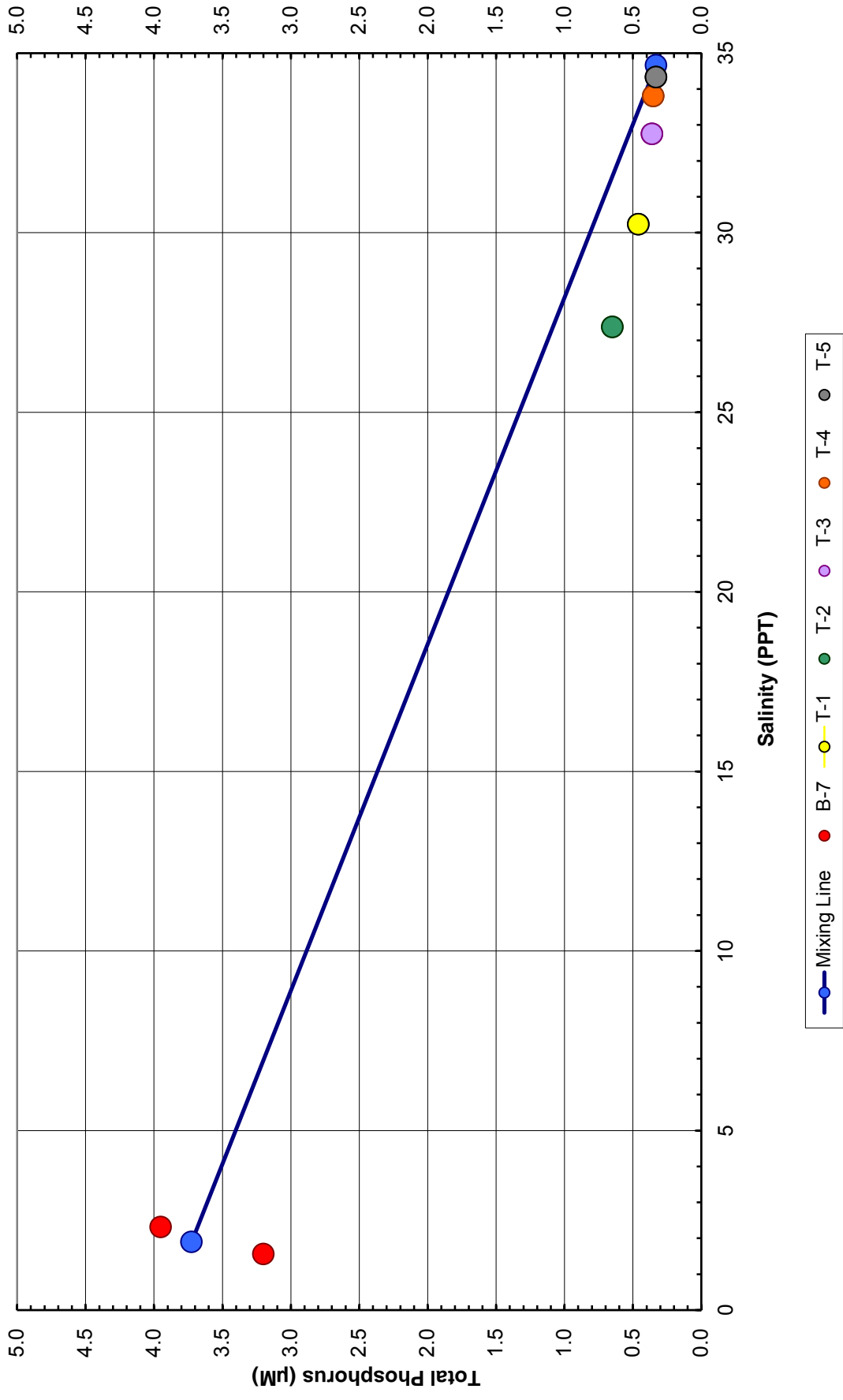


Figure 14. Mixing Line Analysis of Total Phosphorus in Shoreline Samples at Transects 1 to 5
(Refer to Figure 12 for Transect Locations)



presumably reflect the ongoing natural removal of phosphorus in groundwater as it moves to its shoreline discharge.

SURFACE WATER OCCURRENCE IN THE VICINITY OF THE PROJECT SITE

Overview of Surface Water Occurrence

There are no perennial streams or other surface water features in the near vicinity of the project site which would effect or be effected by the proposed project. Surface water occurs only during and immediately following rainfall events of sufficient intensity to produce surface water runoff.

Existing Stormwater Runoff Infrastructure

Stormwater runoff is conveyed to the shoreline in the near vicinity of the project site at the two locations shown on Figure 15. Facilities which deliver runoff to Shoreline Discharge Site 1 consist of a grated field inlet in the gutter on the mauka side of Kamehameha Highway and a 24-inch pipeline which runs from the field inlet beneath the highway and alongside the Fire Station to its point of discharge about 100 feet from the shoreline. The field inlet picks up most of the runoff from the Foodland parking lot and essentially all of the runoff which sheet flows off the three contiguous Hanapohaku parcels into the Kamehameha Highway gutter and moves south to the grated inlet.

The facilities which convey surface water runoff to Shoreline Discharge Site 2 drain a significantly larger area. Drainage facilities in Pupukea Road collect runoff from about 130 mauka acres, including all of Hakuola Gulch, and convey the runoff via pipes and open channel to the catch basin at the intersection of Pupukea Road and Kamehameha Highway. From the catch basin, runoff crosses beneath Kamehameha Highway and runs south parallel to the highway to its discharge point shown on Figure 15. Runoff from the mauka portion of the Foodland site discharges at this location.

POTENTIAL IMPACTS ON WATER RESOURCES OF THE PUPUKEA RCCC PROJECT

Overview

The project described in the initial sections of this report has the potential to impact groundwater, surface water, and the nearshore marine waters in the following three ways: (1) by the additional consumption of drinking water from the BWS system; (2) by the implementation of the drainage system infrastructure; and (3) by the additional generation of wastewater that will be treated and disposed of onsite. Each of these potential impacts is quantified in the sections following.

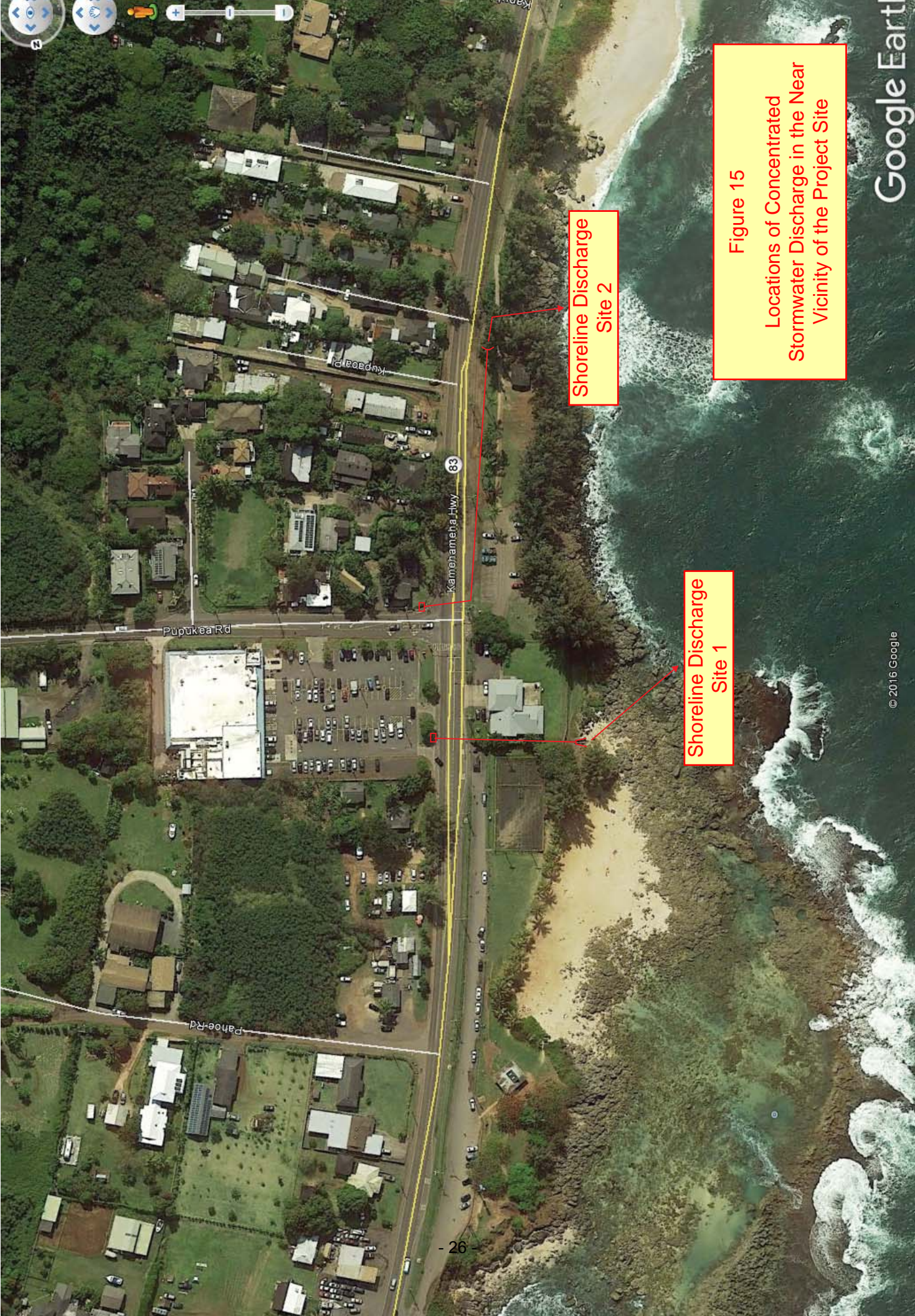


Figure 15

Locations of Concentrated Stormwater Discharge in the Near Vicinity of the Project Site

Shoreline Discharge Site 2

Shoreline Discharge Site 1

Additional Consumption of Drinking Water from the BWS System

At present, the total use of drinking water by the three Hanapohaku parcels and the adjacent Foodland parcel is approximately 4700 GPD. The projected increase on the three Hanapohaku parcels is about 6000 GPD (from 2200 to about 8200 GPD). For the Foodland parcel, additional landscape irrigation could increase the total use from 2500 to 3000 GPD. The total increase of about 6500 GPD would represent a permanent commitment of this potable quality groundwater resource for these uses. The water would come from BWS wells located in the adjacent Waialua Aquifer. However, the uses do qualify as “reasonable beneficial” as defined under the State Water Code and the relatively small amount is well within the hydraulic capacity of BWS’ system. As such, the additional draft of groundwater by BWS’ wells from the Waialua Aquifer is not considered to be significant.

Implementation of the Drainage System

Implementation of the proposed drainage system will reduce the volume of surface water from the three Hanapohaku parcels and from a portion of the parking lot of the Foodland parcel. Use of bioswales and other BMPs and the installation of subsurface detention storage will substantially reduce the suspended and bedload sediment that currently is carried into the marine environment by surface runoff. Implementation of the larger than required retention storage of 26,600 cubic feet will substantially reduce the volume of runoff from the Hanapohaku parcels. An approximation of the extent of this reduction for 24-hour storms of 1- to 50-year recurrence intervals is presented on Table 5. Notes at the bottom of the table explain the basis of the calculations. Using the SCS method to compute runoff, storm rainfalls of up to 4 inches (greater than the 1-year, 24-hour event) would be entirely retained in detention storage. This retained water would eventually percolate to the groundwater below. In the process of percolation to groundwater and the subsequent lateral travel to discharge into the marine environment, nitrogen and phosphorus concentrations will be significantly reduced by denitrification and absorption processes. In all respects, the project’s proposed drainage system will have a significant environmental benefit in comparison to the present use of the property.

Wastewater Collection, Treatment, and Disposal

There are three onsite wastewater treatment systems to consider: The existing system on the Foodland parcel; the existing system on TMK 5-9-011:068, the Hanapohaku parcel adjacent to Foodland; and the new system proposed for the Pupukea RCCC project. Each is described and quantified in the sections following.

Table 5. Comparative Runoff Volumes for Pre- and Post-Development of the Three Hanapohaku Parcels for 24-Hour Storms of Varying Recurrence Intervals

Recurrence Interval (Years)	24-Hour Rainfall (Inches)	Present Land Use Amount of Runoff		Proposed Development					Project's Reduction of Runoff Volume (Cubic Feet)
		Amount of Runoff		Detained Onsite (Cubic Feet)	Net Release (Cubic Feet)	Amount of Runoff			
		Inches	Cubic Feet			Inches	Cubic Feet		
1	3.46	1.750	17,279	2.232	22,038	22,038	0	17,279	
2	4.81	2.910	28,732	3.489	34,449	26,600	7,849	20,883	
5	6.65	4.589	45,310	5.254	51,876	26,600	25,276	20,034	
10	8.07	5.926	58,511	6.637	65,531	26,600	38,931	19,580	
25	10.0	7.776	76,777	8.531	84,232	26,600	57,632	19,145	
50	11.5	9.229	91,123	10.011	98,845	26,600	72,245	18,878	

Notes: 1. Storm rainfall amounts from NOAA Atlas 14.

2. The area of the three Hanapohaku parcels is 2.72 acres.

3. Runoff calculated by the SCS Curve Number (CN) method. CN value for the present land use is 82. CN for the proposed development is 88.

4. Stormwater detention to be provided is 26,200 cubic feet.

Foodland Onsite Wastewater Treatment System. As described in J³ Engineering LLC (August 2011), this system consists of a 1000 gallon pre-loader tank, a 15,000 gallon ATU, and about 27,000 square feet of absorption bed area, all in the site's parking lot. The system was designed to handle 2500 GPD of wastewater. The actual wastewater generation rate is not known. If it amounts to 80 percent of the 2500 GPD of ongoing water use, it would be 2000 GPD. The amount of wastewater generation, its level of treatment, and the manner of its disposal will not be changed as a result of this project. Further, its impact on the quality and quantity of groundwater discharging into the marine environment will not change and this impact is already reflected in the quality of the water samples collected along the shoreline (refer back to Table 4).

Existing Wastewater Treatment System on TMK 5-9-011:068. The basis of design of this system is described in Laulea Engineering LLC (April 2016). It consists of a 320 gallon grease interceptor tank, two ATUs of nominal 800 GPD capacity, and 1640 square feet of leach field absorption area. It is not known what the actual rate of wastewater treatment and disposal is, but it is conservatively assumed to be 400 GPD. All components of this system are to be removed for the development of the Pupukea RCCC project.

System Proposed for the Pupukea RCCC Project. The basis of design of the proposed system is described in Enviniti LLC (August 2017). It would consist of the following: grease interceptor tanks; pre-loader tanks; an aeration tank; stand alone chemical basins; a sequence batch reactor tank system (or other) to produce secondary quality effluent; and 27,000 square feet of absorption bed area for disposal. The design wastewater flow rate is 10,533 GPD. As indicated earlier, it is assumed for this assessment that actual wastewater production will be 7320 GPD as a year-round average rate. The balance of the water use would be for landscape irrigation.

Net Increase of Treated Wastewater to the Groundwater and Marine Environment. The contribution of the Foodland wastewater treatment system will remain unchanged. Removal of the existing system in TMK 5-9-011:068 and its replacement with the system proposed for the Pupukea RCCC will result in a net increase in the production of wastewater of approximately 6920 GPD. The resulting net increase in total nitrogen and total phosphorus to the groundwater flowing beneath the project site is approximated with the following assumptions:

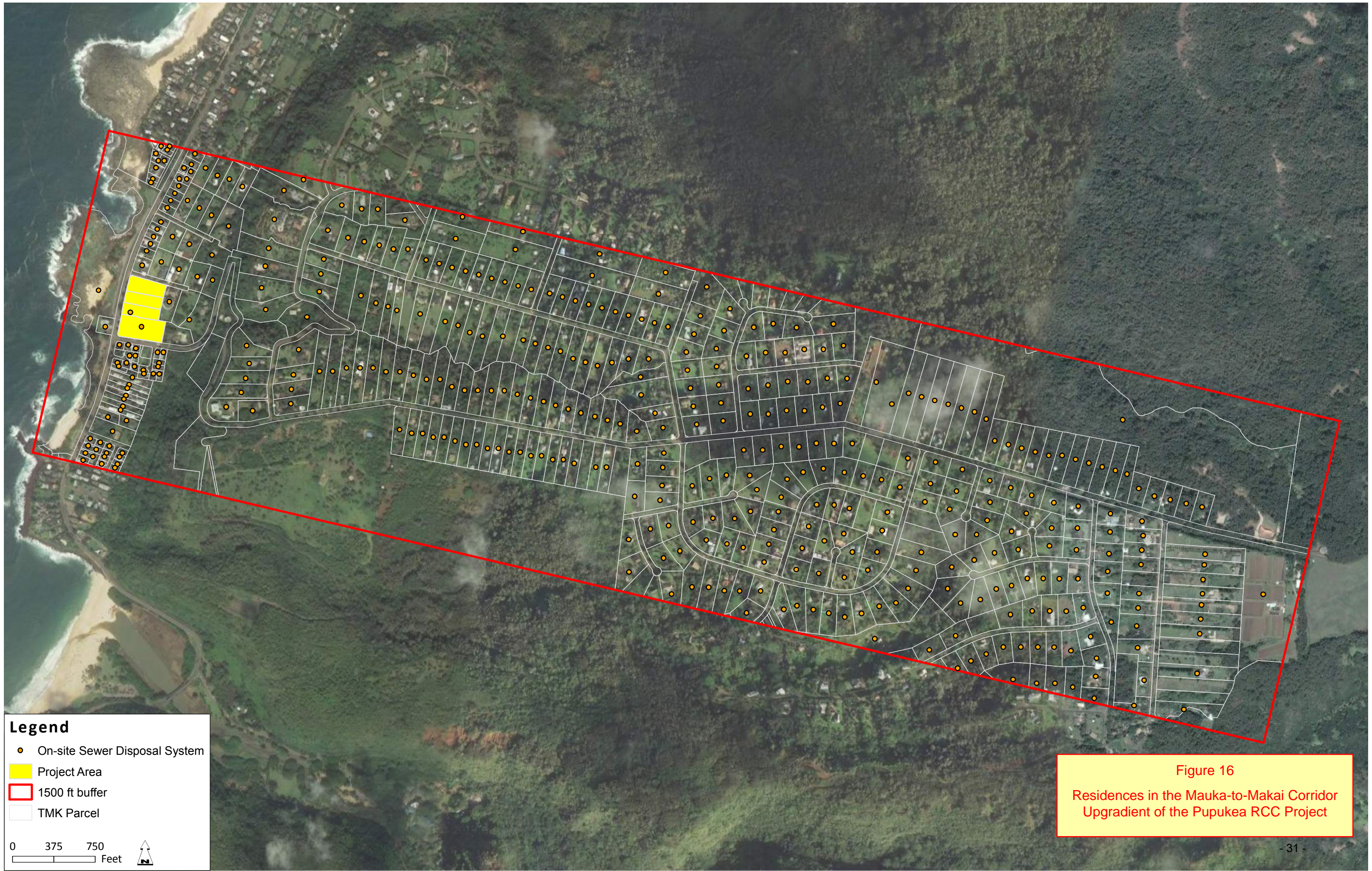
- The net increase in wastewater production will be 6920 GPD.
- Average nitrogen and phosphorus concentrations in the wastewater are 60 and 12 mg/l, respectively. These concentrations are toward the high end of the ranges for typical domestic sewage.

- Nutrient removal rates in the project's ATUs will be 50 percent for nitrogen and 25 percent for phosphorus, resulting in residual concentrations of 30 and 9.0 mg/l respectively in the treated wastewater. This is a conservative assumption as the actual removal rates are likely to be greater.
- Further nutrient removal will occur during the disposal in the absorption beds, downward percolation through the vadose zone (including travel through clay); and movement with groundwater to discharge into the marine environment. These removal rates are conservatively approximated to be 80 percent for nitrogen and 90 percent for phosphorus. Based on these assumptions, the residual concentrations of wastewater ultimately discharging into the marine environment would be 6.0 mg/l for nitrogen and 0.90 mg/l for phosphorus. For 6920 gallons of treated wastewater, these additions would be equivalent to increases of 0.35 pounds per day of nitrogen and 0.051 pounds per day of phosphorus.

In comparison to the calculated nutrient increases in the groundwater discharging into the marine environment as a result of the project, the present ongoing groundwater discharge of these nutrients can be approximated as follows:

- Based on groundwater recharge calculations in Engott et al (2015), the aquifer's total groundwater flow rate is 50 MGD, equivalent to 5.5 MGD per coastal mile.
- The project site mauka of Kamehameha Highway spans 560 feet of coastline. At the coastline, contaminants percolating to groundwater from the site will impact at least 760 feet of groundwater discharging along the shoreline due to lateral dispersion. This groundwater flow is approximately 790,000 GPD.
- Concentrations of nitrogen and phosphorus in groundwater presently flowing beneath the site and discharging into the marine environment are assumed to be the averages of the top samples in the B-7 monitor well (refer back to Table 3): 88.3 μ M (1.24 mg/l) for nitrogen; and 3.58 μ M (0.111 mg/l) for phosphorus.
- For the above concentrations and a 790,000 GPD groundwater flow, present daily nitrogen and phosphorus discharges into the marine environment along the 760 feet of shoreline amount to 8.16 and 0.73 pounds, respectively.
- For the calculated nutrient loading as a result of the project's net increase of 6920 GPD of treated wastewater, the nitrogen addition would be an increase of 4.3 percent over 760 feet of the coastline and the phosphorus addition would amount to 7.0 percent.

Figure 16 has been prepared to put these calculated potential nutrient increases in perspective. There are more than 500 residential units nominally upgradient of the project site. 438 of these have registered individual wastewater systems with the Department of Health: 9 are aerobic systems; 19 are



Legend

- On-site Sewer Disposal System
- Project Area
- 1500 ft buffer
- TMK Parcel

0 375 750
Feet



Figure 16
Residences in the Mauka-to-Makai Corridor
Upgradient of the Pupukea RCC Project

listed as septic systems, presumably with leach field disposal; 118 are listed as soil treatment systems; 279 are cesspools; and 13 are listed as multiple. If the average wastewater production is 250 GPD per residence, more than 100,000 GPD of wastewater is being disposed of in the 3000-foot wide mauka-to-makai corridor outlined in Figure 16. This is more about 15 times greater than the 6,920 GPD wastewater increase attributed to the Pupukea RCCC project. The impact to groundwater quality of this ongoing wastewater disposal is reflected in the quality of water sampled in the B-1 and B-7 monitor wells as listed in Table 3. The fact is that the nutrient levels in these two wells show little or no influence of the ongoing wastewater disposal over and above the expected levels of nutrients in groundwater as a result of natural processes. This is at least an indirect confirmation that the nutrient removal rates assumed in the calculation of the Pupukea RCCC's potential impact are quite conservative.

REFERENCES

- Babcock, R. W., C. Nguyen, S. Taguchi, J. DeGracia, and X. Visaya. 2016. Performance Evaluation of a Waipono Pure – 800 Wastewater System. WRRC-2016-26, Water Resources Research Center, University of Hawaii.
- Engott, J. A., A. G. Bassiouni, Maoya, and S. K. Izuka. 2015. Spatially Distributed Groundwater Recharge for 2010 Land Cover Estimated Using a Water – Budget Model for the Island of Oahu, Hawaii. USGS Scientific Investigations Report 2015-5010.
- Enviniti LLC. August 2017. Final Wastewater Report, Pupukea Rural Community Commercial Center. Consultant report prepared for Group 70 International, Inc.
- George A. L. Yuen and Associates, Inc. 1990. Water Resources Protection Plan, Volumes I and II. Consultant report prepared for the Commission on Water Resource Management, DLNR, State of Hawaii.
- Group 70 International, Inc. August 2017. Preliminary Engineering Report, Pupukea Rural Community Commercial Center. Consultant report prepared for Hanapohaku, LLC.
- J3 Engineering LLC. August 2011. New Aerobic Treatment Works Design for Foodland Pupukea Supermarket. Memo Report to DOH Wastewater Branch with Attachments.
- Laulea Engineering LLC. April 2016. Shark's Cove Lot 2A IWS Design. Construction plans of the wastewater system installed on TMK 5-9-011:068
- Lusk, M., G.S. Toor, and T. Obreza. July 0211. Onsite Sewage Treatment and Disposal Systems: Phosphorus. Document SL349, IFAS Extension, University of Florida.
- Marine Research Consultants. 2017. Assessment of Marine Chemistry and Community Structure in the Vicinity of the Proposed Pupukea Rural Community Commercial Center. Consultant report prepared for Group 70.
- Mink, J. F. 1988. Groundwater Conditions in Pupukea-Paumalu, Oahu. Consultant report prepared for Ohbayashi Hawaii Corporation.
- Mink, J. F. 1989. Pupukea Golf Course Wells – Summary of Pump Test Results and Recommendations for Pump Size and Settings. Consultant report prepared for Ohbayashi Hawaii Corporation.
- Shade, P. J. and W. D. Nichols. 1996. Water Budget and the Effects of Land-Use Changes on Ground-Water Recharge, Oahu, Hawaii. USGS Professional Paper 1412-C.

REFERENCES

(continued)

Takasaki, K. J. and J. F. Mink. 1985. Evaluation of Major Dike-Impounded Ground-Water Reservoirs, Island of Oahu. U.S. Geological Survey Water Supply Paper 2217.

Takasaki, K. J. and S. Valenciano. 1969. Water in the Kahuku Area, Oahu, Hawaii. U.S. Geological Survey Paper 1874.

TNWRE Inc. 1993. Groundwater Evaluation for the Proposed Lihilani Project in Pupukea-Paumalu, Oahu, Hawaii. Consultant report prepared for Quon-Yamagishi Partnership.

Wilson Okamoto Corporation. 2008. Water Resource Projection Plan. Consultant report prepared for the Commission on Water Resource Management, DLNR, State of Hawaii.

Appendix

Logs of the B-1 and B-7 Boreholes by Geolabs, Inc.



GEOLABS, INC.

Geotechnical Engineering

HANAPOHAKU COMMERCIAL DEVELOPMENT
Pupukea

Log of Boring

1

Drilling Notes	Sample Quality	Field				Depth (feet)	Sample	Graphic	USCS	Description
		Rec. Length/ Sample Length (inches)	RQD Length/ Sample Length (inches)	Blows/ 6"	Pocket Pen. (tsf)					
									Approximate Ground Surface Elevation (feet): 45 * Latitude:21.649 Longitude: -158.06134	
	Good	16/18"		5/10/15	4.0	0-1		GP	Gray and white coarse GRAVEL (BASALTIC) with some crushed concrete, medium dense, dry (fill)	
	Fair	12/18"		7/7/12		1-2		CH	Brown SILTY CLAY with traces of gravel (basaltic), stiff, moist (fill)	
	Good	16/18"		7/11/14	4.5	2-3			Mottled reddish brown with trace gray SILTY CLAY with some decomposed gravel, hard, moist (older alluvium) grades more gravelly and silty locally	
	Fair	15/18"		6/15/18		4-5				
	Good	15/15"		24/48/50/3"	4.5	6-15				
Drill water circulating		11:18 26/30"	18/30"			15-20			Gray vugular BASALT , slightly to moderately fractured, unweathered to slightly weathered, very hard (a'a basalt)	
		11:27 12:10 60/60"	49/60"			20-25			Brownish gray subangular GRAVELLY COBBLES (BASALTIC) with a little silty sand, dense, moist (clinker)	
		12:32 12:10 24/60"	6/60"			25-30			Gray vugular BASALT , moderately fractured, slightly weathered, very hard (a'a basalt)	
		12:32 13:04 51/60"	22/60"			30-35				

DRAFT

BORING LOG DRAFT 7447-00.GPJ GEOLABS.GDT 12/23/16

Date/Time Started: December 15, 2016 09:30	Water Level: 42.6 ft. 12/19/2016 0805 HRS	Plate .1
Date/Time Completed: December 19, 2016 14:30		
Logged By: S. Latronic	Driller Name: K. Vongamath	
Project Engineer: Glenn Barut	Drill Rig: CME-75DG2	
Total Depth: 101 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order: 7447-00	Driving Energy: 140 lb. wt., 30 in. drop	



GEOLABS, INC.

Geotechnical Engineering

HANAPOHAKU COMMERCIAL DEVELOPMENT
Pupukea

Log of Boring

1

Field						Depth (feet)	Sample	Graphic	USCS	Description
Drilling Notes	Sample Quality	Rec. Length/ Sample Length (inches)	RQD Length/ Sample Length (inches)	Blows/ 6"	Pocket Pen. (tsf)					
slight water loss @ 39.5'		13:32 14:33				35			GW	Brownish gray subangular SANDY GRAVEL (BASALTIC) with a little cobbles, dense, moist (clinker)
		46/60"	9/60"			38				Brownish gray to gray vesicular BASALT , closely fractured, slightly weathered, hard (pahoehoe basalt)
		14:43 14:51				40				Orangish brown and gray brecciated BASALT , closely fractured, slightly to moderately weathered, medium hard (welded clinker)
		58/60"	20/60"			45				Gray vugular BASALT , slightly to moderately fractured, unweathered to slightly weathered, very hard (a'a basalt)
		15:26 15:37				48				
		60/60"	49/60"			50				
		15:54 16:09				52				
		36/60"	20/60"			55				
		16:21 16:30				58				
		56/60"	21/60"			60				
Lost drill water circulation		16:42 09:18				62				Brownish gray subangular GRAVELLY COBBLES (BASALTIC) , dense, wet (clinker)
		56/60"	20/60"			65				Gray vugular BASALT , moderately fractured, unweathered to slightly weathered, hard to very hard (a'a basalt)
		09:30 09:45				68				Orangish brown and gray subangular GRAVELLY COBBLES (BASALTIC) with some sand, medium dense, wet (clinker)
	27/60"	0/60"			70					

DRAFT

Date/Time Started:	December 15, 2016 09:30	Water Level:	42.6 ft. 12/19/2016 0805 HRS	Plate .2
Date/Time Completed:	December 19, 2016 14:30			
Logged By:	S. Latronic	Driller Name:	K. Vongamath	
Project Engineer:	Glenn Barut	Drill Rig:	CME-75DG2	
Total Depth:	101 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7447-00	Driving Energy:	140 lb. wt., 30 in. drop	

BORING LOG DRAFT 7447-00.GPJ GEOLABS.GDT 12/23/16



GEOLABS, INC.

Geotechnical Engineering

HANAPOHAKU COMMERCIAL DEVELOPMENT
Pupukea

Log of Boring

1

Field						Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Drilling Notes	Sample Quality	Rec. Length/ Sample Length (inches)	RQD Length/ Sample Length (inches)	Blows/ 6"	Pocket Pen. (tsf)					Description
		09:58 10:07				75				Gray dense BASALT , slightly to moderately fractured, unweathered to slightly weathered, very hard (a'a basalt)
		60/60"	46/60"							
		10:17 10:27				80				
		60/60"	22/60"							
		10:47 10:58				85				grades to vugular
		60/60"	42/60"							
		11:27 11:42				90				Orangish brown and gray cemented BASALT , moderately to closely fractured, moderately weathered, medium hard (welded clinker)
		60/60"	39/60"							
		11:53 12:03				95				Gray vugular BASALT , moderately fractured, unweathered to slightly weathered, very hard (a'a basalt)
		44/60"	15/60"							
		12:16 12:26				100				
		60/60"	38/60"							
		12:44								Boring terminated at 101 feet

DRAFT

BORING LOG DRAFT 7447-00.GPJ GEOLABS.GDT 12/23/16

Date/Time Started:	December 15, 2016 09:30	Water Level:	▼ 42.6 ft. 12/19/2016 0805 HRS	Plate .3
Date/Time Completed:	December 19, 2016 14:30			
Logged By:	S. Latronic	Driller Name:	K. Vongamath	
Project Engineer:	Glenn Barut	Drill Rig:	CME-75DG2	
Total Depth:	101 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7447-00	Driving Energy:	140 lb. wt., 30 in. drop	



GEOLABS, INC.

Geotechnical Engineering

HANAPOHAKU COMMERCIAL DEVELOPMENT
Pupukea

Log of Boring

7

Drilling Notes	Sample Quality	Field		Blows/ 6"	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
		Rec. Length/ Sample Length (inches)	RQD Length/ Sample Length (inches)							Description
Lost drill water circulation		12:26 12:56								grades to slightly fractured
		57/60"	57/60"			75				
		13:17 13:29								
		60/60"	58/60"			80				grades to massive
		14:10 14:19								
		60/60"	52/60"			85				
drill water returned		14:37 14:50								Brownish gray to gray cemented BASALT , moderately fractured, slightly weathered, hard (welded clinker)
		60/60"	40/60"			90				
		15:02 15:16								Gray vugular BASALT , slightly to moderately fractured, unweathered to slightly weathered, very hard (a'a basalt)
	14:25 15:43									
	54/60"	42/60"			95					
	59/60"	46/60"			100					
	15:55									Boring terminated at 100.5 feet
						105				

Date/Time Started:	December 20, 2016 12:05	Water Level: ▼	35.2 ft. 12/22/2016 0715 HRS	Plate .3
Date/Time Completed:	December 22, 2016 12:30			
Logged By:	S. Latronic	Driller Name:	K. Vongamath	
Project Engineer:	Glenn Barut	Drill Rig:	CME-75DG2	
Total Depth:	100.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7447-00	Driving Energy:	140 lb. wt., 30 in. drop	

BORING LOG DRAFT 7447-00.GPJ GEOLABS.GDT 12/23/16

APPENDIX C

ASSESSMENT OF MARINE WATER CHEMISTRY AND
COMMUNITY STRUCTURE IN THE VICINITY OF THE
PROPOSED PUPUKEA RURAL COMMUNITY COMMERCIAL CENTER,
NORTH SHORE, OAHU, HAWAII

**ASSESSMENT OF MARINE WATER CHEMISTRY AND COMMUNITY
STRUCTURE IN THE VICINITY OF THE PROPOSED PŪPŪKEA
RURAL COMMUNITY COMMERCIAL CENTER**

NORTH SHORE, OAHU, HAWAII

Prepared for:

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Prepared by:

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1039 Waakaua Pl.
Honolulu, HI 96822

September 2017

I. INTRODUCTION AND PURPOSE

The proposed Pūpūkea Rural Community Commercial Center (PRCCC) project site is comprised of four parcels in Pūpūkea, North Shore, Oahu, Hawaii fronting Kamehameha Highway. Three of the contiguous parcels owned by Hanapohaku LLC (2.7 acres) are located to the north of the Foodland Pūpūkea parcel (1.7 acres). The Hanapohaku LLC parcels contain a mix of commercial ocean recreational rental concessions including Seammaids Beach Boutique and North Shore Surf Shop, a real estate office, dentist office, and mobile food trucks. The existing uses on the three parcels will be completely removed, while the existing Foodland grocery store will remain in place.

The project will develop a Rural Community Commercial Center with an overall focus on sustainable principles, consistent with the design guidelines of the North Shore Sustainable Communities Plan. The rural center will provide goods and services for the Pūpūkea, Waimea, and Kawaihoa communities. Infrastructure will be provided to support the new facilities, including driveways, parking with solar panel canopies, drainage, water supply, and wastewater. The planned floor area of the facilities will be approximately 27,500 sf of leasable area (30,000 sf gross floor area). Design of the facilities will be consistent with the country character of the North Shore. The project will comply with the North Shore Sustainable Communities Plan guidelines for Rural Community Commercial Centers by providing compact and efficient organization of various commercial services; reflecting the rural character compatible with surrounding open spaces and adjacent residential uses; limiting building heights to two stories; and visually screening parking from the street and adjacent residential lots with landscaping. Buildings will be set back from the highway.

While all planning and construction activities will place a high priority on maintaining the existing relatively pristine nature of the marine environment, it is nevertheless important to address any potential impacts that may be associated with the planned project. None of the proposed land uses includes any direct alteration of the coastal areas or nearshore waters. The potential exists, however, for the project to affect the composition and volume of groundwater that flows beneath the project site, as well as surface runoff emanating from the project. As all groundwater that could be affected by the project subsequently reaches the ocean, it is recognized that there is potential for the project to affect the marine environment. This concern is especially critical for Sharks Cove, which lies directly makai of the project site. Sharks Cove is a recreational area that is heavily utilized for water recreation, and is one of the premier snorkeling and shore-based SCUBA diving areas in the State of Hawaii. Therefore, important questions include the potential impacts from constituents added to groundwater which could cause alterations to water quality and marine life.

In the interest of addressing these concerns and assuring maintenance of environmental quality, a baseline marine environmental assessment and potential impact analysis of the nearshore areas off the PRCCC property was conducted in May/June 2017.

The rationale of this assessment is fourfold; 1) to provide a comprehensive and accurate depiction of the marine habitat in terms of both water chemistry, physical structure, and biotic community structure; 2) to determine the contributions of groundwater and surface flow to the composition of nearshore marine waters before the commencement of any project construction activities; 3) to evaluate the effects that such input, as well as other natural “stressors,” exerts on existing marine community structure. The 4th objective is to combine this information with estimates of changes in groundwater and surface water flow rates and chemical composition that could result from the project. These predicted changes in groundwater and surface water flow rates have been supplied by Tom Nance Water Resource Engineering (TNWRE 2017). Results of the combined evaluation will quantify predicted changes to marine water chemistry offshore of the project site. Such quantification will indicate if, and to what degree, there is the potential for negative effects to the marine environments from the proposed project.

II. WATER CHEMISTRY

A. METHODS

Five transect survey sites were established downslope of the PRCCC property. Transect site 1 was located north of the project site and bisected Sharks Cove. Transect site 2 was located off the northern boundary of the project site and bisected the reef flat bounding Sharks Cove. Transect site 3 was located off the southern end of the project site, while Transect 4 originated at the mouth of the Stream draining upslope areas mauka of the project site. Transect 5, located at the southern end of Three Tables beach served as a control that should be beyond the influence of the project area (Figure 1).

Water quality was evaluated at each site on transects that were oriented perpendicular to the shoreline and depth contours. Water samples were collected at 6 to 10 locations on each transect from the highest wash of waves at the shoreline to distances of 185-300 meters (m) offshore. Sampling locations were determined by hand-held GPS. Such a sampling scheme was designed to span the greatest range of salinity with respect to potential freshwater efflux at the shoreline. Sampling was more concentrated in the nearshore zone because this area is most likely to show the effects of shoreline modification. At locations where water depth was less than one (1) meter, a single sample was collected within 10 centimeters (cm) of the air-water interface. At locations where water depth was greater than one meter a surface sample was collected within approximately 10 cm of the sea

surface, and a bottom sample was collected within 10-20 cm of the sea floor.

In order to determine chemical concentrations in unaltered groundwater, samples were also collected from wells located upslope from the project site. These data are included in an accompanying report entitled "Assessment of Potential Impacts on Water Resources of the Proposed Pūpūkea Rural Community Commercial Center" prepared by Tom Nance Water Resources Engineering in June 2017.

Water quality parameters evaluated included the ten specific criteria designated for open coastal waters in Chapter 11-54, Section 06 (Open Coastal waters) of the State of Hawaii Department of Health (DOH) Water Quality Standards. These criteria include: total nitrogen (TN), nitrate + nitrite nitrogen ($\text{NO}_3^- + \text{NO}_2^-$, hereafter referred to as NO_3^-), ammonium nitrogen (NH_4^+), total phosphorus (TP), Chlorophyll *a* (Chl *a*), turbidity, temperature, pH and salinity. In addition, orthophosphate phosphorus (PO_4^{3-}) and silica (Si) were also reported because these parameters are sensitive indicators of biological activity and the degree of groundwater mixing.

All fieldwork was conducted on May 17, 2017 by investigators working from shore. All water samples were collected in triple-rinsed 500-milliliter acid-washed, triple rinsed polyethylene bottles, and placed on ice as soon as possible. Analyses for Si, NH_4^+ , PO_4^{3-} , and NO_3^- were performed on filtered samples with a Technicon Autoanalyzer using standard methods for seawater analysis (Strickland and Parsons 1968, Grasshoff 1983). TN and TP were analyzed in a similar fashion following digestion. Total organic nitrogen (TON) and total organic phosphorus (TOP) were calculated as the difference between TN and dissolved inorganic N, and TP and dissolved inorganic P, respectively.

Chl *a* was measured by filtering water through glass-fiber filters; pigments on filters were extracted in 90% acetone in the dark at -20°C for 12-24 hours. Fluorescence before and after acidification of the extract was measured with a Turner Designs fluorometer. Salinity was determined using an AGE Model 2100 laboratory salinometer with a readability of 0.0001‰ (ppt). Turbidity was determined using a 90-degree nephelometer, and reported in nephelometric turbidity units (NTU) (precision of 0.01 NTU).

In-situ field measurements of continuous vertical profiles of water temperature, dissolved oxygen, pH and salinity were acquired using a RBR Concerto CTD calibrated prior to fieldwork.

EPA and Standard Methods (SM) methods that were employed for chemical analyses, as well as detection limits, are listed in the Code of Federal Regulations (CRF) Title 40, Chapter 1, Part 136, are as follows:

NH_4^+ EPA 350.1, Rev. 2.0 or SM4500-NH3 G, detection limit 0.42 $\mu\text{g/L}$.

$\text{NO}_3^- + \text{NO}_2^-$, EPA 353.2, Rev. 2.0 or SM4500-NO3F, detection limit 0.28 $\mu\text{g/L}$

PO₄³⁻ EPA 365.5 or SM4500-P F, detection limit 0.31 µg/L.
Total P EPA 365.1, Rev. 2.0 or SM4500-P E J, detection limit 0.62 µg/L.
Total N SM 4500-N C., detection limit 5.60 µg/L.
Si, EPA 370.1 or SM 4500 SiO₂ E, detection limit 5.32 µg/L.
Chlorophyll a, SM 10200, detection limit 0.006 µg/L.
pH, EPA 150.1 or SM4500H+B, detection limit 0.002 pH units.
Turbidity, EPA 180.1, Rev. 2.0 or SM2130 B, detection limit 0.008 NTU.
Temperature, SM 2550 B, detection limit 0.01 degrees centigrade.
Salinity, SM 2520, detection limit 0.003 ppt.
Dissolved Oxygen, SM4500 O G, and detection limit 0.01% sat.

All fieldwork was conducted by Dr. Steven Dollar and Ms. Andrea Millan. All laboratory analyses were conducted by Marine Analytical Specialists located in Honolulu, HI (Labcode: HI 00009). This analytical laboratory possesses acceptable ratings from EPA-compliant proficiency and quality control testing.

B. RESULTS

1. Horizontal Stratification

Tables 1 and 2 show results of all water chemistry analyses for samples collected off the PRCCC site on May 17, 2017. Table 1 shows concentrations of dissolved nutrients in micromolar (µM) units; Table 2 shows concentrations in micrograms per liter (µg/L). Concentrations of eight dissolved nutrient constituents in surface and deep samples are plotted as functions of distance from the shoreline in Figure 2. Values of salinity, turbidity, Chl *a*, and temperature as functions of distance from shore are shown in Figure 3.

Several patterns of distribution are evident in Tables 1 and 2 and Figures 2 and 3. It can be seen in Figure 2 that the dissolved nutrients Si, NO₃⁻, NH₄⁺, PO₄³⁻, TP and TN display elevated concentrations in the samples collected near the shoreline relative to the most seaward samples of all five three sampling transects. Salinity displays the opposite trend, with lower values (27-30‰) in samples nearest to the shoreline, and oceanic salinity of approximately 34.8‰ at the seaward ends of the transects (Figure 3). While the gradients of nutrients and salinity occurred at all sampling sites, the greatest peak in nutrients and lowest salinity of shoreline samples occurred at Transects 1 and 2 located at Sharks Cove. On Transect 2, salinity is low and nutrient values relatively high across the entire reef flat. Seaward of the juncture of the reef flat and the open ocean (~100 m from shore) salinity is essentially oceanic with values greater than 34.6‰.

These patterns of increasing salinity and decreasing nutrient concentrations with distance from shore are a result of concentrated input of groundwater to the ocean

at or near the shoreline throughout the region fronting the PRCCC site (no rainfall or surface drainage was occurring during the sampling). Low salinity groundwater, which typically contains high concentrations of Si, NO_3^- , and PO_4^{3-} percolates to the ocean at the shoreline, resulting in a nearshore zone of mixing. In many areas of the Hawaiian Islands, such groundwater percolation results in steep horizontal gradients of increasing salinity and decreasing nutrients with distance from shore.

Water chemistry parameters that are not associated with groundwater input (TON, TOP) typically do not show the same pattern of decreasing concentration with respect to distance from the shoreline as Si, NO_3^- , PO_4^{3-} , TP and TN. However, for the present data set at Pūpūkea, there are similar shoreline peaks of Total organic N and P at the shoreline (Figures 2 and 3, Tables 1 and 2).

Similar to the patterns of dissolved inorganic nutrients, the distribution of Chl *a* also displays peaks near the shoreline with steeply decreasing gradients with distance from shore on all three transects (Figure 3, Table 1). Beyond several meters from the shoreline on the two sampling transects near Sharks Cove (T-1, T-2) the concentration of Chl *a* in surface waters remained relatively constant across the sampling scheme (Figure 3). With the exception of samples collected within several meters of the shoreline on Transects 1 and 2 where turbidity was distinctly elevated, all values were below approximately 0.2 NTU (Table 1, Figure 3). Temperature showed distinctly lower values in the samples closest to the shoreline on Transect 2, which is likely a result of mixing of cooler groundwater with warmer ocean water near the shoreline (Table 1, Figure 3).

2. Vertical Stratification

The mix of groundwater and ocean water creates a buoyant surface lens of low salinity, high nutrient water that is evident throughout the nearshore waters fronting the project site (Tables 1 and 2). With the lack of physical mixing in terms of waves and currents, the stratified water column persists along the entire length of the sampling transects off of the PRCCC property. Tables 1 and 2 and Figures 2 and 3 show concentrations of water chemistry parameters as functions of distance from shore in samples collected from surface and bottom water just above the ocean floor. It can be seen in Tables 1 and 2 that for the inorganic nutrients that displayed distinct horizontal gradients (particularly Si, and NO_3^-), there is also distinct variation between surface and deep samples. Surface values of Si and NO_3^- were consistently higher than deep values, while salinity was lower in surface samples relative to deep samples from the same location. While the difference between surface and deep samples was clearly evident with Si, NO_3^- and TN, there is not clearly distinguishable differences in surface and deep concentrations of PO_4^{3-} , TON, TOP and TP.

Nutrient constituents not associated with groundwater input (NH_4^+ , TON and TOP) do not exhibit any discernible relationship with respect to vertical stratification (Figure

3). Likewise, turbidity and Chl *a*, also showed no consistent trend with surface values not consistently elevated relative to bottom values (Figure 3).

3. Conservative Mixing Analysis

A useful treatment of water chemistry data for interpreting the extent of material input from land is application of a hydrographic mixing model. In the simplest form, such a model consists of plotting the concentration of a dissolved chemical species as a function of salinity (Officer 1979, Smith and Atkinson 1992, Dollar and Atkinson 1992). The concept of using such mixing models which scale nutrient concentrations to salinity has been recently used by the State of Hawaii Department of Health for establishing a unique set of water quality standards for the West Coast of the Island of Hawaii [Hawaii Administrative Rules, §11-54-06 (d)]. Unfortunately, similar standards have not been instituted for other areas of the State.

Comparison of the curves produced by the distribution of data with conservative mixing lines provides an indication of the origin and fate of the material in question. If the parameter in question displays purely conservative behavior (i.e., no input or removal from any process other than physical mixing), data points should fall on, or near, the conservative mixing line. If however, external material is added to the system through processes such as leaching of fertilizer nutrients to groundwater, data points will fall above the mixing line. If material is being removed from the system by processes such as biological uptake, data points will fall below the mixing line.

Figure 4 shows plots of the concentrations of Si, NO₃⁻, PO₄³⁻, and NH₄⁺ as functions of salinity for the samples collected at each sampling station in May 2017. Each graph also shows conservative mixing lines constructed by connecting the end-member concentrations of open ocean water collected at the same time as the other water samples, and average groundwater concentration from the surface layer of monitoring well B-1 located upslope of the project area (see report by TNWRE [2017] for description of monitoring wells and water chemistry data).

Dissolved Si represents a check on the model as this material is present in high concentration in groundwater, but is not a major component of fertilizer. In addition, Si is not utilized rapidly within the nearshore environment by biological processes. It can be seen in Figure 4 that data points for all five transect sites fall in a linear array on the conservative mixing line. Linear regression of the concentrations of Si as a function of salinity indicates that for all five transects, there is a highly significant R² (proportion of variation explained) of 0.93 to 0.99 indicating that the concentration of Si is dependant on salinity. The Y-intercept of the regression of Si as a function of salinity can be interpreted as the expected concentration at a salinity of zero. As groundwater has salinity close to zero (Tables 1 and 2), the Y-intercept can be used to evaluate the relationship between upslope groundwater and

groundwater that is entering the ocean at the shoreline. For monitoring well B-1 sampled upslope of the PRCCC site, the average concentration of Si is 810 μM . The upper and lower 95% confidence limits of the Y-intercepts of the regression lines of Si vs. salinity for the transects are 570-682 μM for Transect 1, 642-748 μM for Transect 2, and 799-865 μM for Transect 3, 674-822 for Transect 4, and 452-617 for Transect 5.

Hence, it can be determined that the Y-intercepts for Transects 3 and 4 fall within the range encompassing the endpoint concentration from monitoring well B-1. On the other three transects there is some alteration of groundwater Si relative to groundwater from the monitoring well. On Transects 1, 2 and 5, slightly less Si is present than what would be expected if only groundwater with the same Si content as was sampled from monitoring well B-1 was reaching the shoreline. The level of difference between the water measured in the nearshore ocean and the mixing line created using the monitoring well as an endpoint is evident in the position of the sample points from Transect sites 1, 2 and 5 below the mixing line in Figure 4.

Even though regression statistics indicate slight alteration in Si concentrations in the ocean relative to upslope groundwater at several sampling sites, such a pattern still supports the conclusion that Si is behaving as a conservative tracer and that well water sampled from the upslope well is similar in composition to groundwater entering the ocean off the PRCCC site.

The plots of NO_3^- versus salinity show a similar pattern as Si, although in a different direction. The data points for Transects 3 and 4 lie near the conservative mixing line, while the data points for Transects 1 and 2 prescribe a line that lies considerably above the mixing line at salinities less than 32‰. Linear regression of these data indicate significant R^2 's of 0.86 for Transects 1 and 2, and 0.89 to 0.97 for Transects 3-5 indicating that the concentrations of NO_3^- in nearshore waters off the PRCCC site are a function of salinity.

The upper and lower confidence limits of the Y-intercepts for Transects 1 and 2 are 37-64 μM and 46-80 μM , respectively. As the average concentration of NO_3^- in monitoring well B-1 is 35 μM , it is apparent that the concentration of NO_3^- in groundwater entering the ocean at Sharks Cove is as high as approximately double that which is present in upslope groundwater. This result indicates that there is added subsidies of NO_3^- to groundwater from external sources between the monitoring wells and the ocean.

On Transects 3-5, however, the Y-intercepts for the regression of NO_3^- range from 13 to 30 μM , with none as high as 35 μM . These low values are evident in Figure 4 as all the points from these three transects fall just below the conservative mixing line. The lower concentrations of the Y-intercepts from these sites suggests that the groundwater reaching the ocean is of a slightly different (i.e., lower concentration) that was measured in monitoring well B-1. While the concentrations may be slightly lower than might be expected, it is apparent that there is no subsidies of NO_3^- to the

ocean from activities on land.

PO_4^{3-} is also a major component of fertilizer and sewage. However, PO_4^{3-} is usually not found to leach to groundwater to the extent of NO_3^- , owing to a high absorptive affinity of phosphorus in soils or rock. It can be seen in Figure 4 that most of the PO_4^{3-} data points fall in weakly linear clusters below the mixing lines. Only three of the five R^2 's of regression of PO_4^{3-} vs. salinity are significant only on Transect 2, 3 and 4 (0.80, 0.43 and 0.83, respectively). The lack of significant regression between salinity and PO_4^{3-} on Transects 1 and 5 indicates that there is a much weaker relationship between groundwater input and the concentration of PO_4^{3-} in nearshore waters. The confidence limits of the Y-intercepts for all three transects with significant R^2 's lie below the average concentration of monitoring well B-1 water ($2.9 \mu\text{M}$). Hence, these data indicate that there are no subsidies of PO_4^{3-} entering the nearshore environment from sources other than naturally occurring groundwater. Rather, the data indicate that there is removal of PO_4^{3-} from groundwater during transit from the upslope locations of the well and the ocean, or more likely as uptake by plants in the nearshore area.

The other form of dissolved inorganic nitrogen, NH_4^+ , shows a different relationship than Si, NO_3^- and PO_4^{3-} . Plots of concentrations of NH_4^+ versus salinity exhibit no distinct linear trends with respect to salinity, although some of the highest concentrations on Transect 2 are at the lowest salinities (Figure 4). Linear regression of concentrations of NH_4^+ vs. salinity result in significant R^2 's on four of the five transects, although on Transect 5 the relationship is positive, with highest concentration at the lowest salinity. The lack of consistent inverse relationships suggests that the source of most of the NH_4^+ in the ocean is not from the land but rather from biological processes occurring in the nearshore areas of Sharks Cove.

5. Compliance with DOH Criteria

Tables 1 and 2 also show values of State of Hawaii Department of Health (DOH) water quality standards for open coastal waters under "wet" and "dry" conditions. These criteria are applied depending upon whether the area is likely to receive less than (dry) or greater than (wet) 3 million gallons of groundwater and/or surface water input per mile per day. As it is not possible to accurately estimate groundwater and surface water discharge to make the determination of which criteria apply, both wet and dry standards are considered. DOH standards include specific criteria for three situations; criteria that are not to be exceeded during either 10% or 2% of the time, and criteria that are not to be exceeded by the geometric mean of samples. With only a single sampling none of these criteria are statistically meaningful. However, comparing sample concentrations to these criteria provide an indication of whether water quality is near the stated specific criteria. Shaded values in Tables 1 and 2 show instances where measurements exceed the not to exceed the 2% of the time DOH standards under wet conditions, which represents the highest concentrations (most lenient) of the standards.

Inspection of Tables 1 and 2 indicate that most of the values for NO_3^- in the shoreline areas of Sharks Cove (Transect 1), and on the neighboring tidepool reef flat (Transect 2) exceeded the most lenient DOH standard. Beyond the reef flat, none of the measurements of any constituents exceeded the 2% wet DOH criteria.

As noted above, the category of water quality standards that are applicable for the area are "Open Coastal Waters." As the name implies, these standards apply to "open" waters that should be reasonably defined as "waters beyond the direct influence of land." In order to evaluate the effects of land uses on the nearshore ocean off the PRCCC site, the selected sampling regime collected water within a zone that extends from the shoreline to the open coastal ocean across a semi-confined reef flat. A consequence of the physical structure of the nearshore region of Transect 2 is that the reef crest serves to restrict circulation and flushing of the reef flat. As a result, the reef flat serves as a sink for dissolved material that reaches the marine environment through groundwater discharge at the shoreline. Hence, sampling was conducted within the region of ocean that is indeed directly influenced by land. If the monitoring protocol were changed to include only those sampling locations beyond the reef flat (i.e., true open coastal waters), which is completely valid with respect to meeting DOH regulatory compliance, little of the factors discussed above relating to the effects of activities on land to the nearshore ocean would not be observed.

Therefore, at the present time, while replicate data sets have not been collected in order to explicitly follow area specific DOH standards, it appears that existing baseline conditions of water quality at the PRCCC site exceed DOH water quality standards primarily on the reef flat, and not in true open coastal waters.

III. BIOTIC COMMUNITY STRUCTURE

A. METHODS

Biotic community structure of the marine environment was qualitatively assessed by investigators swimming throughout the offshore area from the shoreline to a water depth of approximately 40 feet off of each of the survey transect sites described in the sections above. During these reconnaissance swims, notes were taken on physical structure and marine species abundance. Numerous photographs were taken of typical features of all habitats to provide a descriptive representation of the area fronting the project site.

B. RESULTS

As with all reef communities in Hawaii, biotic composition, particularly in terms of coral assemblages are primarily determined by physical forces (primarily wave energy) that impact the area (Dollar 1982, Dollar and Tribble 1993, Fletcher et al.

2008, Grigg and Maragos 1974, Grigg 1983, Grigg 1988). As the Pūpūkea area is mostly an open coastal area directly exposed to long-period north and northwest swells during the winter months, the response to these forces is clearly reflected in physical composition and coral community structure.

Following is a description of the distinct biotopes, or zones that occur in the marine environment off of Sharks Cove, fronting the PRCCC site (a biotope is an area of uniform environmental conditions providing a living place for a specific assemblage of plants and animals). As reef building corals are of major interest, most of the following discussion focuses on the structure of reef coral communities.

1. Transect 1

The physical composition of Transect 1 is divided into three distinct zones. The inner region, extending from the inner shoreline of Sharks Cove to a distance of approximately 50 m offshore is composed primarily of large boulders, interspersed with rubble and sand channels (Figure 5). As this shallow area is regularly impacted by large waves during the winter, attached and unattached organisms are rare. While sparse in distribution, the only stony coral that was observed on the nearshore boulders was *Pocillopora meandrina*. This species has been documented to be a “pioneering species” in that it is able to colonize areas that are too physically harsh for most other species, and is typically found in wave-swept habitats similar to the boulder zone at Sharks Cove. The only other common benthic species is the soft octocoral *Sarcothelia edmondsoni*, which is purple in color, and occurs as flat patches on the upper surfaces of boulders.

At the seaward boundary of the boulder zone, bottom composition grades into a solid calcium carbonate (limestone) bench that is composed of fossil reef. A conspicuous feature of the limestone bench is the occurrence of numerous large erosional features that take the form of columns and jagged protuberances (Figure 6). These erosional features create a unique region of the highest rugosity (vertical relief) on the reef. As with the inner boulder zone, corals are relatively scarce, with the major occupants *Pocillopora meandrina*, along with small flat encrustations of *Porites* spp. and *Montipora* spp.

At a distance of approximately 100 m from shore, there is a sharp boundary in the form of a vertical scarp between the high rugosity zone and the outer reef platform (Figure 7). The outer reef platform, which is also formed from an eroded fossil reef, consists of a relatively flat bench without the erosional features of the high rugosity zone (Figure 8). The outer reef platform slopes gently to the seaward limit of the survey area at a depth of approximately 10 meters. As with the inner biotopes, coral colonization of the reef platform is restricted to hemispherical branching colonies of *Pocillopora meandrina*, and small colonies of corals that have flat encrusting or sturdy lobate growth forms (primarily *Porites*, *Montipora*, *Leptastrea* and *Pavona*) (see Figure 13 for photographs of all coral species observed during the

present surveys at Pūpūkea).

2. Transect 2.

Transect 2 differs in overall structure from the rest of the survey area in that it encompasses an area of shallow tidepools interspersed throughout a boulder covered raised platform (Figure 9). As the elevation of the raised platform is within the intertidal zone, the amount of water, and hence the size of the tide pools, varies as a function of tide. Biotic colonization of the floor of the tidepools is limited with little coral cover, likely as a result of extreme temperature and exposure to the atmosphere at low tidal stands. At the seaward boundary of the tidepools, small encrusting corals occur on the vertical surface. The sea urchin *Echinometra matheai*, which bores into limestone surfaces, occurs abundantly on the walls of the tidepools. On the seaward side of the tidepools, the physical structure of the marine habitats is similar to the outer reef platform at Transect 1.

3. Transects 3-5.

The physical and biotic structure of Transect 3, 4, and 5 is similar. The nearshore area is characterized by a cover of large boulders that extend from just seaward of the shoreline to a distance of approximately 100 meters from shore. The inner region of the boulder is devoid of most stony corals, but is colonized by abundant stands of the soft coral *Sarcothelia edmondsoni* (Figure 10).

The mid-reef zone consists of a similar boulder-covered bottom, although at the increased depth of 5-7 meters, there is colonization of a number of species of corals. These corals consist primarily of small encrusting colonies of *Porites* spp., *Montipora* spp. and *Pocillopora meandrina* (Figure 11). While rare, small colonies of *Pavona* spp., and *Leptastrea* spp. were also observed (Figure 13). The outer reef zone south of Sharks Cove extending to the offshore limits of the survey consisted of a flat platform colonized primarily by flat encrustations of *Porites* spp. (Figure 12).

No areas of extensive benthic alga growth or seagrass were observed in any of the survey areas. Qualitative observations of reef fish revealed several large schools of *Kuhlia sandvicensis* (‘āhole) (Figure 5) and mixed Acanthurids (Figure 11) in the nearshore zones. On the outer reef zones, reef fish were not overly abundant.

In summary, the benthic communities off the proposed Pūpūkea Rural Community Commercial Center develop primarily in response to the physical forces associated with the seasonal occurrence of large surf. The exception is within the network of tidepools adjacent to Sharks Cove, where biotic composition is limited by high temperature from solar heating, and exposure to the atmosphere during low tides. Between these extreme physical stresses, all biotic communities within the area can be viewed as limited by physical control compared to other areas in the Hawaiian Islands.

4. Incidental Sightings of Threatened and Endangered Species

Several species of marine animals that occur in Hawaiian waters have been declared threatened or endangered by Federal jurisdiction. The threatened green sea turtle (*Chelonia mydas*) occurs commonly throughout the Hawaiian Islands, and are frequently observed throughout the north shore of Oahu. The endangered hawksbill turtle (*Eretmochelys imbricata*) is known infrequently from Hawaiian waters. Several green sea turtles were observed within the survey area over the course of the present study. No hawksbill turtles were observed during the course of underwater surveys.

Populations of the endangered humpback whale (*Megaptera novaeangliae*) winter in the Hawaiian Islands from December to April. The present survey was conducted in May when whales are absent from Hawaiian waters. During the season when present, humpback whales, as well as other cetaceans are common off the coastline of Oahu. The Hawaiian monk seal, (*Monachus schauinslandi*) is an endangered earless seal that is endemic to the waters off the Hawaiian Islands. Monk seals commonly haul out of the water onto sandy beaches to rest. No seals were observed during the present survey work.

IV. DISCUSSION and CONCLUSIONS

The purpose of this baseline survey is to provide the information to make valid evaluations of the potential for impact to the marine environments from the proposed Pūpūkea Rural Community Commercial Center Project. The information collected for this study provides the basis to understand the processes that are presently operating in the nearshore ocean. Based on these data, it is possible to address any concerns that might be raised in the planning process.

The proposed Pūpūkea Rural Community Commercial Center Project does not include any plans for any direct alteration of the shoreline or offshore areas. Therefore, potential impacts to the marine environment can only be considered from activities on land that may result in delivery of materials (fresh water, sediment, nutrients, and potentially toxic materials) to the ocean through infiltration to groundwater, surface runoff and wind transport. The project may have an impact on groundwater as a result of: 1) by the additional consumption of drinking water from the Honolulu Board of Water Supply (BWS) system; 2) by the implementation of the drainage system infrastructure; and (3) by the additional generation of wastewater that will be treated and disposed of onsite. Tom Nance Water Resource Engineering (NWRE) has prepared a report entitled "Assessment of Potential Impacts on Water Resources of the Proposed Pūpūkea Rural Community Commercial Center," dated September 2017. This report provides a detailed depiction of the

potential impacts to water resources from the project, as well as estimated changes in groundwater quantity and quality owing to the project. The main conclusions of the TNWRE report are summarized below:

The additional draw of drinking water from the BWS wells (~6,500 GPD) is well within the hydraulic capacity of the BWS system, and is not considered to be significant.

Use of bioswales and other BMPs and the installation of subsurface detention storage will substantially reduce the suspended and bedload sediment that currently is carried into the marine environment by surface runoff. This retained water would eventually percolate to the groundwater below. In the process of percolation to groundwater and the subsequent lateral travel to discharge into the marine environment, nitrogen and phosphorus concentrations will be significantly reduced by denitrification and absorption processes. *In all respects, the project's proposed drainage system will have a significant environmental benefit in comparison to the present use of the property (italics added).*

The onsite wastewater treatment system proposed for the Pūpūkea Rural Community Commercial Center Project will result in a net increase in the production of wastewater of approximately 6,920 GPD. The resulting net increase in total nitrogen and total phosphorus to the groundwater flowing beneath the project site is approximated with the following assumptions:

- The wastewater will contain an average concentration of nitrogen and phosphorus of 60 and 12 mg/L, respectively.
- Nutrient removal rates in the project's Aerobic Treatment Unit (ATU) will be about 50% for nitrogen and 25% for phosphorus, resulting in residual concentrations of about 30 and 9.0 mg/L respectively in the treated wastewater. This is a conservative assumption as the actual removal rates are likely to be greater.
- Further nutrient removal will occur during the disposal in the absorption beds, downward percolation through the vadose zone (including travel through 15 feet of clay); and movement with groundwater to discharge into the marine environment. These removal rates are conservatively approximated to be about 80% for nitrogen and 90% for phosphorus. Based on these assumptions, the residual concentrations of wastewater ultimately discharging into the marine environment would be 6.0 mg/L for nitrogen and 0.90 mg/L for phosphorus. For the 6,920 gallons of treated wastewater, these additions would be equivalent to increases of 0.35 pounds per day of nitrogen and 0.051 pounds per day of phosphorus.

- Based on groundwater recharge calculations the total groundwater flow rate in the aquifer is 50 MGD (million gallons per day), equivalent to 5.5 MGD per coastal mile.
- The project site mauka of Kamehameha Highway spans 560 feet of coastline. Groundwater that flows under the site will influence about 760 feet of shoreline. This groundwater flow is approximately 790,000 GPD.
- Concentrations of total nitrogen (TN) and total phosphorus (TP) in groundwater presently flowing beneath the site and discharging into the marine environment are assumed to be the averages of the top samples in the B-7 monitor well (Table 3 in TNWRE report): 88.3 μM (1.24 mg/L) for TN; and 3.58 μM (0.111 mg/L) for TP.
- For these groundwater nutrient concentrations, and a groundwater flow rate of 790,000 GPD, the existing daily discharges of total nitrogen and total phosphorus into the marine environment amount to 8.16 and 0.73 pounds per day, respectively.
- For the calculated nutrient loading as a result of the project's net increase of 6,920 GPD of treated wastewater, the addition of TN and TP to the marine environment would be an increase of 4.3% and 7.0%, respectively, over 760 feet of the coastline fronting the property.

Inspection of Table 1 and Figure 2 of this report indicate that the concentrations of TN at the point of groundwater discharge at the shoreline range from a peak of 30 μM at Transect 2 to a low of 6.5 μM at Transect 4. The corresponding concentrations of TP are 0.66 μM at Transect 2 and 0.35 μM at Transects 4 and 5. Increasing the concentration of TN at the shoreline by 4.3% from existing conditions would result in a maximum value of about 31.3 μM and a minimum of 6.8 μM . Correspondingly, these increases in groundwater nutrients from the project would result in maximum and minimum values of TP at the shoreline of 0.71 μM and 0.37 μM , respectively. These small changes, which peak at about 1.3 μM for TN and 0.05 μM for TP are likely within the natural variability of the groundwater discharge at the shoreline, and do not represent a significant change in the composition of such discharge.

In addition, plots of TN and TP as functions of distance from shore (Figure 2) reveal that within 5 m of the shoreline, the concentrations of all nutrients drops from the peak values at the shoreline to essentially constant open coastal ocean values across the rest of the reef tract. These steep declines are the result of rapid mixing and dilution of the relatively small amount of groundwater discharging at the shoreline with large volumes of coastal ocean water. The small increases in groundwater nutrient concentrations attributable to the project would be mixed to background ocean levels in a narrow zone near the shoreline that is essentially devoid of benthic biota owing to other physical factors, primarily wave energy,

which occurs regularly throughout the area. With the observed steep horizontal gradients near the shoreline, the projected increases in nutrient concentration in groundwater over existing conditions would likely be undetectable in the marine environment off the project site at distances from the shoreline where marine communities occur.

All of these conclusions indicate that the proposed Pūpūkea Rural Community Commercial Center will not have a measureable effect on water quality in the coastal ocean offshore of the project. Such projected increases would not alter the existing situation with respect to compliance with area specific DOH limits. This is particularly true in the region of Transect 2 (Sharks Cove), where presently there are groundwater nitrogen subsidies from land on the order of 100% over background conditions.

V. SUMMARY

1. Evaluation of nearshore water chemistry and benthic biotic community structure off the proposed Pūpūkea Rural Community Commercial Center on the North Shore of Oahu, were carried out in May 2017. Fifty-seven water samples were collected at five sites located in the vicinity of the project. Water samples were collected on transects perpendicular to shore, extending from the shoreline to a distance of up to 300 meters offshore. Samples were also collected from monitor wells upslope of the project site in order to determine chemical composition of groundwater mauka of the project site, and near the shoreline. Analysis of fourteen water chemistry constituents included all specific constituents in DOH water quality standards.

2. Dissolved nutrients (Si, NO_3^- , NH_4^+ , PO_4^{3-} , TN and TP) displayed horizontal gradients at all transect sites with highest values closest to shore and lowest values at the most seaward sampling locations. Correspondingly, salinity was lowest closest to the shoreline, and increased with distance from shore. These patterns are indicative of groundwater efflux at the shoreline, producing a zone of mixing where nearshore waters are a combination of ocean water and groundwater. During the May 2017 sampling, physical forces (waves) were minimal resulting in a surface layer of low salinity-high nutrient water that was detectable up to 300 m from shore. The steepest gradients and highest nutrient concentrations occurred in the nearshore areas of the tidepools to the south of Sharks Cove. During periods of higher wave energy, which is a consistent seasonal winter occurrence, the nearshore zone of mixing would be smaller than measured during the survey in May.

3. Chl *a* and turbidity were also elevated in nearshore samples with decreasing values moving seaward.

4. Application of a hydrographic mixing model to the water chemistry data was used to indicate if increased nutrient concentrations are the result of mixing of

natural groundwater with oceanic water, or are the result of inputs to groundwater from activities on land. The model indicates that at the time of sampling there were external subsidies of NO_3^- nitrogen to the ocean at Transect site 1 (Sharks Cove) and site 2 (Tidepools on reef flat). These subsidies represents an increase of NO_3^- on the order of 100% over natural groundwater. Similar subsidies of NO_3^- were not evident at Transects 3, 4 and 5 located to the south of the project site. The discernible nutrient subsidy in the nearshore groundwater-ocean water mixing zone indicates that there is presently input to the ocean at Sites 1 and 2 from land-derived sources of nutrients upslope of the site. There was no comparable subsidy to groundwater input of PO_4^{3-} from activities on land.

5. Evaluating water chemistry from the single sampling in May 2017 using DOH "open coastal waters" indicates that concentrations in the nearshore zone, particularly in the tidepools adjacent to Sharks Cove, exceed the least stringent criteria as a result of input of groundwater at the shoreline. Beyond the zone of groundwater mixing with ocean water, concentrations of water chemistry constituents at all transect sites were generally below DOH criteria.

6. Qualitative depiction of the benthic marine communities off the project site reveal a zonation structure that reflects the dominant physical control of seasonal wave impacts. The nearshore zones were characterized by essentially barren boulders and reef platforms. Mid-reef and outer reef zones were colonized by a variety of Hawaii reef corals, growing primarily as small encrustations or lobate forms. No expansive areas of benthic algae or seagrass were noted. Unattached benthos (e.g., sea urchins) were also rare throughout the reef. Several large schools of fish were observed in the nearshore zones, although reef fish in general were not overly abundant on the mid and outer reef zones.

7. Evaluations of changes to groundwater resulting from the project performed by Tom Nance Water Resources Engineering indicate that there will be a potential increase of groundwater flow of about 6,920 GPD over existing conditions along a 760-foot wide coastal segment downslope from the project site. Accompanying the increase in flow rates will be relatively small increases in nutrient loading of 4.3% and 7.0% for nitrogen and phosphorus, respectively. As these projected increases are of such a small magnitude, and nearshore waters are consistently well-mixed, there is little likelihood that the increased concentrations will result in any detectable changes in water quality beyond several meters of the shoreline. While survey results from samples collected during calm conditions in May revealed distinct gradients in water chemistry constituents, it is likely that such gradients would not be detectable

during the winter season, when energy from wave action consistently mixes nearshore waters to a far larger extent.

7. Overall, results of the water chemistry analysis, along with an evaluation of potential changes to groundwater quality and flux, indicate changes in land use associated with the project should not change water quality of the offshore area to any discernible extent. As a result, there should be no potential for changes to biotic communities which inhabit the area beyond the influence of land-derived groundwater.

8. The water quality study conducted for this report can serve as an initial baseline for any monitoring programs that may be required for the project.

REFERENCES CITED

- Dollar, S.J. 1982. Wave stress and coral community structure in Hawaii. *Coral Reefs* 1:71-81.
- Dollar, S.J. and G.W. Tribble. 1993. Recurrent storm disturbance and recovery: a long-term study of coral communities in Hawaii. *Coral Reefs*. 12:223-233.
- Dollar, S. J. and M. J. Atkinson. 1992. Effects of nutrient subsidies from groundwater to nearshore marine ecosystems off the Island of Hawaii. *Est. Coast. Shelf Sci.* 35:409-424.
- Fletcher, C.H. and 15 others. 2008. Geology of Hawaii Reefs. In *Coral Reefs of the USA*. B.M. Reigl and R.E. Dodge (eds). Springer Science + Business Media B.V.
- Grasshoff, K. 1983. *Methods of seawater analysis*. Verlag Chemie, Weinheim, 419 pp.
- Grigg, R.W. and J.E. Maragos. 1974. Recolonization of hermatypic corals on submerged lava flows in Hawaii. *Ecology*. 55:387-395.
- Grigg, R.W. 1983. Community structure, succession and development of coral reefs in Hawaii. *Mar. Ecol. Prog. Ser.* 11:1-14.
- Officer, C. B. 1979. Discussion of the behavior of nonconservative dissolved constituents in estuaries. *Est. Coast. Mar. Sci.* 9:569-576.
- Smith, S. V. and M. J. Atkinson 1993. Mass balance analysis of C, N, and P fluxes in coastal water bodies, including lagoons. *Coastal Lagoon Processes*. (ed) B. Kjerfve, Elsevier Oceanography Series, 60. pp. 123-145.
- Strickland J. D. H. and T. R. Parsons. 1968. *A practical handbook of sea-water analysis*. Fisheries Research Bd. of Canada, Bull. 167. 311 p.
- Tom Nance Water Resource Engineering. 2017. Assessment of the potential impacts on water resources of the proposed Pūpūkea Rural Community Commercial Center. Prepared for Group 70, International, Inc.



feet
meters

3000
900



FIGURE 1. Aerial view of Pupukea, North Shore Oahu, showing location of proposed Pupukea Rural Community Commercial Center. Also shown are locations of five water sampling transects that extended from the shoreline to open coastal waters. Transect 1 bisected Sharks Cove; Transect 2 extended across the reef flat downslope from the northern end of the proposed development; Transect 3 originated off the southern boundary of the property; Transect 4 originated at the mouth of the stream draining upslope areas; Transect 5 served as a control off the southern end of Three Tables Beach. Water samples were collected at 6-10 stations along transects.

TABLE 1. Water chemistry measurements (with nutrients reported in micromolar units) from ocean water samples collected in the vicinity of the Pupukea Commercial Property, Oahu, Hawaii on May 17, 2017. Abbreviations as follows: DFS=distance from shore; TURB = turbidity; CHL *a* = chlorophyll *a*; TEMP = temperature; O₂ = dissolved oxygen; S=surface; D=deep; BDL=below detection limit. Also shown are the State of Hawaii, Department of Health (DOH) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Shaded values exceed DOH 2% "wet" standards. For transect and sampling site locations, see Figure 1.

Transect	DFS (m)	PO ₄ ³⁻ (μM)	NO ₃ ⁻ (μM)	NH ₄ ⁺ (μM)	Si (μM)	TOP (μM)	TON (μM)	TP (μM)	TN (μM)	TURB (NTU)	SALT (‰)	Temp (°C)	pH (rel)	Chl-a (μg/L)	Diss. Oxy (% sat.)
TRANSECT 1	0	0.14	8.11	1.32	83.92	0.32	13.68	0.46	23.11	0.25	30.24	25.88	8.281	2.477	118.55
	1	0.09	2.49	2.24	56.75	0.29	10.70	0.38	15.43	0.53	32.35	25.60	8.277	0.802	118.81
	5	0.09	2.15	0.80	53.62	0.25	9.84	0.34	12.79	0.20	32.54	25.55	8.247	0.304	116.01
	15	0.11	1.83	0.59	53.89	0.21	8.37	0.32	10.79	0.19	32.40	25.55	8.235	0.218	115.90
	45S	0.15	1.31	1.02	34.09	0.23	9.82	0.38	12.15	0.13	33.41	25.73	8.207	0.140	105.60
	45D	0.14	0.60	0.41	17.20	0.22	8.54	0.36	9.55	0.10	34.41	25.81	8.204	0.171	103.09
	100S	0.14	0.95	0.47	24.94	0.20	7.33	0.34	8.75	0.10	34.01	25.75	8.197	0.156	103.29
	100D	0.13	0.26	0.49	9.74	0.22	7.90	0.35	8.65	0.11	34.63	25.83	8.208	0.179	99.81
	130S	0.14	0.84	0.57	22.74	0.19	8.20	0.33	9.61	0.12	34.05	25.79	8.201	0.140	100.11
	130D	0.13	0.21	0.43	7.09	0.19	8.16	0.32	8.80	0.10	34.74	25.82	8.195	0.109	97.78
	225S	0.14	0.55	0.53	13.92	0.19	7.36	0.33	8.44	0.08	34.59	25.80	8.192	0.125	98.85
225D	0.12	0.07	0.40	5.45	0.18	7.41	0.30	7.88	0.08	34.77	25.66	8.200	0.117	101.57	
TRANSECT 2	0	0.41	16.29	2.57	156.73	0.24	11.13	0.65	29.99	0.35	27.38	24.29	8.115	2.041	85.21
	2	0.29	10.02	2.89	122.91	0.37	15.04	0.66	27.95	0.36	29.08	24.79	8.112	1.449	91.22
	5	0.11	3.03	0.84	55.51	0.24	9.00	0.35	12.87	0.23	31.88	24.79	8.107	0.982	85.33
	10	0.11	2.19	0.75	44.89	0.21	9.27	0.32	12.21	0.19	32.42	24.83	8.114	0.382	88.80
	25	0.12	2.57	0.78	46.16	0.22	8.74	0.34	12.09	0.16	32.57	25.43	8.138	0.257	96.61
	50	0.14	3.78	0.66	58.30	0.21	7.61	0.35	12.05	0.14	32.03	25.50	8.143	0.218	86.79
	70	0.19	3.46	0.75	48.66	0.20	9.84	0.39	14.05	0.17	32.77	25.43	8.123	0.374	86.68
	100	0.08	3.41	0.46	4.33	0.25	5.57	0.33	9.44	0.11	34.81	25.90	8.343	0.179	127.69
	130S	0.11	0.78	0.31	16.72	0.21	8.36	0.32	9.45	0.14	34.96	25.83	8.200	0.195	98.49
	130D	0.10	BDL	0.38	5.15	0.18	7.97	0.28	8.38	0.08	34.63	25.82	8.201	0.132	100.04
	190S	0.12	0.28	0.33	5.55	0.18	7.56	0.30	8.17	0.11	34.67	25.83	8.203	0.125	97.05
190D	0.11	0.23	0.32	4.63	0.18	6.98	0.29	7.53	0.07	34.78	25.70	8.210	0.156	102.81	
TRANSECT 3	0	0.18	1.44	0.25	53.65	0.18	7.79	0.36	9.48	0.13	32.76	none	8.253	0.288	none
	2	0.61	1.74	1.31	52.98	0.12	20.35	0.73	23.40	0.12	32.82	none	8.250	0.413	none
	10S	0.20	1.36	0.40	41.86	0.16	7.76	0.36	9.52	0.12	33.22	25.83	8.238	0.187	108.57
	10D	0.15	1.06	0.26	34.40	0.18	10.91	0.33	12.23	0.20	33.60	25.95	8.231	0.179	105.28
	50S	0.16	1.08	0.32	31.33	0.17	9.93	0.33	11.33	0.15	33.60	25.85	8.236	0.156	107.51
	50D	0.12	0.23	0.34	11.02	0.19	9.96	0.31	10.53	0.11	34.63	25.92	8.231	0.140	103.73
	100S	0.10	0.69	0.37	19.63	0.23	9.93	0.33	10.99	0.11	34.16	25.93	8.224	0.117	103.66
	100D	0.12	0.15	0.38	7.09	0.21	9.67	0.33	10.20	0.09	34.67	25.84	8.213	0.140	100.17
	200S	0.13	0.24	0.37	9.80	0.22	5.81	0.35	6.42	0.07	34.60	25.87	8.216	0.140	100.42
	200D	0.06	BDL	0.39	4.63	0.28	6.23	0.34	6.62	0.10	34.78	25.71	8.219	0.148	100.39
	300S	0.12	0.10	0.43	8.00	0.23	5.87	0.35	6.40	0.10	34.67	25.77	8.213	0.109	99.18
300D	0.10	BDL	0.40	4.13	0.24	5.24	0.34	5.65	0.09	34.85	25.64	8.222	0.125	102.17	
TRANSECT 4	0	0.16	0.60	0.39	25.87	0.19	5.48	0.35	6.47	0.11	33.81	26.16	8.262	0.195	112.01
	5	0.16	0.57	0.27	24.86	0.19	5.51	0.35	6.35	0.12	33.84	26.15	8.267	0.218	111.15
	35S	0.14	0.60	0.26	22.45	0.22	5.48	0.36	6.34	0.11	33.87	26.11	8.252	0.179	110.66
	35D	0.16	0.63	0.35	22.09	0.21	5.22	0.37	6.20	0.13	33.88	26.08	8.257	0.164	109.37
	75S	0.14	0.61	0.24	18.81	0.23	5.29	0.37	6.14	0.15	33.85	26.16	8.242	0.148	109.84
	75D	0.12	0.26	0.25	8.87	0.25	4.87	0.37	5.38	0.13	34.63	25.95	8.237	0.187	106.98
	100S	0.14	0.72	0.33	24.18	0.26	5.10	0.40	6.15	0.13	34.05	26.07	8.258	0.156	105.60
	100D	0.13	0.33	0.24	6.72	0.27	5.33	0.40	5.90	0.07	34.56	25.88	8.233	0.132	104.53
	280S	0.10	0.02	0.24	4.16	0.32	5.48	0.42	5.74	0.08	34.81	25.86	8.224	0.117	99.33
	280D	0.10	BDL	0.25	3.23	0.25	5.14	0.35	5.40	0.08	34.96	25.78	8.224	0.109	101.50
	375S	0.10	BDL	0.24	3.69	0.23	5.26	0.33	5.50	0.10	34.74	25.88	8.222	0.093	98.14
375D	0.12	BDL	0.24	3.26	0.21	6.06	0.33	6.31	0.06	34.85	25.76	8.226	0.125	99.94	
TRANSECT 5	0	0.13	0.32	0.29	10.95	0.20	8.61	0.33	9.22	0.27	34.34	26.70	8.299	0.257	105.67
	1	0.14	0.36	0.31	10.69	0.21	8.30	0.35	8.97	0.32	34.38	26.67	8.284	0.257	107.35
	5	0.14	0.32	0.30	10.78	0.21	7.04	0.35	7.66	0.26	34.31	26.60	8.299	0.280	110.19
	50S	0.14	0.26	0.36	7.56	0.22	7.50	0.36	8.12	0.20	34.52	26.42	8.266	0.195	107.60
	50D	0.14	0.24	0.50	7.86	0.22	7.30	0.36	8.04	0.18	34.56	26.21	8.279	0.164	110.73
	130S	0.14	0.22	0.48	7.31	0.24	7.40	0.38	8.10	0.18	34.56	26.23	8.264	0.132	108.26
	130D	0.14	0.04	0.45	4.45	0.22	5.95	0.36	6.44	0.10	34.79	25.91	8.250	0.156	105.17
	185S	0.13	0.09	0.53	5.67	0.23	5.81	0.36	6.43	0.11	34.68	25.99	8.247	0.109	100.63
185D	0.12	0.02	0.48	3.81	0.23	6.15	0.35	6.65	0.16	34.75	25.85	8.242	0.117	102.04	
DOH WQS	DRY	10% 2%	0.71 1.43	0.36 0.64				0.96 1.45	12.86 17.86	0.50 1.00	* *	** **	*** ***	0.50 1.00	**** ****
	WET	10% 2%	1.00 1.78	0.61 1.07				1.29 1.93	17.85 25.00	1.25 2.00	* *	** **	*** ***	0.90 1.75	**** ****

* Salinity shall not vary more than ten percent from natural or seasonal changes considering hydrologic input and oceanographic conditions.

** Temperature shall not vary by more than one degree C. from ambient conditions.

***pH shall not deviate more than 0.5 units from a value of 8.1.

****Dissolved Oxygen not to be below 75% saturation.

TABLE 2. Water chemistry measurements (with nutrients reported as micrograms per liter) from ocean water samples collected in the vicinity of the Pupukea Commercial Property, Oahu, Hawaii on May 17, 2017. Abbreviations as follows: DFS=distance from shore; TURB = turbidity; CHL *a* = chlorophyll *a*; TEMP = temperature; O₂ = dissolved oxygen; S=surface; D=deep; BDL=below detection limit. Also shown are the State of Hawaii, Department of Health (DOH) "not to exceed more than 10% of the time" and "not to exceed more than 2% of the time" water quality standards for open coastal waters under "dry" and "wet" conditions. Shaded values exceed DOH 2% "wet" standards. For transect and sampling site locations, see Figure 1.

Transect	DFS (m)	PO ₄ ³⁻ (µg/L)	NO ₃ ⁻ (µg/L)	NH ₄ ⁺ (µg/L)	Si (µg/L)	TOP (µg/L)	TON (µg/L)	TP (µg/L)	TN (µg/L)	TURB (NTU)	SALT (%)	Temp (°C)	pH (rel)	Chl-a (µg/L)	Diss. Oxy (% sat.)
TRANSECT 1	0	4.34	113.54	18.48	2349.8	9.92	191.52	14.26	323.54	0.25	30.24	25.88	8.281	2.477	118.55
	1	2.79	34.86	31.36	1589.0	8.99	149.80	11.78	216.02	0.53	32.35	25.60	8.277	0.802	118.81
	5	2.79	30.10	11.20	1501.4	7.75	137.76	10.54	179.06	0.20	32.54	25.55	8.247	0.304	116.01
	15	3.41	25.62	8.26	1508.9	6.51	117.18	9.92	151.06	0.19	32.40	25.55	8.235	0.218	115.90
	45S	4.65	18.34	14.28	954.52	7.13	137.48	11.78	170.10	0.13	33.41	25.73	8.207	0.140	105.60
	45D	4.34	8.40	5.74	481.60	6.82	119.56	11.16	133.70	0.10	34.41	25.81	8.204	0.171	103.09
	100S	4.34	13.30	6.58	698.32	6.20	102.62	10.54	122.50	0.10	34.01	25.75	8.197	0.156	103.29
	100D	4.03	3.64	6.86	272.72	6.82	110.60	10.85	121.10	0.11	34.63	25.83	8.208	0.179	99.81
	130S	4.34	11.76	7.98	636.72	5.89	114.80	10.23	134.54	0.12	34.05	25.79	8.201	0.140	100.11
	130D	4.03	2.94	6.02	198.52	5.89	114.24	9.92	123.20	0.10	34.74	25.82	8.195	0.109	97.78
	225S	4.34	7.70	7.42	389.76	5.89	103.04	10.23	118.16	0.08	34.59	25.80	8.192	0.125	98.85
225D	3.72	0.98	5.60	152.60	5.58	103.74	9.30	110.32	0.08	34.77	25.66	8.200	0.117	101.57	
TRANSECT 2	0	12.71	228.06	35.98	4388.4	7.44	155.82	20.15	419.86	0.35	27.38	24.29	8.115	2.041	85.21
	2	8.99	140.28	40.46	3441.5	11.47	210.56	20.46	391.30	0.36	29.08	24.79	8.112	1.449	91.22
	5	3.41	42.42	11.76	1554.3	7.44	126.00	10.85	180.18	0.23	31.88	24.79	8.107	0.982	85.33
	10	3.41	30.66	10.50	1256.9	6.51	129.78	9.92	170.94	0.19	32.42	24.83	8.114	0.382	88.80
	25	3.72	35.98	10.92	1292.5	6.82	122.36	10.54	169.26	0.16	32.57	25.43	8.138	0.257	96.61
	50	4.34	52.92	9.24	1632.4	6.51	106.54	10.85	168.70	0.14	32.03	25.50	8.143	0.218	86.79
	70	5.89	48.44	10.50	1362.5	6.20	137.76	12.09	196.70	0.17	32.77	25.43	8.123	0.374	86.68
	100	2.48	47.74	6.44	121.24	7.75	77.98	10.23	132.16	0.11	34.81	25.90	8.343	0.179	127.69
	130S	3.41	10.92	4.34	468.16	6.51	117.04	9.92	132.30	0.14	34.96	25.83	8.200	0.195	98.49
	130D	3.10	BDL	5.32	144.20	5.58	111.58	8.68	117.32	0.08	34.63	25.82	8.201	0.132	100.04
	190S	3.72	3.92	4.62	155.40	5.58	105.84	9.30	114.38	0.11	34.67	25.83	8.203	0.125	97.05
190D	3.41	3.22	4.48	129.64	5.58	97.72	8.99	105.42	0.07	34.78	25.70	8.210	0.156	102.81	
TRANSECT 3	0	5.58	20.16	3.50	1502.2	5.58	109.06	11.16	132.72	0.13	32.76	none	8.253	0.288	none
	2	18.91	24.36	18.34	1483.4	3.72	284.90	22.63	327.60	0.12	32.82	none	8.250	0.413	none
	10S	6.20	19.04	5.60	1172.1	4.96	108.64	11.16	133.28	0.12	33.22	25.83	8.238	0.187	108.57
	10D	4.65	14.84	3.64	963.20	5.58	152.74	10.23	171.22	0.20	33.60	25.95	8.231	0.179	105.28
	50S	4.96	15.12	4.48	877.24	5.27	139.02	10.23	158.62	0.15	33.60	25.85	8.236	0.156	107.51
	50D	3.72	3.22	4.76	308.56	5.89	139.44	9.61	147.42	0.11	34.63	25.92	8.231	0.140	103.73
	100S	3.10	9.66	5.18	549.64	7.13	139.02	10.23	153.86	0.11	34.16	25.93	8.224	0.117	103.66
	100D	3.72	2.10	5.32	198.52	6.51	135.38	10.23	142.80	0.09	34.67	25.84	8.213	0.140	100.17
	200S	4.03	3.36	5.18	274.40	6.82	81.34	10.85	89.88	0.07	34.60	25.87	8.216	0.140	100.42
	200D	1.86	BDL	5.46	129.64	8.68	87.22	10.54	92.68	0.10	34.78	25.71	8.219	0.148	100.39
	300S	3.72	1.40	6.02	224.00	7.13	82.18	10.85	89.60	0.10	34.67	25.77	8.213	0.109	99.18
300D	3.10	BDL	5.60	115.64	7.44	73.36	10.54	79.10	0.09	34.85	25.64	8.222	0.125	102.17	
TRANSECT 4	0	4.96	8.40	5.46	724.36	5.89	76.72	10.85	90.58	0.11	33.81	26.16	8.262	0.195	112.01
	5	4.96	7.98	3.78	696.08	5.89	77.14	10.85	88.90	0.12	33.84	26.15	8.267	0.218	111.15
	35S	4.34	8.40	3.64	628.60	6.82	76.72	11.16	88.76	0.11	33.87	26.11	8.252	0.179	110.66
	35D	4.96	8.82	4.90	618.52	6.51	73.08	11.47	86.80	0.13	33.88	26.08	8.257	0.164	109.37
	75S	4.34	8.54	3.36	526.68	7.13	74.06	11.47	85.96	0.15	33.85	26.16	8.242	0.148	109.84
	75D	3.72	3.64	3.50	248.36	7.75	68.18	11.47	75.32	0.13	34.63	25.95	8.237	0.187	106.98
	100S	4.34	10.08	4.62	677.04	8.06	71.40	12.40	86.10	0.13	34.05	26.07	8.258	0.156	105.60
	100D	4.03	4.62	3.36	188.16	8.37	74.62	12.40	82.60	0.07	34.56	25.88	8.233	0.132	104.53
	280S	3.10	0.28	3.36	116.48	9.92	76.72	13.02	80.36	0.08	34.81	25.86	8.224	0.117	99.33
	280D	3.10	BDL	3.50	90.44	7.75	71.96	10.85	75.60	0.08	34.96	25.78	8.224	0.109	101.50
	375S	3.10	BDL	3.36	103.32	7.13	73.64	10.23	77.00	0.10	34.74	25.88	8.222	0.093	98.14
375D	3.72	BDL	3.36	91.28	6.51	84.84	10.23	88.34	0.06	34.85	25.76	8.226	0.125	99.94	
TRANSECT 5	0	4.03	4.48	4.06	306.60	6.20	120.54	10.23	129.08	0.27	34.34	26.70	8.299	0.257	105.67
	1	4.34	5.04	4.34	299.32	6.51	116.20	10.85	125.58	0.32	34.38	26.67	8.284	0.257	107.35
	5	4.34	4.48	4.20	301.84	6.51	98.56	10.85	107.24	0.26	34.31	26.60	8.299	0.280	110.19
	50S	4.34	3.64	5.04	211.68	6.82	105.00	11.16	113.68	0.20	34.52	26.42	8.266	0.195	107.60
	50D	4.34	3.36	7.00	220.08	6.82	102.20	11.16	112.56	0.18	34.56	26.21	8.279	0.164	110.73
	130S	4.34	3.08	6.72	204.68	7.44	103.60	11.78	113.40	0.18	34.56	26.23	8.264	0.132	108.26
	130D	4.34	0.56	6.30	124.60	6.82	83.30	11.16	90.16	0.10	34.79	25.91	8.250	0.156	105.17
	185S	4.03	1.26	7.42	158.76	7.13	81.34	11.16	90.02	0.11	34.68	25.99	8.247	0.109	100.63
	185D	3.72	0.28	6.72	106.68	7.13	86.10	10.85	93.10	0.16	34.75	25.85	8.242	0.117	102.04
DOH WQS	DRY	10% 2%	10.00 20.00	5.00 9.00				30.00 45.00	180.00 250.00	0.50 1.00	* *	** **	*** ***	0.50 1.00	**** ****
	WET	10% 2%	14.00 25.00	8.50 15.00				40.00 60.00	250.00 350.00	1.25 2.00	* *	** **	*** ***	0.90 1.75	**** ****

* Salinity shall not vary more than ten percent from natural or seasonal changes considering hydrologic input and oceanographic conditions.

** Temperature shall not vary by more than one degree C. from ambient conditions.

***pH shall not deviate more than 0.5 units from a value of 8.1.

****Dissolved Oxygen not to be below 75% saturation.

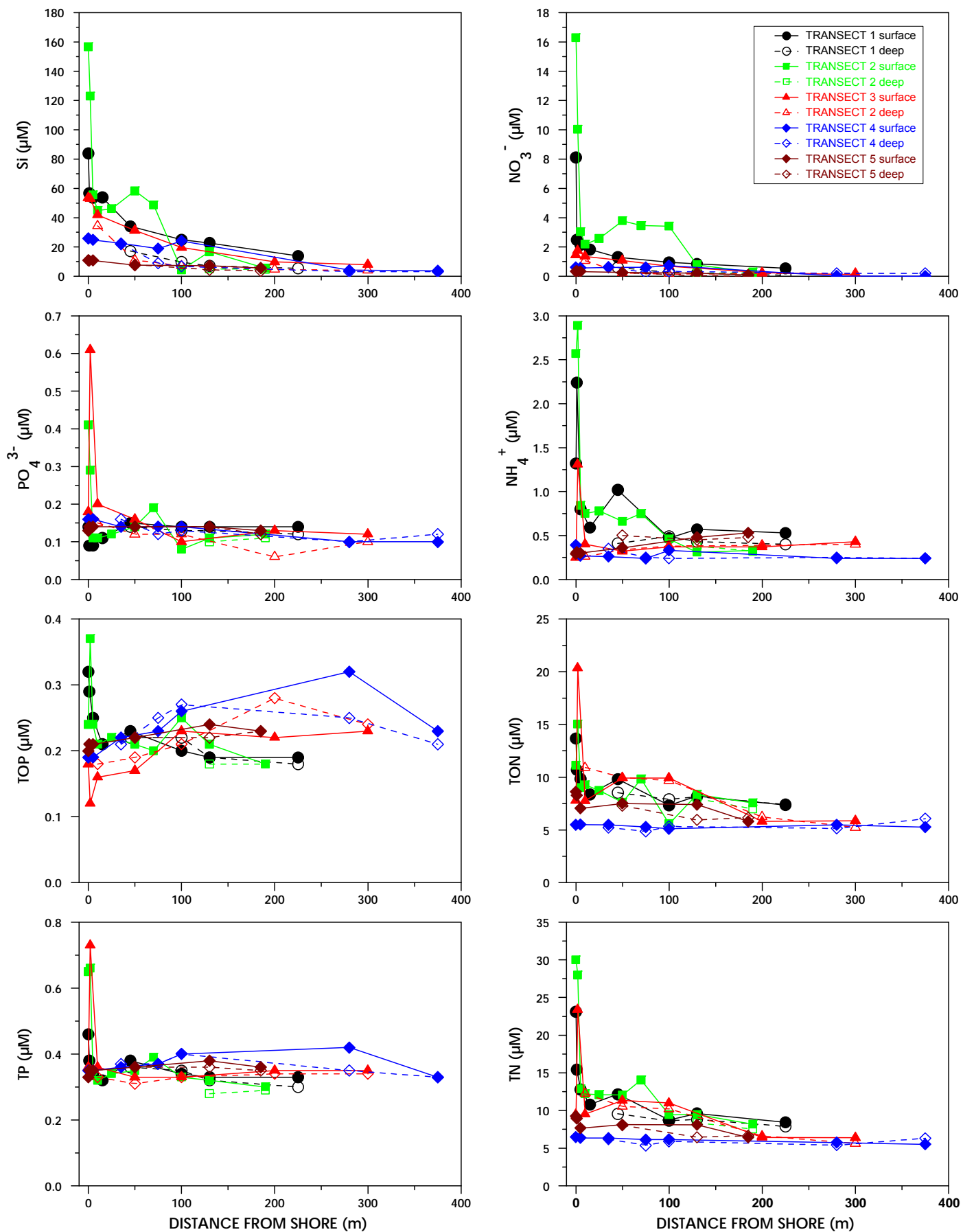


FIGURE 2. Plots of dissolved nutrients in surface and deep samples collected on May 17, 2017 as a function of distance from the shoreline along 5 transects in the vicinity of the Pupukea Commercial Development, Oahu, Hawaii. For transect locations, see Figure 1.

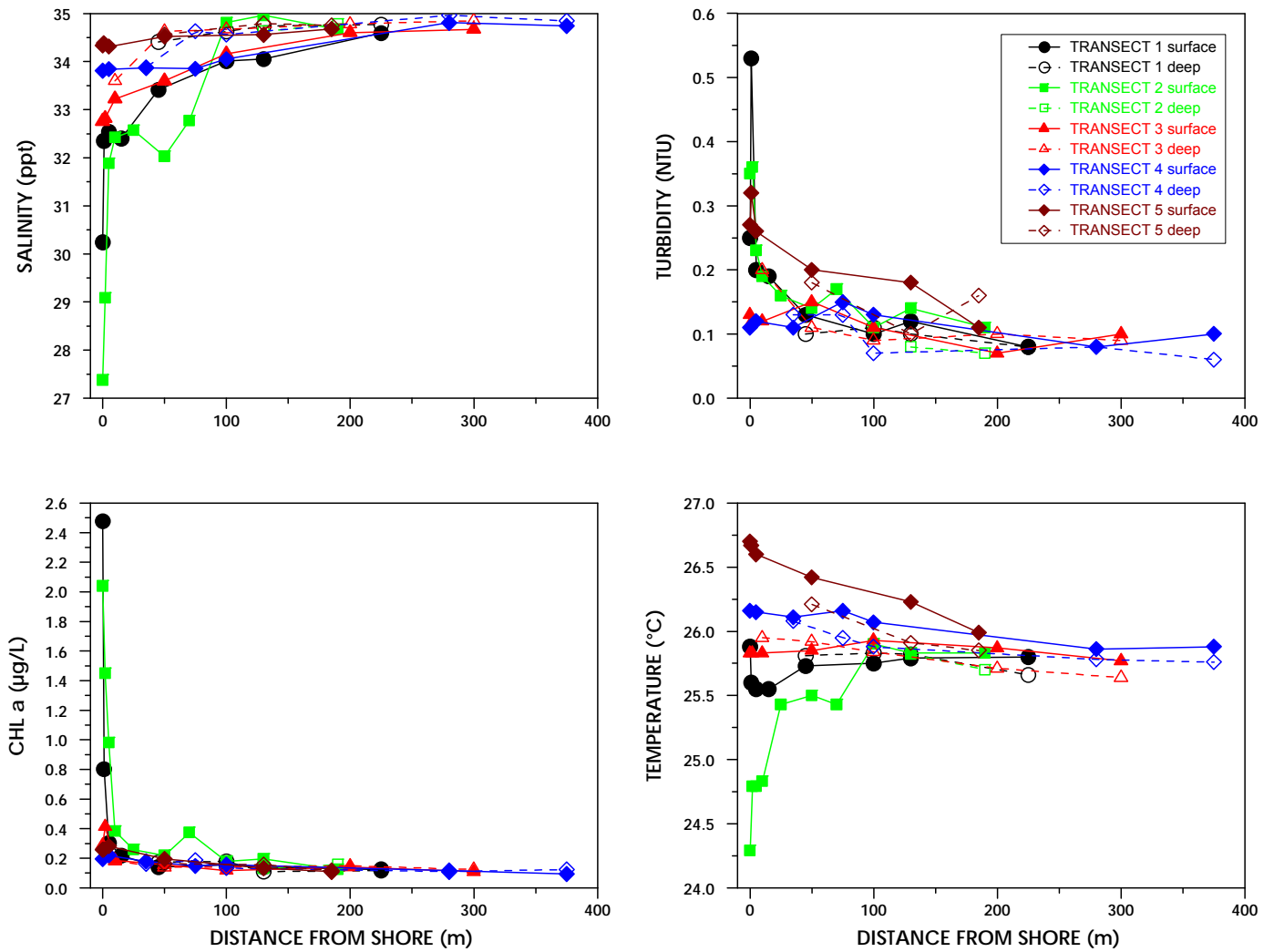


FIGURE 3. Plots of water chemistry constituents in surface and deep samples collected on May 17, 2017 along 5 transects fronting the Pupukea Commercial Property on the North Shore of Oahu, Hawaii as a function of distance from the shoreline. For transect locations, see Figure 1.

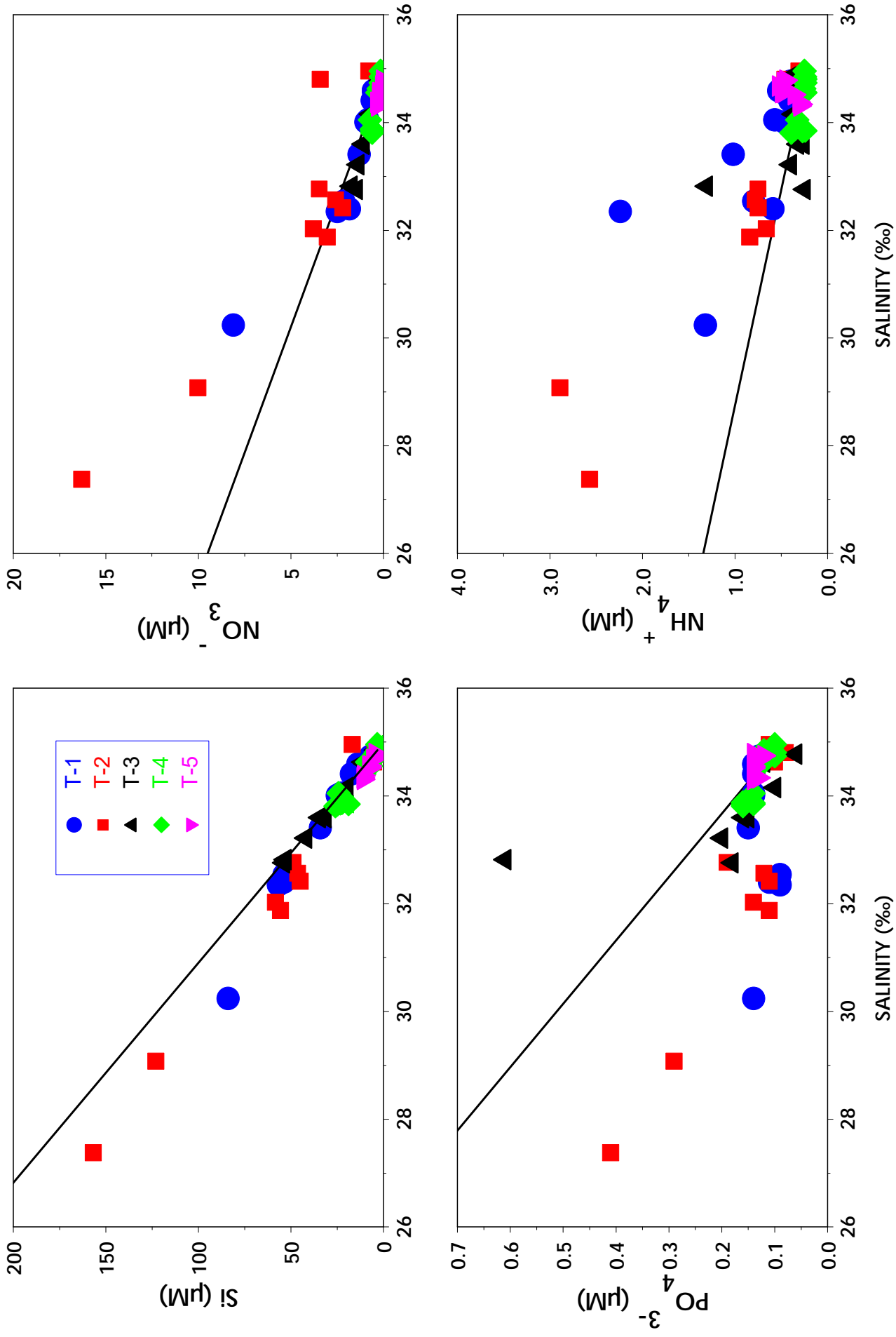


FIGURE 4. Mixing diagram showing concentration of dissolved nutrients from samples collected along transects offshore of the Pupukea Commercial Property, North Shore Oahu, Hawaii as functions of salinity. The straight line in each plot is the conservative mixing line constructed by connecting the concentrations in open ocean water with the average concentration measured in monitoring well B-1 located at the mauka end of the project site, and upslope of the ocean sampling area. For transect locations, see Figure 1.

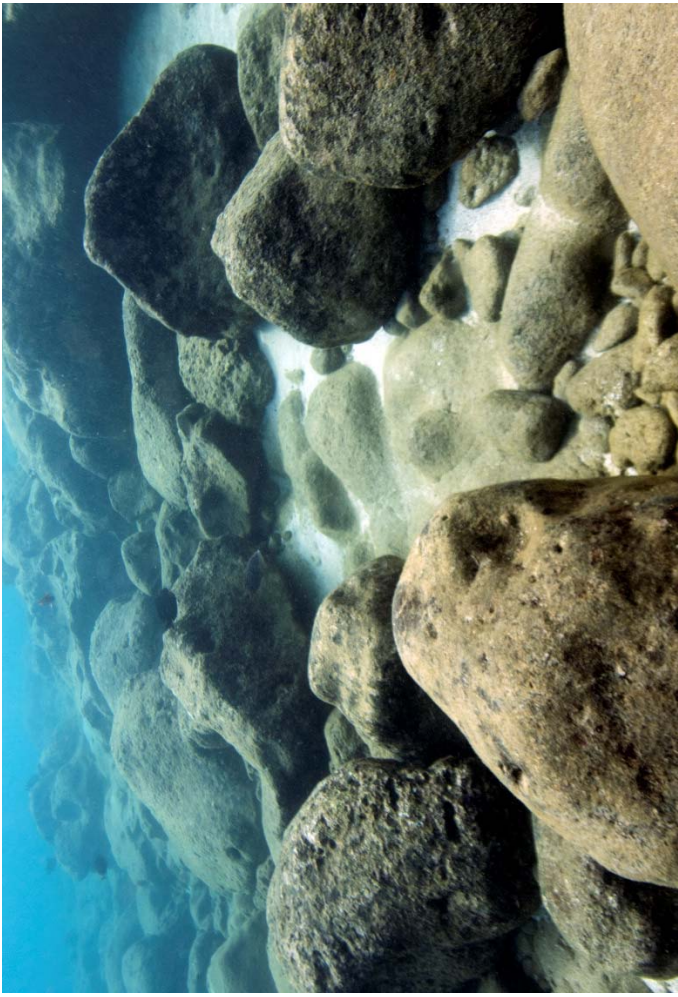


FIGURE 5. Inshore boulder zone at Sharks Cove, Pupukea, Oahu. School of fish in lower left photo are *Kuhlia sandvicensis* ('ōhole) that are commonly found in the area. Water depth is approximately 1-2 meters.

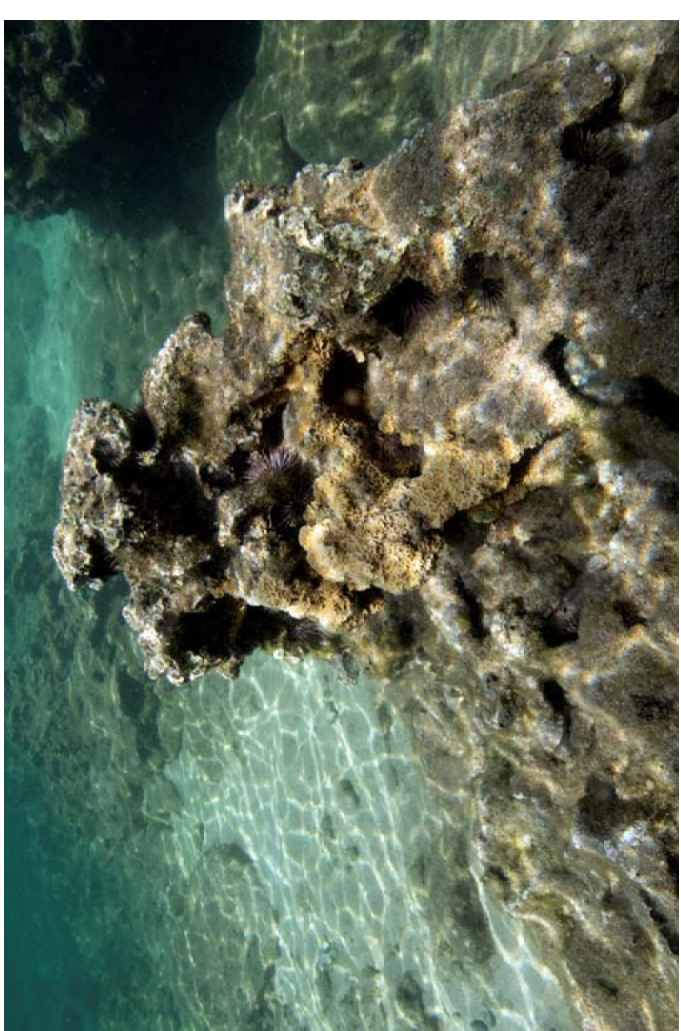
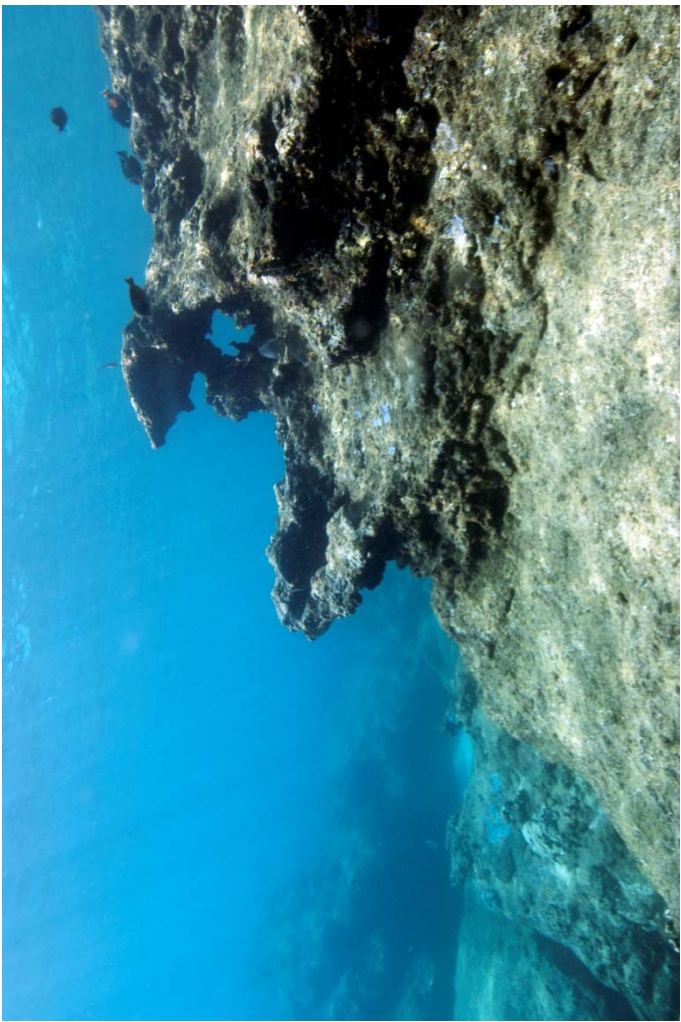
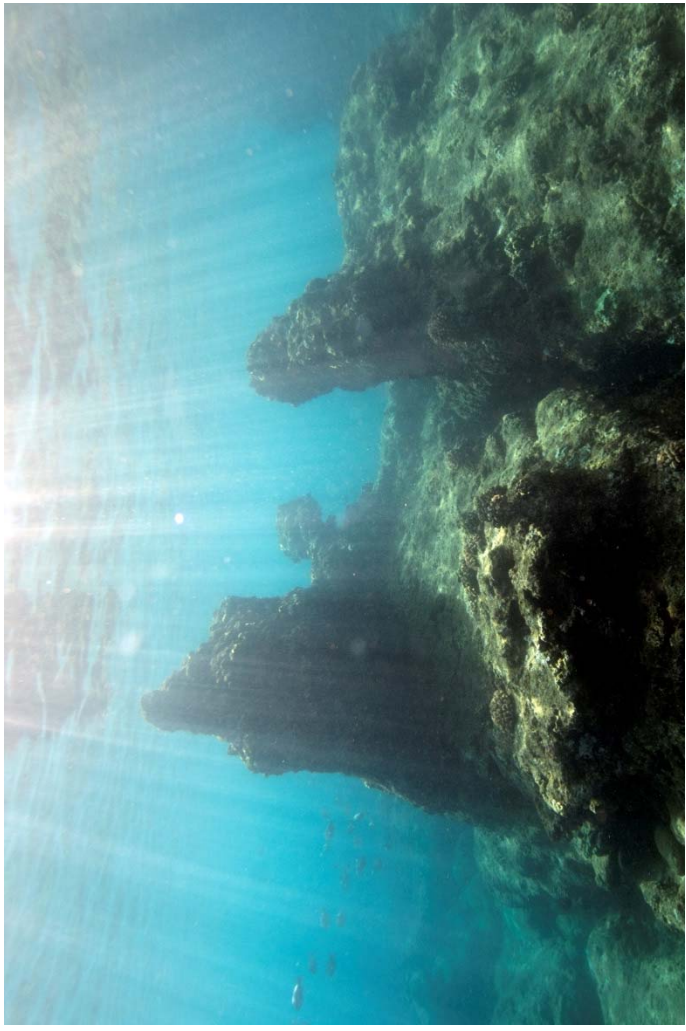


FIGURE 6. High rugosity zone at Sharks Cove, Pupukea, Oahu showing erosional limestone features. Water depth is approximately 3-4 meters.

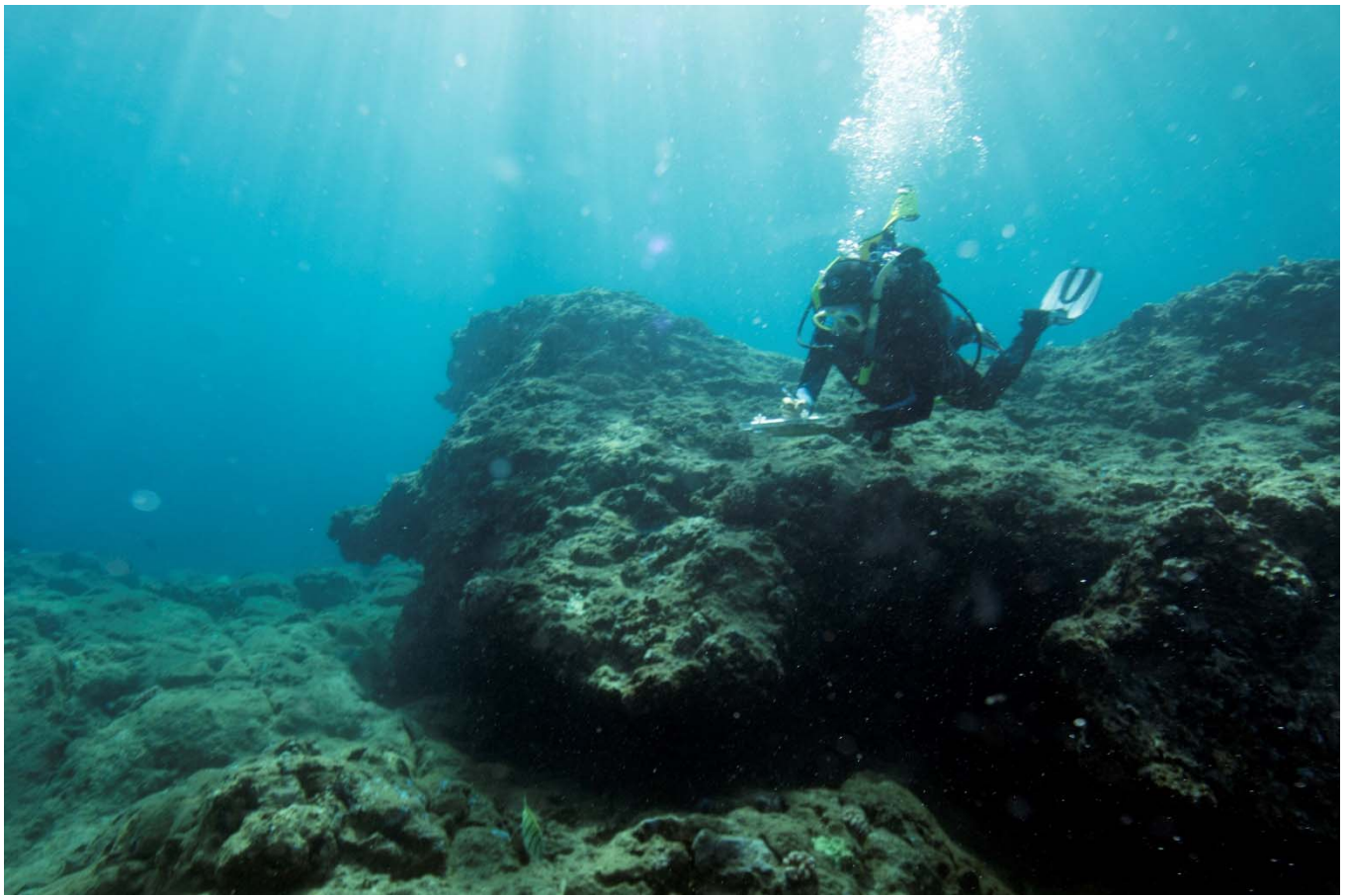


FIGURE 7. Two views of boundary between high rugosity zone and outer reef flat at Sharks Cove, Pupukea, Oahu . Water depth is approximately 5-6 meters.

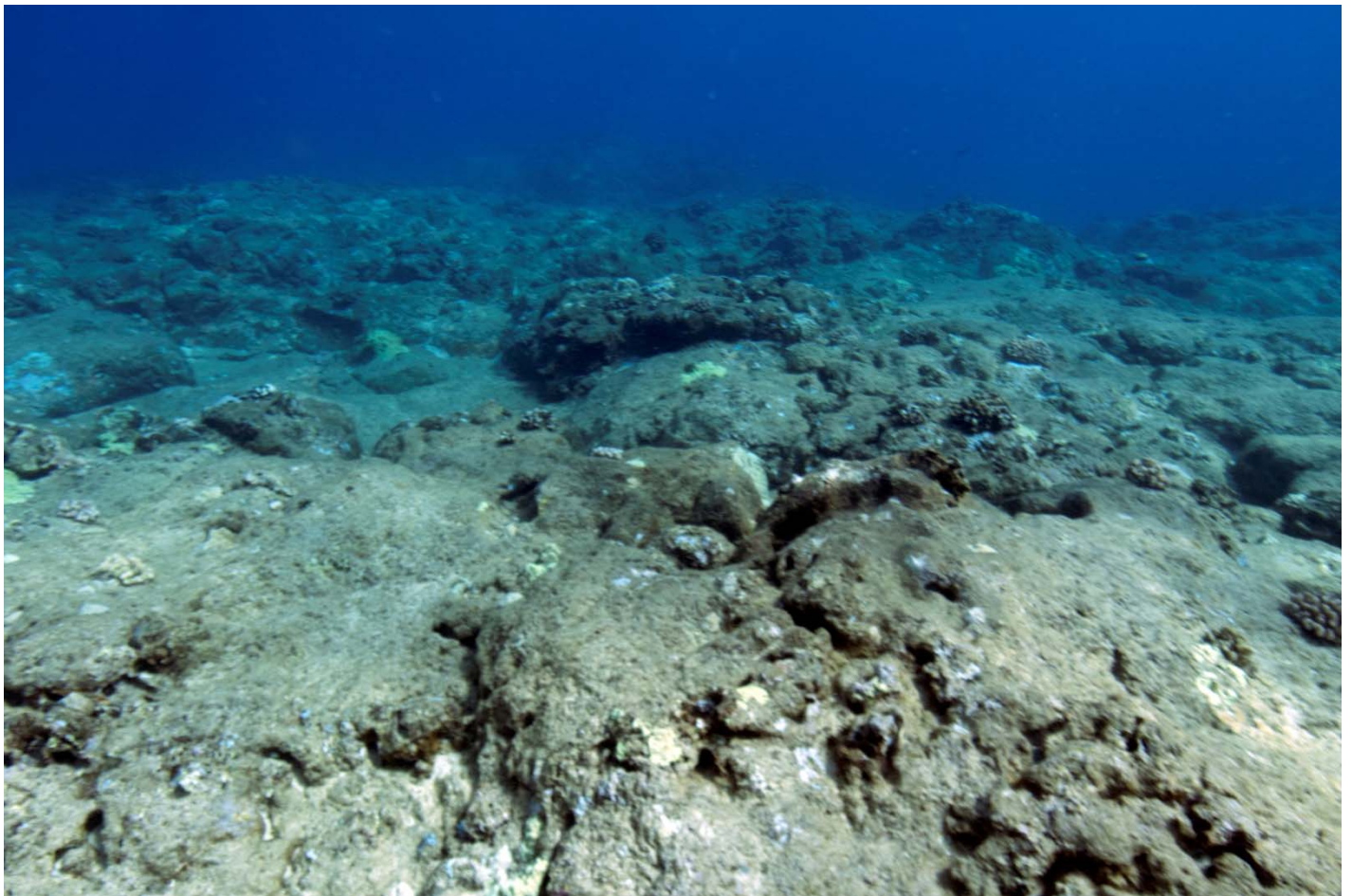


FIGURE 8. Two views of outer reef flat at Sharks Cove, Pupukeya, Oahu . Water depth is approximately 7-8 meters.



FIGURE 9. Tidepools on shallow reef bench that borders Sharks Cove, Pupukea, Oahu. Bottom photos shows submerged view of outer edge of tidepool adjacent to reef crest. Water depth is approximately 1 meter.



FIGURE 10. Two views of nearshore boulder zone in the area of Transects 3 and 4, south of Sharks Cove, Pupukea, Oahu. Blue covering of boulder in upper photo is soft octocoral *Sarcothelia edmondsoni*. Water depth is approximately 1-2 meters.



FIGURE 11. Two views of mid-reef boulder zone in the area of Transects 3 and 4, south of Sharks Cove, Pupukea, Oahu. Water depth is approximately 5-7 meters.

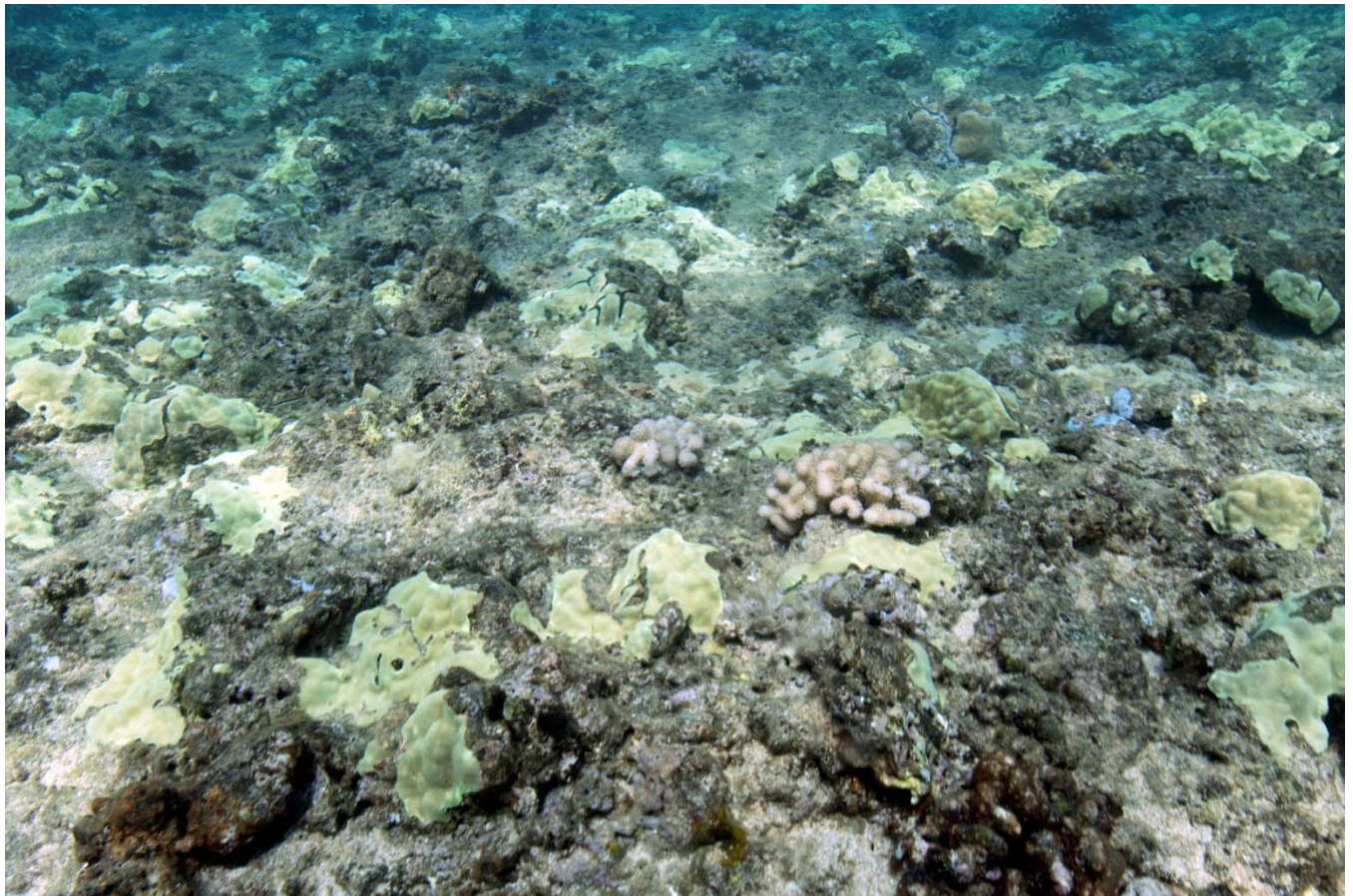
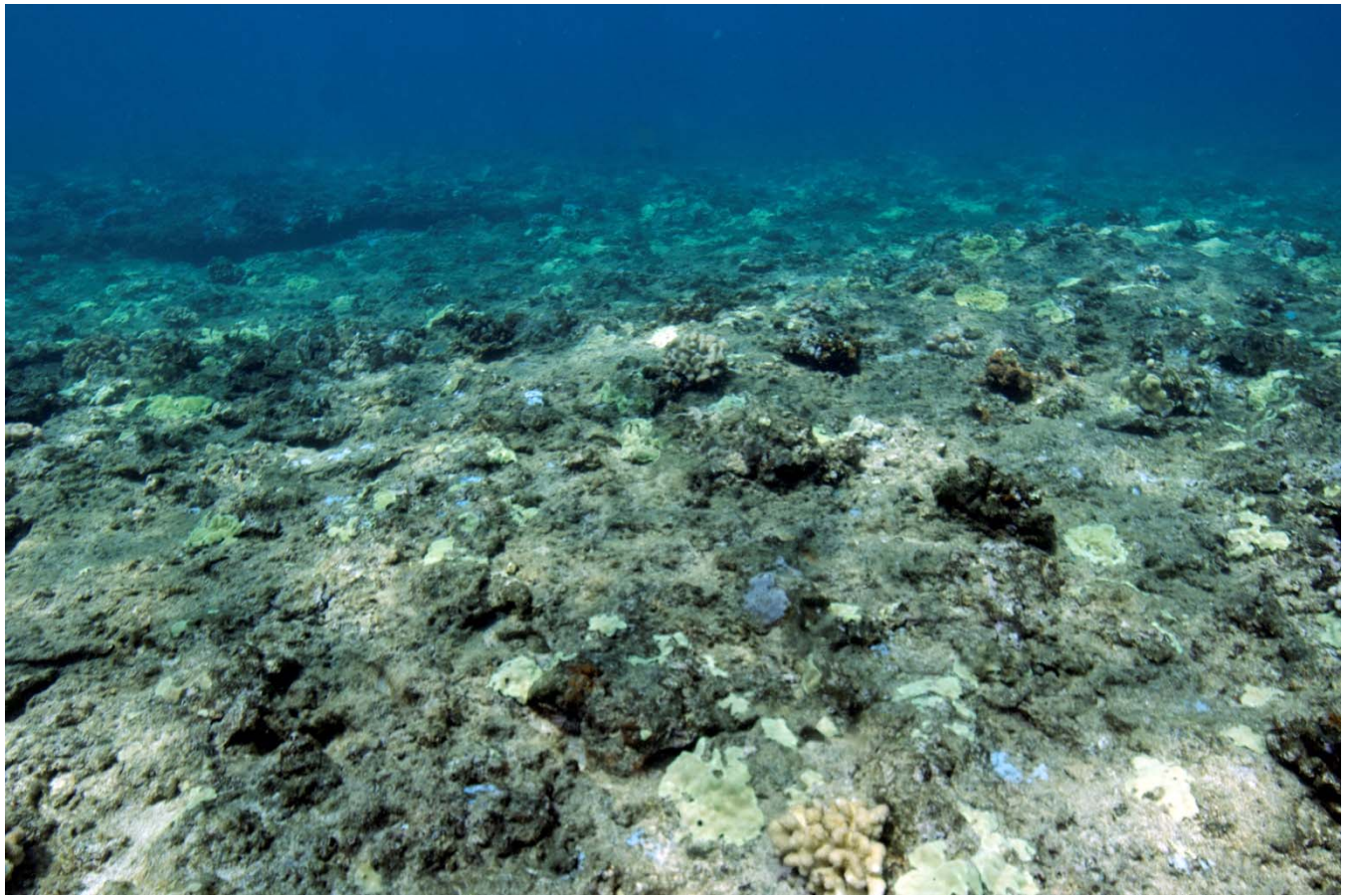


FIGURE 12. Two views of outer reef flat in the area of Transects 3 and 4, south of Sharks Cove, Pupukea, Oahu. Water depth is approximately 8-9 meters.



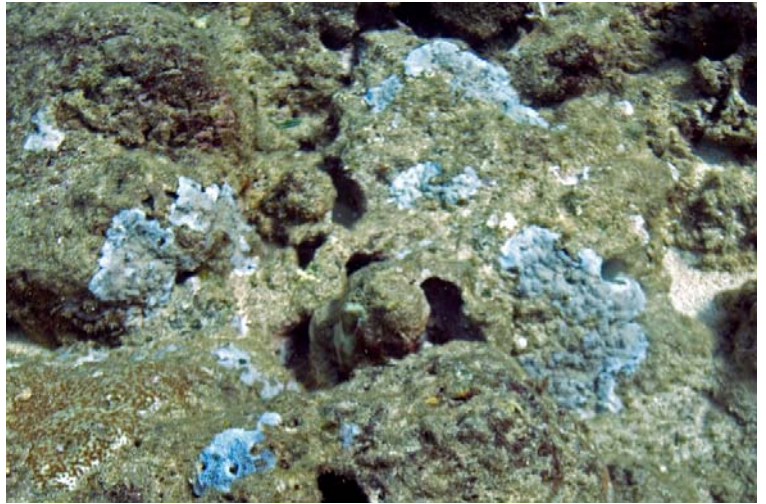
Pocillopora meandrina



Porites lobata



Porites lutea



Montipora flabellata

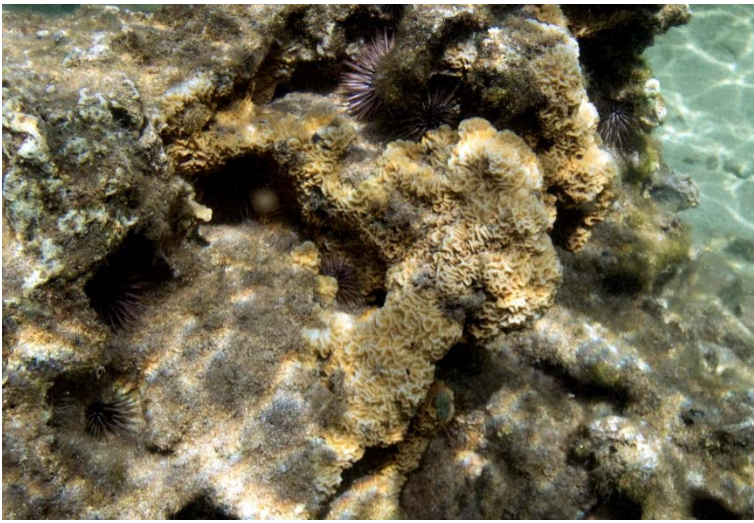


Montipora patula



Montipora capitata

FIGURE 13. Coral species found off Sharks Cove, Pupukea, Oahu, Hawaii.



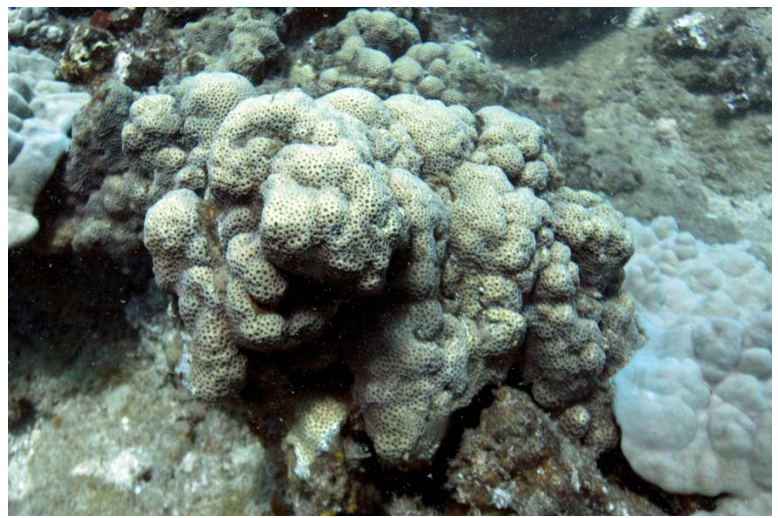
Pavona varians



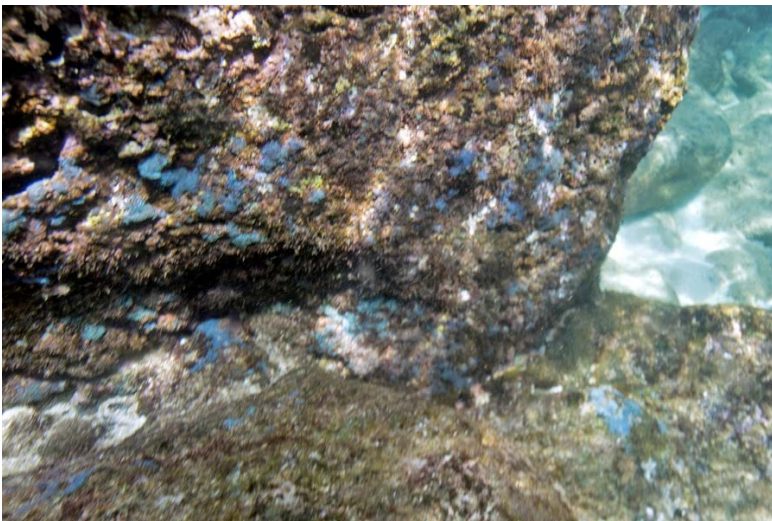
Pavona duerdeni



Leptastrea purpurea



Leptastrea transversa



Sarcothelia edmondsoni

FIGURE 13 continued. Coral species found off Sharks Cove, Pupukea, Oahu, Hawaii.

APPENDIX D

CULTURAL IMPACT ASSESSMENT FOR
TMK: (1) 5-9-011:068, 069, AND 070 IN
PŪPŪKEA AHUPUA‘A, KO‘OLAULOA DISTRICT,
ISLAND OF O‘AHU, HAWAI‘I

FINAL—Cultural Impact Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu, Hawai‘i



Prepared For:

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November 2017



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FINAL—Cultural Impact Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu, Hawai‘i

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Pūlama Lima, MA

November 2017



MANAGEMENT SUMMARY

A Cultural Impact Assessment (CIA) was conducted for a proposed commercial development in Pūpūkea Ahupua‘a, Ko‘olauloa District, on the island of O‘ahu on TMK: (1) 5-9-011:068, 069, and 070. This CIA took the form of background research and an ethnographic survey consisting of interviews with three community members knowledgeable about the area, all of which are discussed in this report. The background research synthesized traditional and historic accounts and land use history for the Pūpūkea region. Consultations with community members were conducted to obtain information about the cultural significance of the subject properties and of Pūpūkea as a whole, as well as to address concerns of the community regarding the effects of the proposed construction on places of cultural or traditional importance.

The background study revealed that Pūpūkea is an area rich in pre- and post-contact history. With a traditional economy based largely on fishing and marine exploitation, the coastline was an important resource for the people that lived there. Because of the dearth of fresh water, wetland agriculture was not widely practiced, and dryland farming focusing on ‘uala cultivation factored largely into traditional lifeways. The historic period brought about widespread changes to the Pūpūkea landscape. Crops such as avocado and pineapple were farmed, and large tracts of land supported housing developments. The OR&L railroad ran just makai of the project area, transporting sugarcane from the north shore plantations. The Niimi store was a hub of activity at the project site in the early 20th century.

Interviews with individuals knowledgeable about Pūpūkea also produced valuable information about the cultural significance there. Although no existing cultural resources or practices were identified for the specific project area, salt collecting and limu gathering were mentioned for the coastal region across the highway, and there may have been an ancient trail that once crossed through the project area in the past. It was also noted that there may be a subterranean fresh water source beneath the project lands.

The interviewees voiced several concerns regarding the proposed development. They include the possibility of the project not giving back to the community; potential adverse effects from sewage seepage; added congestion to traffic and parking; visitors trespassing onto private property and into culturally-sensitive areas; not sharing details of the proposed development with the community; and not fulfilling road improvement stipulations that were previously discussed for the area.

The interviewees also shared recommendations and measures to mitigate potential adverse effects of the proposed development. These consist of giving the area’s Hawaiian and long-time Local families preference for jobs; reaching out to the community and creating dialogue regarding what kinds of businesses will be located at the new development; improving the parking plan, delivery truck system, water usage, etc. that Foodland is currently using; not adding another traffic light along the highway in front of the development; creating a Hawaiian presence at the new development; constructing restrooms that will be accessible to the general public; being respectful of the original Pūpūkea community and acknowledging the piko families of the area; being respectful of the native Hawaiian language and encouraging its correct usage at the new development; and supporting a study on the environmental implications of development, such as the effects of benzoin (from santan lotion) on water quality and the impacts of erosion due to public access.

CONTENTS

MANAGEMENT SUMMARY.....	i
FIGURES.....	iv
TABLES.....	iv
INTRODUCTION.....	1
Project Description, Location, and Natural Environment	1
TRADITIONAL CULTURAL AND HISTORIC BACKGROUND.....	5
Place Names	5
Pre-Contact Pūpūkea	10
Land Use.....	10
Wind Name.....	10
Mo‘olelo	10
Hi‘iaka and Pilia‘ama	10
Pōhaku of Significance	13
Pu‘u o Mahuka Heiau	13
Pūpūkea in the Historic Era.....	14
Early Historic to Post-Contact Period.....	14
Mid-19 th Century and the Māhele.....	14
1900–the Mid-1900s.....	15
Modern Land Use.....	18
Previous Archaeology	18
Summary of Background Research.....	25
ETHNOGRAPHIC SURVEY	27
Methods.....	27
Interviewee Background.....	27
Roberts (Bob) Leinau	28
Thomas (Tom) Shirai, Jr.....	28
Topical Breakouts.....	28
Connections to the Pūpūkea area.....	29
Pūpūkea History	30
The Natural Environment	31
Archaeological Sites and Cultural Practices.....	32
Change Through Time.....	33
Concerns and Recommendations.....	34
Summary of Ethnographic Survey	37
SUMMARY AND RECOMMENDATIONS.....	39
Cultural Resources, Practices, and Beliefs Identified.....	39
Potential Effects of the Proposed Project	39
Confidential Information Withheld	40
Conflicting Information.....	40
Recommendations	40

CONTENTS

GLOSSARY	41
REFERENCES.....	44
APPENDIX A: AGREEMENT TO PARTICIPATE	49
APPENDIX B: CONSENT FORM	52
APPENDIX C: TRANSCRIPT RELEASE	54
APPENDIX D: INTERVIEW WITH BOB LEINAU	56
APPENDIX E: INTERVIEW WITH TOM SHIRAI	66

FIGURES

Figure 1. Project area on a 7.5 minute USGS Waimea quadrangle map.....	2
Figure 2. Project area (in red) on a TMK plat map.	3
Figure 3. Soils in the vicinity of the project area.....	4
Figure 4. Portion of a map showing the north coast of O‘ahu (Donn 1902).	16
Figure 5. Portion of a Pupukea-Paumalu Homesteads map (Wall 1904).	17
Figure 6. The Niimi Store at and adjacent to the current project area, in July 1978.	18
Figure 7. USGS 1962 aerial photo of Pūpūkea.	19
Figure 8. Location of previous archaeological studies in the vicinity of the project area.	20
Figure 9. Location of known archaeological sites in the vicinity of the project area.	21

TABLES

Table 1. Previous Archaeology in Pūpūkea.....	22
Table 2. List of Individuals Contacted	28

INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment (CIA) for a proposed commercial development in Pūpūkea Ahupua‘a, Ko‘olauloa District, on the island of O‘ahu on TMK: (1) 5-9-011:068, 069, and 070. This CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community’s perspectives on the proposed project.

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. The next section presents methods and results of the ethnographic survey. Project results are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of two of the interviews.

Project Description, Location, and Natural Environment

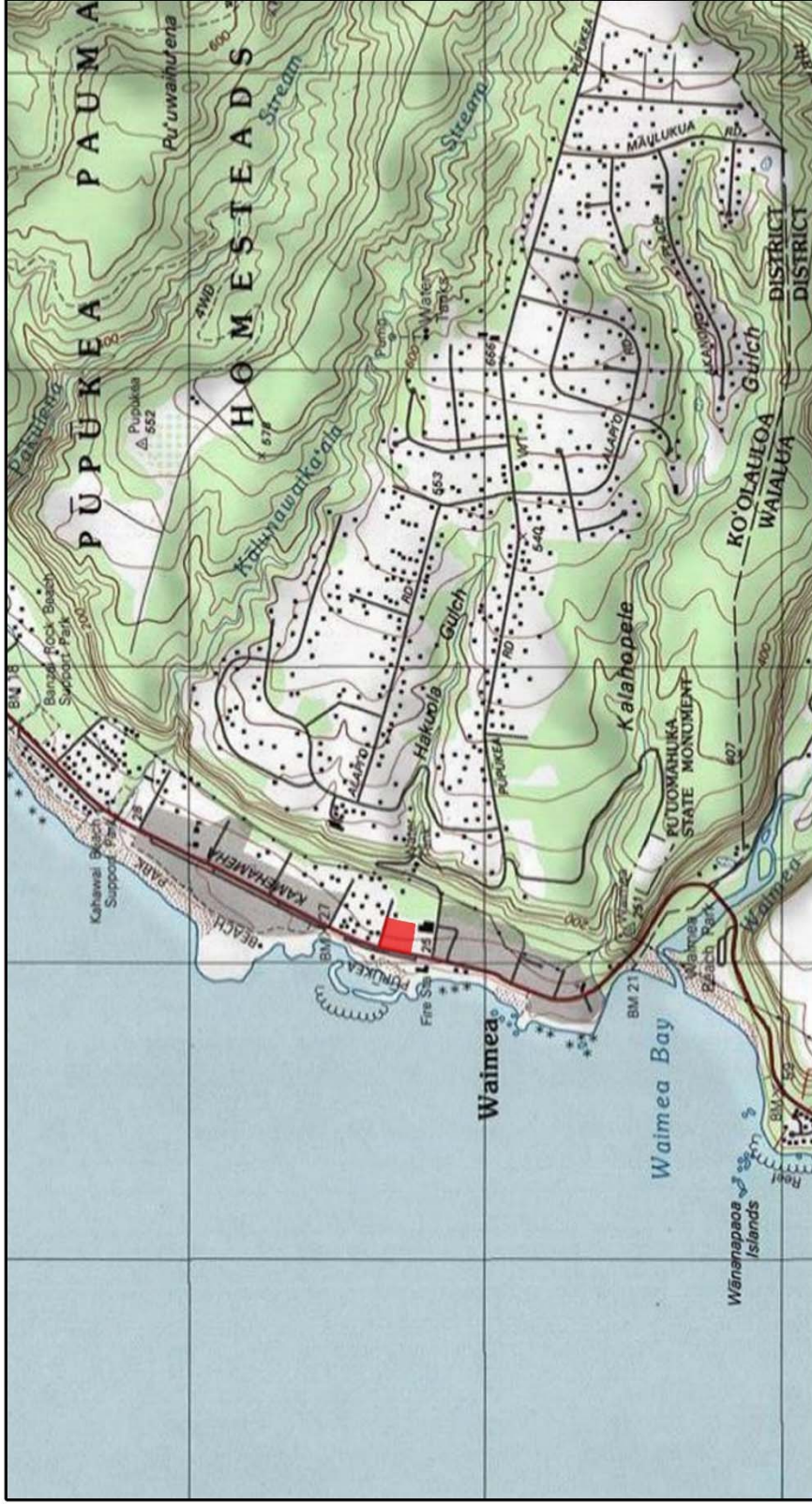
Hanapohaku LLC is proposing to develop a rural community commercial center in Pūpūkea, O‘ahu to provide a mix of goods and services to residents and visitors of the community. The property is classified as Urban in the State Land Use Designation, is zoned for B-1 Neighborhood Business in the City and County of Honolulu Land Use Ordinance, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 SF. The buildings will set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater.

The project area is located on the coast of Pūpūkea on the north shore of O‘ahu (Figures 1 and 2). One of 23 ahupua‘a in the Ko‘olauloa Moku, Pūpūkea is bounded to the northeast by Paumālū Ahupua‘a, and to the southwest by Waimea Ahupua‘a and Moku.

TMK: (1) 5-9-011:068, 069, and 070 total 1.1 ha (2.72 ac.), and are owned by Hanapohaku, LLC. This project area that includes the three parcels is bounded by Pahoe Road on the north, Kamehameha Highway on the west, Foodland on the south, and a private parcel on the east. Topography is relatively flat, and vegetation consists of pockets of koa haole, grass, and weeds. Rainfall averages approximately 115 cm (45 in.) per year (Giambelluca et al. 2013). The project area is roughly equidistant from two watercourses, Kālunawaika‘ala Stream, which lies approximately 1 km (3,280 ft.) to the north, and the larger Waimea River, that is 1 km (3,280 ft.) to the south. The project area lies at approximately 12 m (40 ft.) above mean sea level (amsl), and is 150 m (492 ft.) from the coastline at the beaches known as Sharks Cove and Three Tables.

Geology of the area centers around the Ko‘olau Mountain Range, the massive shield volcano that serves as a backdrop for the windward O‘ahu coast. Formed roughly 1.8–2.6 million years ago, the Ko‘olau mountains produced tholeiitic and olivine basalts with trace amounts of oceanite (Macdonald et al. 1983). Below the Ko‘olau Mountains is the sandy coastal plain that was formed when the sea level was higher. Soils are of the Kaena-Waialua association, which were used for sugarcane, pasture lands, orchards, truck crops, urban development, and recreation (Foote et al. 1972). The soil series is described as mostly level to gently sloping, and poorly to excessively drained (Foote et al. 1972).

Specifically, the soil type in the project area is Waialua silty clay, 3–8% slopes (WkB) (Foote et al. 1972) (Figure 3). This soil is found on coastal plains and is typically used for pasture, sugarcane, and truck crops (Foote et al. 1972:128).



Legend
■ Project Area

Keala Pono



Layer Credits: USGS Topographical Waimea Quadrangle Map 1998

Figure 1. Project area on a 7.5 minute USGS Waimea quadrangle map.

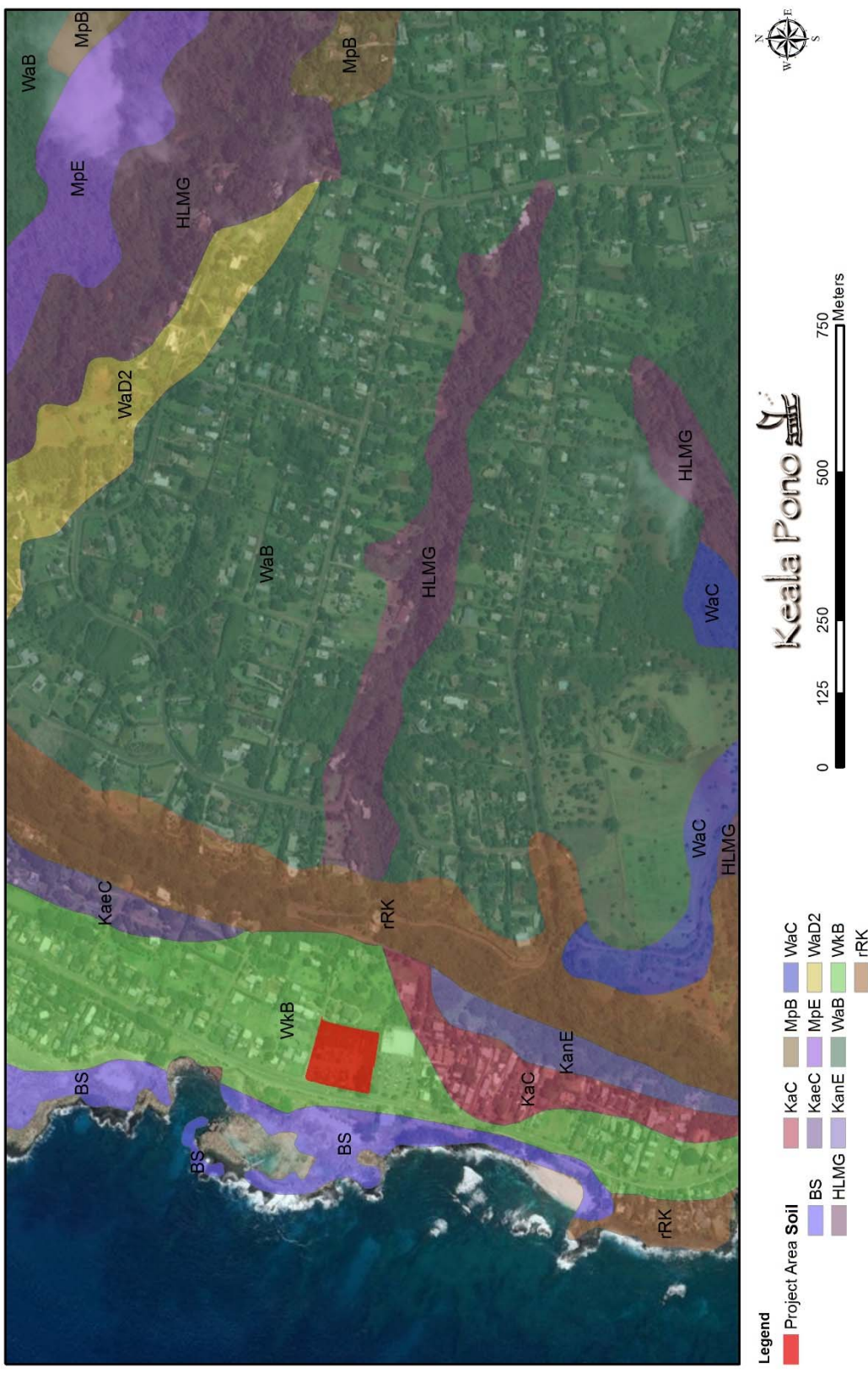


Figure 3. Soils in the vicinity of the project area.

TRADITIONAL CULTURAL AND HISTORIC BACKGROUND

A brief historic review of Pūpūkea Ahupua‘a is provided below, to offer a better holistic understanding of the use and occupation of the project area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, and SHPD library. In addition, internet resources such as the Papakilo database, Ulukau database, and the State of Hawai‘i Department of Accounting and General Services (DAGS) website were consulted. Historical maps, archaeological reports, and historical reference books were among the materials examined.

Place Names

Traditional Hawaiian place names are often referred to in ‘ōlelo no‘eau, mo‘olelo, and mele. Other sources that have documented traditional Hawaiian place names include historic maps, ethno-historic accounts, ethnographic surveys, and early historic land claim records, such as Land Commission Award (LCA) Claims, Grant Claims, and Boundary Commission Testimonies (BCT). The name of a place and its interpretation can reveal significant information about the traditional beliefs and practices associated with an area. In ancient Hawai‘i, it was common to name places based on their environment, the resources found in the area, the people that live there, events that happened in the area, and religious or spiritual associations. The name Pūpūkea literally translates to “white shell” (Pukui et al. 1976:195). The sea was an important resource in the region, as fresh water for farming was not abundant in the ahupua‘a.

The following compilation includes Pūpūkea place names, names of features, mo‘o ‘āina, heiau, kū‘ula, and ‘ili ‘āina, along with any translation and lexicology information that could be obtained for each place. The place names and descriptions were gleaned from *A Catalog of Hawaiian Place Names: Compiled from the Records of the Boundary Commission and The Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaii* (Soehren 2010). Translations obtained from Pukui et al. (1976) are abbreviated as PEM in the text.

Ahupohaku

Feature: mo‘o ‘āina

Claim no. 9976 by Lono is for his “Apana 1. Mooaina o Ahupohaku.”

Lexicology: ahu-pōhaku.

PEM: stone heap.

Aleka

Feature: mo‘o ‘āina

Claim no. 10238 by Kalama is for his “Apana 3. Aleka, hookahi mala uala.” Claim no. 2737 by Puhipapa for his “Apana 1. A moo aina was not awarded.

Lexicology: ‘aleka.

PEM: Large tree of the pine family, cedar, fir.

Auwahi

Feature: mo‘o ‘āina

Claim no. 11010 by Waha: “Apana 1. Auwahi ka aina, he aina kanu.”

Lexicology: auwahi.

PEM: smoky glow.

Camp Pupukea

Feature: place
Boy Scout camp.
Lexicology: pūpū-kea.
PEM: White shell.

Hakuola Gulch

Feature: gulch
Stream rises at about 520 ft. elevation, ends at about 120 ft.
Lexicology: haku-ola.
PEM: living lord.

Ka Lua o Maua

Feature: rock
Site 254. Number of stones in the water, one of which is known as Kalua o Maua, first small inlet on the Kahuku side of Waimea Bay...similar to Laniwahine and is representative of a woman who was a great fisher... (McAllister 1933:151; Sterling and Summers 1978: 145)
Lexicology: ka-lua-maua.
PEM. The pit of Maua

Kaaiipu

Feature: *mo'o 'āina*
Claim no. 8039 by Aena is for "Apana 2. Kaaiipu. He aina paakai".
Lexicology: ka-'ai-pū.
PEM: the eating together.

Kaaumakua

Feature: *mo'o 'āina*
Claim no. 2905 by Kailialoha: "Kaaumakua ka aina ma Pupukea" (Foreign Testimony 11:511), "i ka ili aina o Kaaumakua" (Native Register 3:687).

Kalaekoa

Feature: Boundary point
Course 9 of the Pupukea/Waimea boundary runs "to top of hill Kalaekoa"
Lexicology: ka-lae-koa.
PEM: the koa tree point.

Kalahopele Gulch

Feature: gulch

Kaleleiki

Feature: stream
Lexicology: ka-lele-iki.
PEM: the short leap.

Kalunawaikaala Stream

Feature: stream
Lexicology: ka-luna-wai-ka'ala.
PEM: water from the heights [of] Ka'ala.

Kamaee

Feature: *Kū'ula*

Site 253. Piles of stones, near mountain side of road near Waimea. One of the most prominent piles has a depression a few inches deep and about 2 feet in diameter. This was known as Kamae'e fishing shrine (ko'a), and fish offerings were placed in the mouth like aperture." (McAllister 1933:150; Sterling and Summers 1978:145).

Kamao

Feature: *mo'o 'āina*

Claim no. 10924 by Uluehu: "Apana 1. Kamao kahi kanu."

Lexicology: Perhaps ka-ma'o.

Kanakaiki

Feature: *mo'o 'āina*

Claim no. 10924 by Uluehu: "Apana 2. Kanakaiki aina paakai ia."

Lexicology: kanaka-iki.

PEM: Small man.

Kanawai

Feature: *mo'o 'āina*

Claim no. 10238 by Malamanui: "Apana 1. Kanawai ka moo aina."

Lexicology: kânāwai.

Kaohaimoa

Feature: *mo'o 'āina*

Claim no. 2904 by Kanae: Apana 1. Kaohaimoa ka moo."

Kapi

Feature: *mo'o 'āina*

Claim no. 7420 by Kaiwi: "Kapi ka moo ma Pupukea he aina kula."

Lexicology: kâpī. PE: to sprinkle, as with salt. Ka-pī.

PEM: several possible meanings.

Kapuaa

Feature: *mo'o 'āina*

Claim no. 7421 by Kalainaina: "Apana 1. Kapuaa ka moo aina." Claims no 7422 by Kaawa and no. 8136 by Holoikauai for parcels in kapuaa were denied.

Lexicology: ka-pua'a.

PEM: the pig.

Kapuupuu

Feature: *mo'o 'āina*

Claim no. 8039:2 by Aena at Kaaipu is bounded on the Waianae side by "aina o Hina, kapaia Kapuupuu."

Lexicology: ka-pu'upu'u

Keokea

Feature: *mo'o 'āina*

Claim no. 11010 by Waha: "Apana 2. Keokea he aina paakai."

Lexicology: ke-ō-kea. PEM: the white sand (ō is short for one).

Kiinoho

Feature: *mo'o 'āina*

Claim no. 2904 by Kanae is “ma Kiinoho kekahi kula”. Claim no. 4261 by Kauila for his “Apana 1. Kiinoho moo ma Pupukea” was not awarded.

Lexicology: ki'i-noho.

Kiwaa

Feature: *mo'o 'āina*

Claim no. 4261 by Kauila for his “Apana 3. Kiwaa aina paakai” was not awarded.

Lexicology: kīwa'a

Kuaiula 2

Feature: *mo'o 'āina*

Claim no. 8039 by Aena: “Apana 1. Kuaiula 2 moo he kula.”

Kukuauau

Feature: *ili 'aina*

Claim no. 2736 by Pohakahi is “i ka ili aina o Kukuauau, eha ili uala, hookahi kula uala...” Written “Kukaauau” in FT (Foreign Register).

Maunawai

Feature: place

Lexicology: mauna-wai.

PEM: water mountain.

Pakulena Stream

Feature: stream

Lexicology: pākū-lena.

PEM: yellow barrier.

Piliaama

Feature: stone

Site 252. Stone known as Piliaama... The natural depression upon the stone is said to be the footprint of a man and of a crab.” (McAllister 1933:150; Sterling and Summers 1978:144)

Lexicology: pili-'a'ama

Pohakaa

Feature: *mo'o 'āina*

Claim no. 10824 by Punahoa: “Apana 1. Pohakaa moo aina.”

Lexicology: Perhaps pōhā-ka'a.

PEM: rolling stone (pōhā is short for pōhaku).

Pupukea

Feature: *ahupua'a*

Returned by Kamamalu at the Māhele, retained by the Gov. indices list 19 kuleana. Claims no. 4261 by Kauila, no 4337 by Nalimaku, no. 7442 by Kaawa were not awarded.

Lexicology: Pūpū-kea.

PEM: white shell.

Puu o Mahuka Heiau

Feature: *heiau*

“It is the largest heiau on Oahu” (McAllister 1933:142)...credited to Menehune, and a place where chiefesses gave birth. It was probably at this heiau that three of Vancouver’s crewmen were offered in sacrifice in 1794. The images here are said to have been destroyed by order of Kamehameha II in 1819” (Sterling and Summers 1978:142).

Lexicology: pu‘u o mahuka.

PEM: hill of escape.

Puu Waihuena

Feature: boundary point

Lexicology: pu‘u wai-hu‘ena.

PEM: flowing water hill.

Puulu

Feature: *mo‘o ‘āina*

Claim no. 4261 by Kauila: “Apana 2. Puulu hookahu mala uala.” Also claim no. 4723 by Ku: “Puulu ka moo aina ma Pupukea.”

Lexicology: pū‘ulu.

PEM: group, crowd, army, party, gang, retinue.

Sunset Beach

Feature: place

Residential area and surfing beach.

Umipuna

Feature: *mo‘o ‘āina*

Claim no. 4323 by Kawili: “Apana1. Umipuna ka moo aina, ahupuaa Pupukea.”

Lexicology: ‘umi-puna.

Wahiolu

Feature: *mo‘o ‘āina*

Claim no. 3990 by Haona: “Apana 2. Pahale ma moo aina ma Pupukea, Wahiolu ka inoa.”

Lexicology: Perhaps wahi ‘olu.

PEM: cool place.

Waimea

Feature: village

Near Waimea Bay.

Lexicology: wai-mea.

PEM: reddish water (as from erosion of red soil).

Pūpūkea Beach Park lies directly across the street from the project area. The park includes two main beaches known as Sharks Cove and Three Tables:

Pūpūkea, or “white shell,” is a long and narrow eighty-acre beach park with a rocky shore. Two small pocket beaches lie within the rocks, one at either end of the park. Among the most popular dive sites on the North Shore, these small beaches are known as Sharks Cove and Three Tables.

Sharks Cove was named by the scuba divers who use it as an entry/exit point. One popular story says that the outline of a reef outside the cove resembles a shark when seen from above. Three Tables was named for the three sections of flat reef that lie off the beach. The tables emerge above the surface of the ocean at low tide. Both of these beaches are primarily summer dive sites, the powerful winter surf precluding most in-water activities in the park. (Clark 2005:112–114)

Pre-Contact Pūpūkea

The following section presents information on the project area in pre-contact times, before the arrival of Westerners in Hawai‘i in 1778. Included are land use information, a wind name, and mo‘olelo of Pūpūkea.

Land Use

Pūpūkea did not likely support wetland agriculture in times past and its economy probably focused more on fishing and the exploitation of coastal resources, along with dryland agriculture. Handy et al. (1991) provide further details:

Two other *ahupua‘a* situated between Kaunala and Waimea, namely Paumalu and Pupukea, are not of a topography to support wet-taro culture of ancient type....The narrow seaward plain had no water. According to *kama‘aina* informants, the gulches or streams in these two localities never were planted. (Handy et al. 1991:463)

It is said that Kamapua‘a, ruler of O‘ahu awarded all lands containing the word “wai” (water, wealth) to the kahuna Lono-a-wohi. After Kamapua‘a left O‘ahu to visit his parents’ home in Kahiki, his father Kahikiula took his place as ruler of O‘ahu (Fornander 1969:43) and re-distributed the “well-watered” lands. Although Pūpūkea was not among these wet lands, Kamakau states that during the re-distribution, “the kahuna class were given the lands of Waimea, Pupukea, Waiahole, and Hakipu‘u...Pupukea belonged to the priests of Kualī‘i” (Kamakau 1992:231). The kahuna class held these lands until the days of high chief Kahahana.

Wind Name

A general wind name for the Pūpūkea area is Mālualua, a northeasterly wind (Nakuina 2005:43). No rain names or other wind names could be found for the ahupua‘a.

Mo‘olelo

Several mo‘olelo pertinent to Pūpūkea were found during research. These stories include an account of the goddess Hi‘iaka and her encounter with a fisherman of Pūpūkea, reports of significant stones, and the history of Pu‘u o Mahuka Heiau.

Hi‘iaka and Pilia‘ama

According to oral tradition, and a publication in a 19th century Hawaiian newspaper, Hi‘iaka, sister of the volcano goddess, Pele, traveled to the Pūpūkea area and while there chanted of the places she visited. A clipping of the original newspaper article and translation are provided below (*Ka Leo o ka Lahui* 1893 in Sterling and Summers 1978:144):

Ko laua nei hele aku la no ia a
ke kula o Kuilima. nana aku laua
nei o ke kope mai o ke kai o Pupukea
ilua o ka lau o kai l'ima. ua
hele wale a pala ka lau o ka ilima
i ke ahungai, oli aku kua i kela
mahe pua.

He kai kapi ike ono
Ko Kalamaula i Pupukea
Ua hele a pala i ke kai
Ke ono o ka ilima
E hiki aku ai i Kapi
E iho aku ai i Piliamaama la
Aia i pili wale —e
Aia la ke lele ala
Aohe i ka welo —e.
——:Aole i puehu:——

(*Ka Leo o ka Lahui* 1893)

They continued to the plain of Kuilima and watched the sea of Pupukea throwing its sprays upward. It swept over the leaves of the ilima, yellowing them, then Hiiaka chanted:

The sea sprays up over the sand,
The yellowing sea of Pupukea,
Yellows the leaves of the ilima,
With its sprays,
This is the way to Kapi,
This is the trail to Pilia'ama
(last three lines not translated) (Sterling and Summers 1978:144)

Another article provides a continuation of Hi'iaka's visit to Pūpūkea. A clipping of the original newspaper article and translation are provided below (*Ka Leo o ka Lahui* 1893 in Sterling and Summers 1978:144):

I ka pau ana oia mele aia nei.
ko laua nei hele aku la no ia a hala
ia wahi, a malaila aku a Waiaiaie.
a malaila aku a hala ia mau wahi
aku, a Pupuhea laua nei, ike laua
nei ia Piliaaama e noho ana e
lawaiia, nana aku laua nei i ka la-
waiia mai o Piliaaama, kani kahea
aia nei.

O Piliaaama kanaka lawaiia o ka
pali

Hee puewai o Waimea

Konohiki aku o Ihikoko

Lawaiia hi-aku o Kaipahu la

He aha ua ia?

Pane mai o Piliaaama ia laua
nei, no ka ninau ana aku a Hiiaka-
ikapoliopole i ka ia ma ke mele.

Hai mai o Piliaaama ia laua
i ka inoa o ka ia ana e lawaiia ana.
he kata ka ia he Moi ka ia. he oio
ua ia, he ahole ka ia, he paaia
pau ka oielo ana mai o Piliaaama
ia laua nei, kani aku no ke oli
a Hiiakaikapoliopole penei.

O Piliaaama kanaka lawaiia

Kane hiialo oe a Kapuewai

Lawaiia aku o Kapapaiki la

He aha ua ia e?

Pane mai o Piliaaama, he uhu
ua ia, he Opule ka ia, he Manini ka
ia, he Hinane ua ia, he papai no
hoi ua ia, pau na ia e lawaiia ianei
la e au.

(Ka Leo o ka Lahui 1893)

At Pupukea they spied Piliaama fishing as they watched Hiiaka called:

O Piliaama fisherman of the cliffs
Who surfs the mouth of the stream of Ihukoko
Who catches aku fish
What are you catching now?

He answered that he was catching some kala, moi, oio and ahole. She called again:

O Piliaama, fisherman,
Beloved husband of Kapuewai,
Who fishes for aku at Kapapaiki,
What else do you catch?

He answered, “some uhu, opelu, manini, hinane and also some crabs. I do all kinds of fishing here” (Sterling and Summers 1978:144).

Pōhaku of Significance

Two special stones were noted by McAllister (1933) in Pūpūkea. One of these stones was called Piliaama:

The natural depression upon this stone is said to be the footprint of a man and of a crab. According to my informant, Hookala, a man of low birth but exceedingly handsome and strong once lived in the vicinity. An alii woman who passed was enamored of this man and approached him. She came toward him, but he moved away. She followed. He began running, and she gave chase. When she had almost overtaken him, he vanished, and there remained this stone with his footprint and that of a crab. (McAllister 1933:150)

Another significant stone was known as Kalua o Maua:

Ho‘okala [an informant] remembers that Kalua o Maua is similar to Laniwahine [*mo‘o* of the Waialua area] and is representative of a woman who was a great fisher. One night, when she had gone torching, her husband was unable to see her from their place on the side of the hill. Searching for her, he found her in the form of this stone swimming about in the water. It is said that wherever this stone is found there is fresh water in the ocean. (McAllister 1933:151)

Pu‘u o Mahuka Heiau

Located on the cliffs of Pūpūkea, overlooking Waimea Valley, stands Pu‘u o Mahuka, which is thought to be a heiau luakini. Pilahi Paki writes about this in his book, *Legends of Hawaii: Oahu’s Yesterday*, and credits the construction of the heiau to the ali‘i Kahahana, and his high priest, Ka‘ōpuluhulu. It is said that Kahahana asked Ka‘ōpuluhulu if it was wise to wage war with Kaua‘i. The priest replied that a heiau would need to be constructed so that he could receive a sign. Kahahana had Kupopolo Heiau built near the shores of Waimea, but Ka‘ōpuluhulu did not receive the sign. He instructed Kahahana to build a heiau at a higher location and Pu‘u o Mahuka was erected. There, Ka‘ōpuluhulu received the sign to not invade Kaua‘i. Paki writes, “Pu‘u-O-Mahuka, remains among the lofty cliff as an emblem of the power of ‘thought’ which can produce peace or war” (Paki 1972:58–59).

Pūpūkea in the Historic Era

Following the arrival of Westerners in 1778, Pūpūkea saw major transformations. The uplands were cultivated in pineapple, and lowlands were increasingly used for residential housing. These changes are evident in historic accounts, Māhele data, and maps and photographs of the landscape.

Early Historic to Post-Contact Period

The first account mentioning the Pūpūkea area was written by Captain Charles Clerke as he sailed around the north shore of O‘ahu. On February 28, 1779, Captain Clerke anchored in Waimea Bay and recorded this description in his journals:

I stood into a Bay just to the Wt[est]ward of this point the Eastern Shore of which was by far the most beautifull Country we have yet seen among these Isles, here was a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate many large Villages and extensive plantations; at the Water side it terminated in a fine sloping, sand Beach. . . . This Bay, its Geographical situation consider'd is by no means a bad Roadsted, being sheltered from the NEbN SEterly to SWbW with a good depth of Water and a fine firm sandy Bottom; it lays on the NW side of this Island of Wouahoo . . . surrounded by a fine pleasant fertile Country. (Beaglehole 1967:569)

James King, also on the same voyage as Captain Clerke, stated:

The appearance of so fine a river running thru: a deep Valley made us drop Anchor...I walk'd a little farther & observed it to be the produce of 2 branches, or small streams or rivers, that came down 2 Valleys...the bank of this river as well as the face of this NW part of Wo‘ahoo was as beautiful as any Island we have seen & appear'd very well cultivated & popular; they told us here that most of the Men were gone to Morotai to fight Tahyteree... (Beaglehole 1967:584–585)

In 1792, the *Daedalus*, captained by George Vancouver, anchored off the coast of Waimea and a party was sent ashore for fresh water. Three members of the party ventured inland in Waimea Valley and were beaten to death by tattooed men. The bodies were possibly taken to Pu‘u o Mahuka Heiau:

They [the Hawaiians] took the bodies to a heiau (‘temple’), cooked them and divided them among O‘ahu chiefs. They themselves said the heiau was at Mokuleia, about twelve miles along the coast to the west. European interpreters of Hawaiian history, wishing to be more commonsensical, suggest that the heiau might have been Pu‘u-o-Mahuka at Waimea itself. (Denig 1995:25)

Mid-19th Century and the Māhele

The change in the traditional land tenure system in Hawai‘i began in 1845 with the introduction of The Organic Act. The Organic Act of 1845 and 1846 essentially initiated what is known as the Māhele system, or the division of Hawaiian lands. This new system introduced the concept of private property in the Hawaiian society, and required Hawaiians, commoners and royalty alike, to submit claim to their lands.

In 1848, the crown (Hawaiian government) and the ali‘i (royalty) received their land titles, which are known as the Crown Lands. In 1850 a second Māhele was conducted, this time allowing commoners, and others who could prove residency, to put claim to their land. Those with successful claims were awarded with land known as kuleana parcels. Though many Hawaiians did not submit or follow through on claims for their lands, the distribution and descriptions of Land Commission

Awards (LCAs) can provide significant insight to the patterns of land use, residence, environment, and activities in the project area.

During the Māhele, Pūpūkea Ahupua‘a was awarded to Kamehameha III. However, because his documented awards on O‘ahu did not include any awards from the Ko‘olauloa District, it has been suggested that Kamehameha III gave Pūpūkea to the government (Chinen 1961:26, PBR Hawaii & Associates 2014). Boundary Commission Document No. 14985 validated this statement, as Pūpūkea Ahupua‘a was indicated as “Crown Lands.” A total of 31 kuleana claims were made for Pūpūkea Ahupua‘a. Of these, nine were not awarded. Unlike typical small land boundaries, most of the 22 awarded claims in Pūpūkea were comprised of narrow land strips. There were no LCA awards given for the project parcels or immediate vicinity.

Shortly following the Māhele, sugarcane cultivation became a profitable endeavor in Hawai‘i. In 1889 the OR&L railroad was built from Honolulu to Kahuku to accommodate the sugar plantations on the north shore of O‘ahu, and the Waimea Railroad station was built at the intersection of the Government Road and the Pūpūkea Road (Kuykendall 1967:68).

1900–the Mid-1900s

In the early 1900s, though the railroad was the main focus of economic activity on O‘ahu, farming in the Pūpūkea highlands became profitable as crops were harvested and transported, using the railroad, to central markets across the island (Clark 1977). In particular, avocados were very lucrative, with 400 acres of avocado trees planted in the Pūpūkea uplands in the early 1900s (Clark 1977:123). After the owner, Fredrick Haley, Sr., sold the 400 acres of avocado lands to Libby, McNeil, and Libby, pineapple became a popular commodity of the area (Clark 1977:123). Pineapple plantations in Pūpūkea were founded as early 1919.

At this time, residential construction also began for the Pūpūkea-Paumalū Homesteads and the Pūpūkea-Paumalū Beach Tract. By 1943, even more development had occurred in the region. During the decline of plantation agriculture in the 1950s and 1960s more lots in Pūpūkea were sold for residential purposes. By the 1970s, both the highlands and coastal areas of Pūpūkea were thriving residential communities.

Two historic maps depict the project lands in the early 1900s. The first is a map of the north coast of O‘ahu from 1902 (Figure 4). The shoreline, coastal road, cliffs, and gulches are illustrated. The next map shows the Pūpūkea-Paumalū Homesteads in 1904 (Figure 5). The OR&L railroad and Government Road can be seen just makai of the project area. A structure labeled as “Waimea R.R. Station” is also close to the project area, at the intersection of what is now Kamehameha Highway and Pūpūkea Road. A school lot is depicted south of the bend in Pūpūkea Road, southeast of the project site. Farther southeast is Pu‘u o Mahuka, which is labeled as “Heiau.”

There were three major stores in the Pūpūkea area in the 20th century that were focal points of the community. The earliest was Niimi Store, located at and adjacent to the current project area (Figure 6). It was established in 1903 and later evolved into Foodland (Hoover 2005). The Niimi family lived in a house located behind their store (*North Shore News* 2013:3). The other stores were the Sunset Beach Store (located at the current Ted’s Bakery), which opened in 1956; and Kammie’s Market, which was established in 1961 next to what is now the Chevron service station.

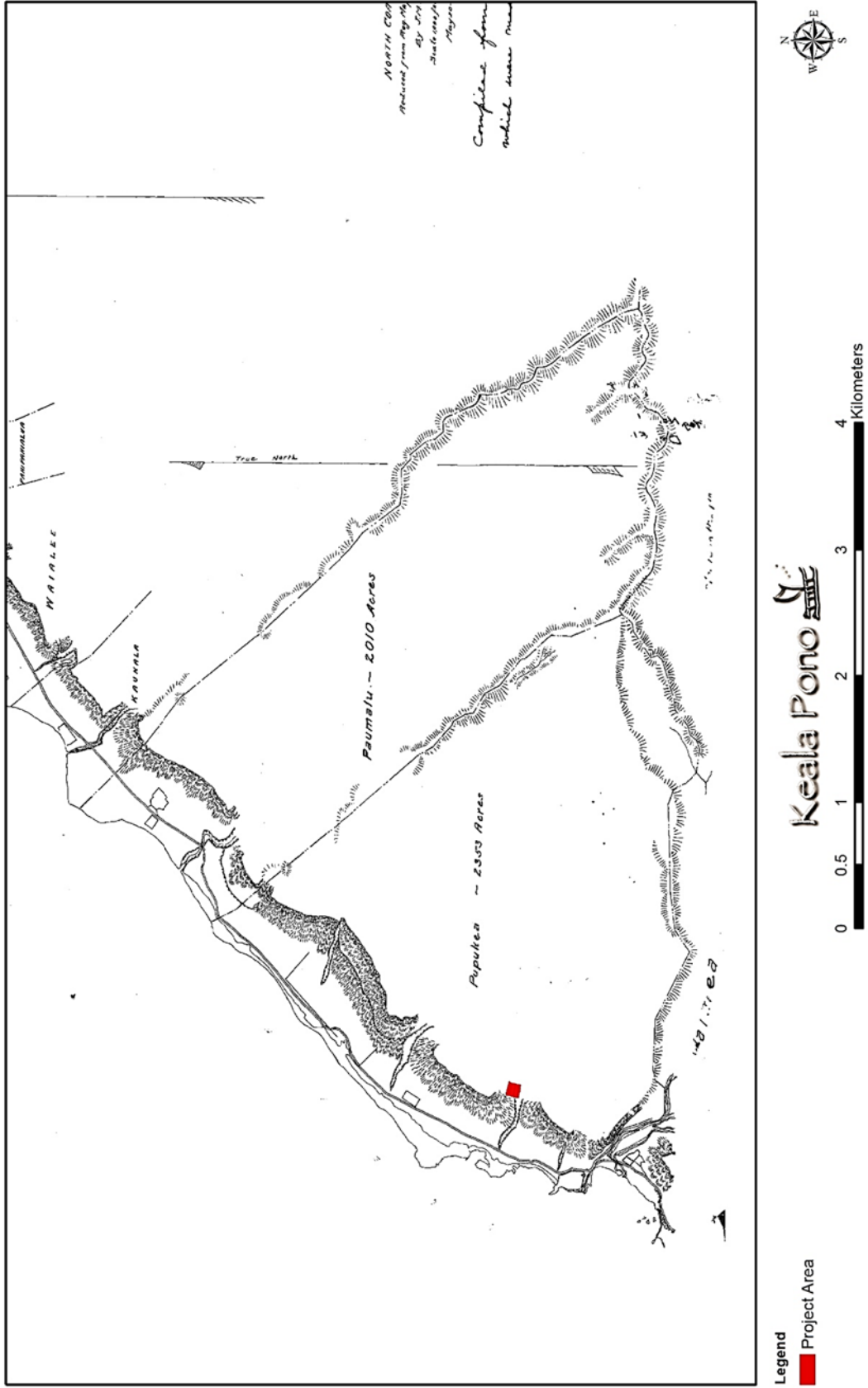
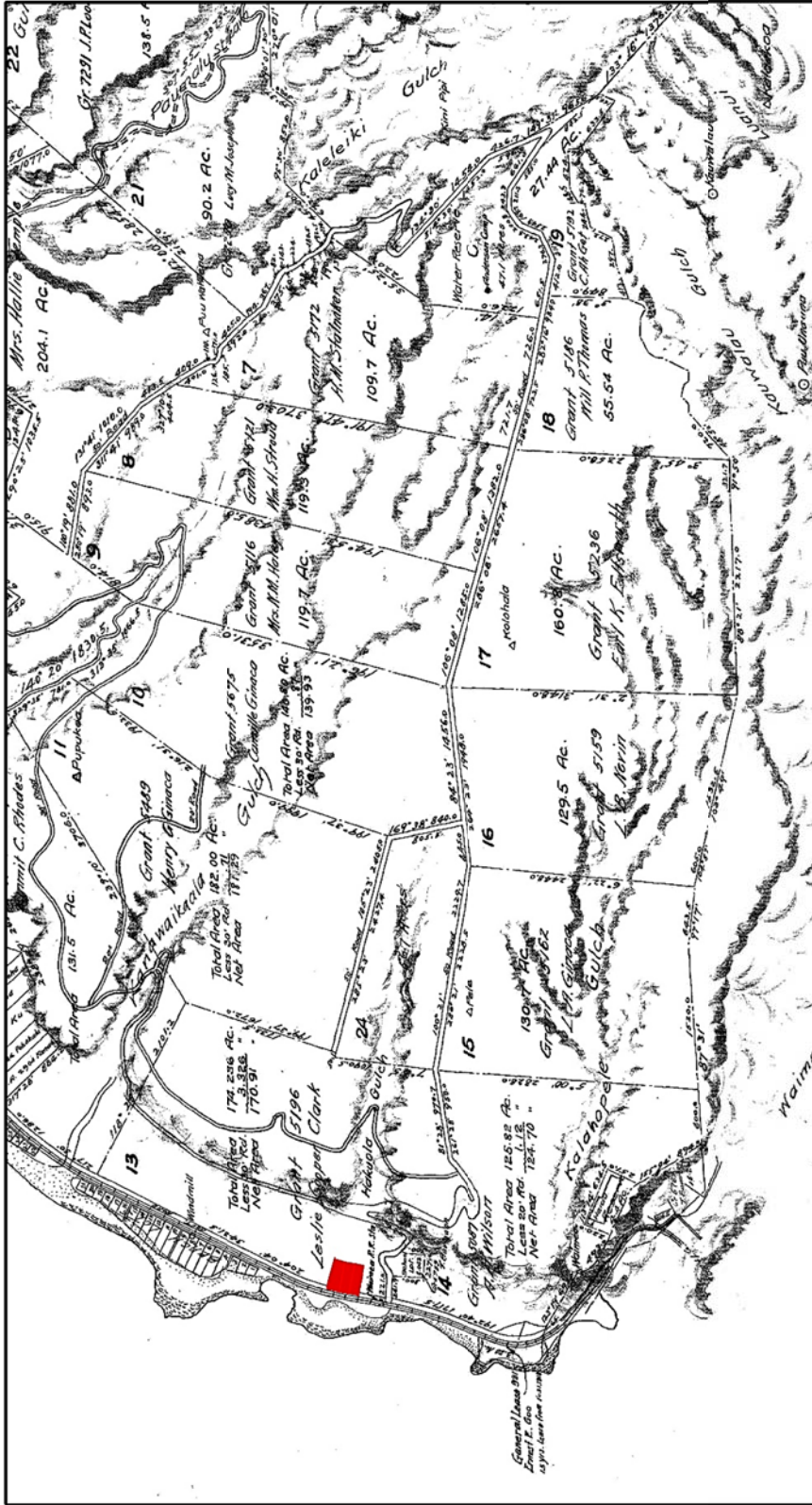


Figure 4. Portion of a map showing the north coast of O'ahu (Donn 1902).



Legend
■ Project Area

Keala Pono

0 0.5 1 2 Kilometers



Figure 5. Portion of a Pupukea-Paumalu Homesteads map (Wall 1904).



Figure 6. The Niimi Store, the grounds of which were at and adjacent to the current project area.

Modern Land Use

Today, Pūpūkea remains a mostly residential area, with some agricultural production in the uplands (Figure 7). The Pūpūkea-Paumalū Beach Tract (Sunset Beach area) was also sold for residential property, where many vacation homes were constructed. Pūpūkea is known as a popular surf area, and continues to attract homeowners, surfers, and tourists today (Clark 1977:125).

Previous Archaeology

Pūpūkea has been the subject of many archaeological studies. The following discussion summarizes the findings of cultural resources identified in the vicinity of the subject properties, based on reports found at the SHPD library in Kapolei (Figure 8 and Table 1). State Inventory of Historic Places (SIHP) numbers are prefixed by 50-80-01 (Figure 9 and see Table 1).

The earliest archaeological work for the area was during McAllister's (1933) island-wide survey. McAllister recorded five sites in Pūpūkea Ahupua'a: Site 249, Pu'u o Mahuka Heiau; 252, the Piliaama Stone; 253, Kamae'e Ko'a; 254, the Kalua o Maua Stones; and 255 Pele's Follower's Stones. The latter site was described as a group of large rocks that are people whom Pele turned to stone so they would become immortal (McAllister 1933).

An early archaeological reconnaissance was conducted mauka of Pūpūkea Beach Park, and one site, SIHP 3364, was documented (Denison 1979). The site is a rectangular enclosure formed by rock walls. It was thought to be an animal pen dating to the historic era. Also mauka of Pūpūkea Beach Park, human remains were inadvertently discovered during construction on a residential property (Kawachi 1988). The remains were given the SIHP number 3955. Human remains were again



Legend
■ Project Area

Keala Pono



Layer Credits: 1962 Pūpūkea Aerial

Figure 7. USGS 1962 aerial photo of Pūpūkea.

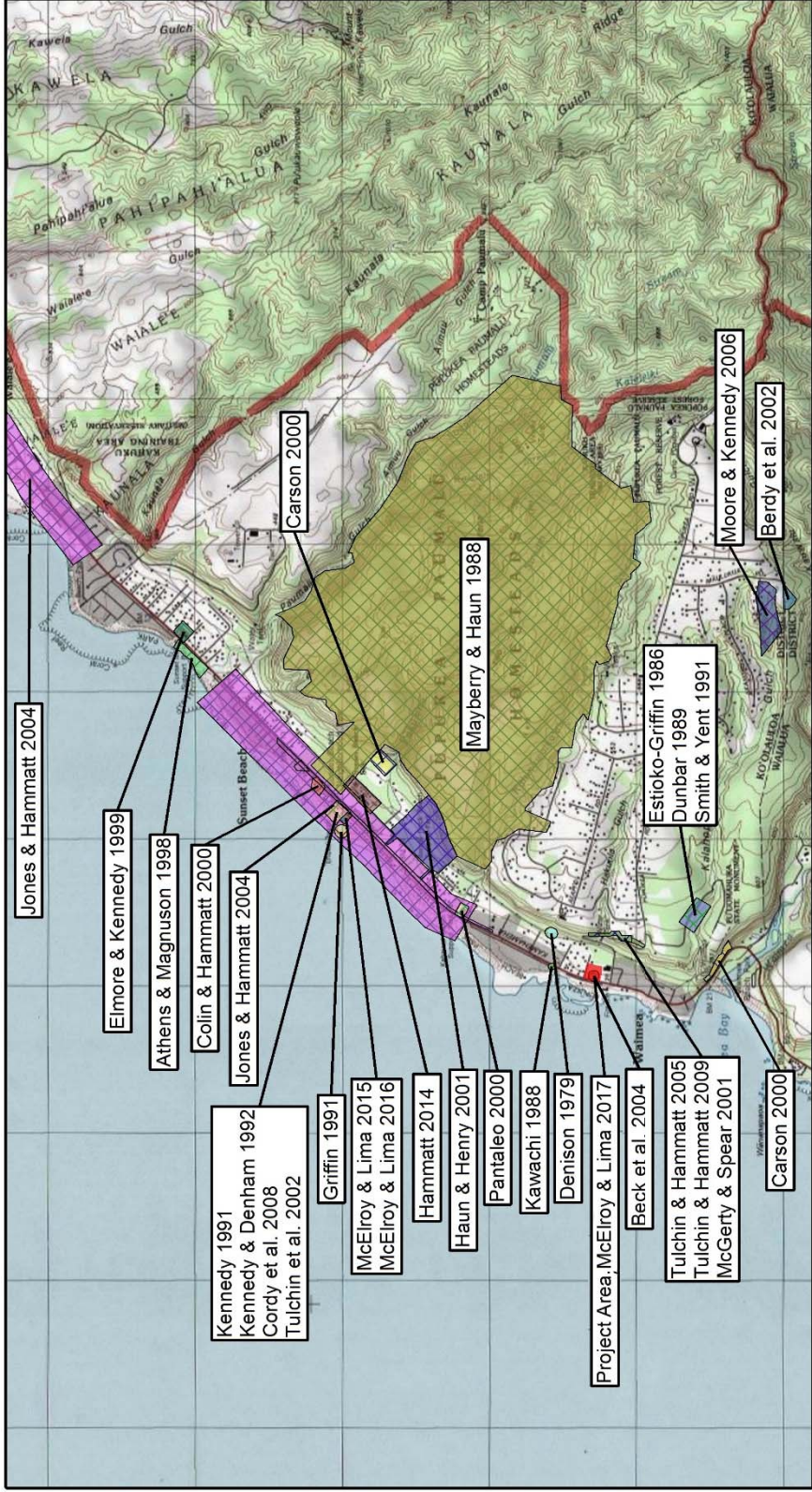


Figure 8. Location of previous archaeological studies in the vicinity of the project area.



Keala Pono



- Legend**
- Project Area
 - ▲ McAllister (1933) Site
 - ▲ Historical Site
 - ▲ Burial

Layer Credits: USGS Topographical Waimea Quadrangle Map 1998

Figure 9. Location of known archaeological sites in the vicinity of the project area.

Table 1. Previous Archaeology in Pūpūkea

Author	Year	Location	Work Completed	Findings
McAllister	1933	O‘ahu	Survey	Recorded 5 sites in Pūpūkea: 249, 252, 253, 254, and 255; none are near the project area.
Denison	1979	Mauka of Pūpūkea Beach Park	Reconnaissance	Recorded SIHP 3364, a rectangular enclosure thought to be a historic animal pen.
Estioko-Griffin	1986	Pu‘u o Mahuka Heiau	Historical Overview	Provided historical context for the heiau.
Kawachi	1988	Mauka of Pūpūkea Beach Park	Burial Report	Recorded a human burial, SIHP 3955.
Mayberry & Haun	1988	Pupukea-Paumalu Development Project	Reconnaissance	Identified 60 sites, mostly economic or agricultural, with some military or mortuary/ceremonial.
Dunbar	1989	Pu‘u o Mahuka Heiau	NRHP Nomination	Completed NRHP nomination forms for Pu‘u o Mahuka Heiau.
Kawachi & Smith	1989	Mauka of Pūpūkea Beach Park	Burial Report	Documented SIHP 4150, a human burial.
Griffin	1991	‘Ehukai Beach Park	Burial Report	Recorded SIHP 4452, a human burial.
Kennedy	1991	‘Ehukai Beach Park	Inventory Survey	Negative findings.
Smith & Yent	1991	Pu‘u o Mahuka Heiau and Vicinity	Mapping and Subsurface Testing	Mapped Pu‘u o Mahuka Heiau (Site 249) and two walled enclosures (SIHP 2502 and 3951). Excavations at the heiau returned radiocarbon dates in the late-1700s to early-1800s.
Kennedy & Denham	1992	‘Ehukai Beach Park	Monitoring	Documented SIHP 4452, a previously recorded human burial, as well as scattered human remains, a firepit, and several artifacts.
Athens & Magnusen	1998	Sunset Beach	Inventory Survey	Identified subsurface midden deposits, SIHP 5585 and 5586.
Elmore & Kennedy	1999	Sunset Beach	Monitoring	Negative findings.
Carson	2000	Mauka of Sunset Beach	Survey	Identified 5 sites, SIHP 5830–5834, including habitation, agricultural, and human burial areas.
Colin & Hammatt	2000	Ke Nui Rd.	Burial Disinterment	Reported on SIHP 5532, a human burial.
Pantaleo	2000	Sunset Beach Recreation Center	Literature Review and Field Inspection	Negative findings.
Haun & Henry	2001	Sunset Beach Agricultural Subdivision	Inventory Survey	Recorded 14 sites, SIHP 5951–5964, consisting of burial, agricultural, and water storage locales. The burials were multiple individuals found in caves, one with the remains of a burial canoe.
Berdy et al.	2002	Pūpūkea Road	Inventory Survey	Negative findings.

Table 1. (Continued)

Author	Year	Location	Work Completed	Findings
Tulchin et al.	2002	‘Ehukai Beach Park	Monitoring	Identified four additional firepits of SIHP 4452.
Beck et al.	2004	Portion of the Current Project Area	Site Assessment Survey	Negative findings.
Jones & Hammatt	2004	Kamehameha Hwy.	Monitoring	Identified SIHP 6519, two human burials; as well as 6520, a firepit.
Tulchin & Hammatt	2005	Pūpūkea Rd.	Field Inspection & Literature Review	Recorded 5 sites: two historic roadbeds, two burial caves, and a historic storage cave. Four possible shelters were noted as potential sites. SIHP numbers were not assigned.
Moore & Kennedy	2006	Mālukua Rd.	Inventory Survey	Identified SIHP 6760, a historic water tank.
Cordy et al.	2008	‘Ehukai Beach Park	Monitoring	Negative findings.
Tulchin & Hammatt	2009	Pūpūkea Rd.	Inventory Survey	Documented 5 sites: SIHP 7034–7038, including historic features, a trail segment, burial caves, and a temporary habitation shelter.
McGerty & Spear	2011	Pūpūkea Rd.	Monitoring	Negative findings.
Hammatt	2014	Sunset Beach Elementary School	Monitoring	Negative findings.
McElroy & Lima	2015	Near ‘Ehukai Beach Park	Burial Site Component of an Archaeological Data Recovery and Preservation Plan	Set forth guidelines for treatment of SIHP 7678, a human burial that had been disturbed during initial construction on the property.
McElroy & Lima	2016	Near ‘Ehukai Beach Park	Monitoring	Identified SIHP 7679, a subsurface cultural layer with firepits.
McElroy & Lima	2017	Current Project Area	Archaeological Inventory Survey	Negative Findings.
No Report Found		Sunset Beach		SIHP 2353 is a series of petroglyphs in sandstone reef at Sunset Beach; a report on this site was not found in the SHPD library.
No Report Found		Mauka of Pūpūkea Beach Park		SIHP 4285 is an inadvertently discovered human burial; a report on this site was not found in the SHPD library.

uncovered during residential construction in the area (Kawachi and Smith 1989). The remains were designated as SIHP 4150. Another set of remains was documented for the area mauka of Pūpūkea Beach Park, but the original report that recorded the find could not be located. The remains, designated as SIHP 4285, were reported as a known site in a later archaeological report (Tulchin and

Hammatt 2005). These four sites (an enclosure and several sets of human remains) are the closest archaeological sites to the project area (see Figure 8).

Archaeological reconnaissance with subsurface testing was conducted for the 1,130-acre Pupukea-Paumalu Development Project (Mayberry and Haun 1988). A total of 60 sites were identified (SIHP 3820–3873, 3971–3976, and 5830–5832), most of which were economic or agricultural, and some military or mortuary/ceremonial. Archaeological inventory survey was later conducted along one of the cliff areas covered by the reconnaissance (Carson 2000). Habitation, agricultural, and human burial sites were identified (SIHP 5830–5834).

Various work was completed at Pu‘u o Mahuka Heiau. The first was a historical overview of the area (Estioko-Griffin 1986). Subsequently, the site was nominated for the National Register of Historic Places (NRHP) (Dunbar 1989). A 1991 report documented work completed at three sites in the area: Pu‘u o Mahuka Heiau (Site 249), and SIHP 2502 and 3509, which are walled enclosures (Smith and Yent 1991). The enclosures are near the heiau but outside the State Park property. All three sites were mapped with a transit, and subsurface testing was conducted at the heiau. It was reported that “subsurface testing confirmed the presence of intact cultural deposits at the site and revealed two paving episodes in the eastern enclosure [of the heiau]” (Smith and Yent 1991:32). Two radiocarbon dates indicate construction or refurbishing of the heiau in the late-1700s or early-1800s (Smith and Yent 1991:34).

Several studies took place at ‘Ehukai Beach Park. An early archaeological inventory survey had no findings (Kennedy 1991), but later studies identified a human burial (Griffin 1991), scattered human remains, and a firepit, all grouped together under SIHP 4452 (Kennedy and Denham 1992). The firepit was radiocarbon dated to cal. AD 1153–1421 (Kennedy and Denham 1992:24). Artifacts collected include a possible kukui nut candle, files and abraders, a broken adze, basalt flakes, and an iron ball. Later monitoring revealed four firepits, which were included with SIHP 4452 (Tulchin et al. 2002). Two radiocarbon dates were obtained: cal. AD 1410–1530 and 1650–1960 (Tulchin et al. 2002:29). Another monitoring project at ‘Ehukai Beach Park yielded no findings (Cordy et al. 2008). Very close to ‘Ehukai Beach Park, a burial site component of an archaeological data recovery and preservation plan was prepared for a privately owned beachfront parcel (McElroy and Lima 2015). The plan set forth guidelines for treatment of SIHP 7678, a human burial that had been partially disturbed during initial construction on the subject property. Archaeological monitoring of construction identified an additional site, SIHP 7679, a subsurface cultural layer with five firepits (McElroy and Lima 2016). A sample of kukui nutshell returned a conventional radiocarbon age of 200±30 BP, which calibrates to AD 1650–1685, AD 1730–1810, and AD 1925–Post 1950 (McElroy and Lima 2016:44–45).

Archaeological inventory survey was conducted at Sunset Beach (Athens and Magnusen 1998). Two subsurface midden deposits, SIHP 5585 and 5586, were identified. A radiocarbon date of cal. AD 1502–1652 was obtained for Site 5585 (Athens and Magnusen 1998:ii). Archaeological monitoring was later carried out for park improvements across the street, but there were no findings (Elmore and Kennedy 1999).

A human burial was found on Ke Nui Road (Colin and Hammatt 2000). The burial was thought to be traditional Hawaiian and was designated as SIHP 5532. Not far from this, archaeological monitoring was performed for the installation of a water main along Kamehameha Highway (Jones and Hammatt 2004). SIHP 6519 and 6520, consisting of human burials and a firepit, were found near the Sunset Beach Neighborhood Park. SIHP 6519 included two individuals identified as a young adult female and an adolescent of undetermined sex. SIHP 6520 is a firepit that was radiocarbon dated to cal. AD 1620–1960 (Jones and Hammatt 2004:34).

Archaeological inventory survey was conducted for the Sunset Beach Agricultural Subdivision, located on the mauka side of Kamehameha Highway (Haun and Henry 2001). A total of 14 sites were recorded (SIHP 5951–5964), including caves, walls, cisterns, and alignments. Feature functions were listed as burial, agricultural, and water storage. The burials were found within two caves (SIHP 5963 and 5964), which each contained the remains of multiple individuals. Fragments of a burial canoe were also found within one of the caves. The agricultural remains are thought to be ‘uala fields that date from the mid-1600s to the mid-1800s (Haun and Henry 2001:33).

Several studies were completed for rockfall mitigation on Pūpūkea Road. An initial field inspection and literature review recorded five sites consisting of two historic roadbeds, two burial caves, and a historic storage cave (Tulchin and Hammatt 2005). Four possible shelters were also noted as potential sites; these were four overhangs and a lava tube. SIHP numbers were not assigned at the time. Archaeological inventory survey assigned SIHP numbers to the five sites recorded earlier (SIHP 7034–7038) (Tulchin and Hammatt 2009). SIHP 7034 and 7035 are historic roads, while 7036 is a traditional or early historic trail. SIHP 7037 consists of historic storage caves, while 7038 includes six burial caves and a temporary habitation shelter. Charcoal recovered during excavation of the shelter returned a radiocarbon date of cal. AD 1440–1640 (Tulchin and Hammatt 2009:71). Archaeological monitoring was later conducted for Phase I of the project, and no new sites were documented (McGerty and Spear 2011).

An archaeological inventory survey in upper Pūpūkea identified one site (Moore and Kennedy 2006). The site is a historic water tank that was designated as SIHP 6760.

Site 2353 consists of petroglyphs carved into the limestone reef at Sunset Beach. The site is reported as previously identified (e.g., Tulchin et al. 2002), but the original report documenting the petroglyphs was not found in the SHPD library.

Several projects produced negative findings. These consist of a literature review and field inspection of the proposed Sunset Beach Recreation Center (Pantaleo 2000), an archaeological inventory survey of private property along Pūpūkea Road (Berdy et al. 2002), and archaeological monitoring at Sunset Beach Elementary School (Hammatt 2014).

Finally, what was called a “site assessment survey” was completed for a portion of the current project area (Beck et al. 2004:13). At the time of the survey, the project area was listed as TMK: (1) 5-9-011:017, and 2.143 acres were covered, consisting of all of the current parcel 070 and the mauka portions of parcels 68 and 69. There were no findings, and evidence of recent dumping and farming were reported. No subsurface testing was conducted. A recent archaeological inventory survey at the current project area also produced no findings (McElroy and Lima 2017). The archaeological work included pedestrian survey that covered 100% of the 1.1 ha (2.72 ac.) project area, as well as test excavations consisting of 11 trenches. It was found that the entire area has been disturbed by modern activity, such as bulldozing and paving.

Summary of Background Research

Pūpūkea is an area rich in pre- and post-contact history. With a traditional economy based largely on fishing and marine exploitation, the coastline was an important resource for the people that lived there. Because of the dearth of fresh water, wetland agriculture was not widely practiced, and dryland farming focusing on ‘uala cultivation factored largely into traditional lifeways.

The historic period brought about widespread changes to the Pūpūkea landscape. Crops such as avocado and pineapple were farmed, and large tracts of land supported housing developments. The

OR&L railroad ran just makai of the project area, transporting sugarcane from the north shore plantations. The Niimi store was an important edifice at the project site in the early 20th century.

Although no archaeological sites are known for the current project area, previous archaeological work nearby has had significant findings. The four archaeological sites closest to the project area consist of several human burials and an enclosure. A variety of site types have been documented in other parts of Pūpūkea, with human burials found near the coast and in caves. Traditional agricultural, ceremonial, and habitation areas, as well as a variety of historic sites have also been documented for Pūpūkea.

ETHNOGRAPHIC SURVEY

There are some things that cannot be found in the archives, in textbooks, or at the library. It is here, through the stories, knowledge and experiences of our kama‘āina and kūpuna, that we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of Pūpūkea, ethnographic interviews were conducted with community members who are knowledgeable about the project area.

Methods

This Cultural Impact Assessment was conducted through a multi-phase process between April and June 2017. Guiding documents for this work include The Hawai‘i Environmental Council’s Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawai‘i). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting and Dietrix Duhaylonsod, BA, Ethnographer.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or Group 70; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Three individuals participated in the current study. Mana‘o and ‘ike shared during these interviews are included in this report.

Interviews were taped using a digital MP3 recorder. During the interviews, each person was provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he/she was most comfortable. Follow-up questions were asked based on the interviewee’s responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each interviewee for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in the three interviews (Table 2). One of the interviewees requested that their name and transcript be kept confidential. The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include connections to the project lands, archaeological sites and cultural practices, the natural environment, Pūpūkea history, change through time, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D and E.

Interviewee Background

The following section includes background information for each interviewee, in their own words. This includes information on the interviewee’s ‘ohana and where the interviewee was born and raised. The interviewees are Bob Leinau, Thomas Shirai, Jr., and a third anonymous interviewee. Background information on this latter interviewee is not included here to preserve anonymity.

Table 2. List of Individuals Contacted

Name and Affiliation	Method of Contact	Result of Contact
Anonymous Community Member	Phone, In-Person	Interview Completed
Roberts Leinau (Community Member, Mālama Pūpūkea-Waimea)	Email, Phone, In-Person	Interview Completed
Makua Rothman (Community Member, Professional Surfer)	Email, Phone (Via Manager Tautua Reed)	Interview Could Not Be Scheduled
Thomas Shirai, Jr. (Community Member, North Shore-Waialua descendant, O'ahu Island Burial Council)	Email, Phone, In-Person	Interview Completed

Roberts (Bob) Leinau

Aloha, my name is Roberts Leinau, otherwise known as Bob. I was born in Connecticut, raised in Southern California, came to Hawai'i in 1965, moved to North Shore in 1968 to go surfing, and I'm still here. I went to the University of Southern California. I was in premed. I took tons and tons of chemistry, a lot of science classes, and German. I don't have any family roots in Hawai'i. However, my family came to America on the Mayflower. They signed the Declaration of Independence. And most of my family line are doctors, on one side. The other side of the family was somebody several generations ago made a pile of money that kind of disappeared, and I never got to inherit any of it. But my relatives were really rich.

Thomas (Tom) Shirai, Jr.

My name is Thomas Shirai, Jr. I was born on September 29, 1961... I was born in Kapi'olani Hospital, but I was raised the majority of my life by my grandparents, my mom's parents, in Mokule'ia. My parents are Thomas Shirai, he's from the Big Island of Hawai'i, from a place called Papaikou. And my mother is from this region. And her name is Laverna Keao...She was born in Waialua. And the extent of the Waialua lineage is on my grandpa's mother's side. It goes further back several generations, before pre-Western times.

And so my father had tuberculosis, and he was an in-patient at Le'ahi Hospital. And so in the Hawaiian fashion, Hawaiian tradition, I'm the oldest grandchild, they mālama that one first, and it was mostly like a direct order, "the boy coming with us," no ands, ifs, and but, just cut and dry. And so I was there. I was nurtured. And through that life experience, I learned only majority on the Hawaiian side of the family.

...I went to Mother Rice preschool. And then I went to Ala Wai Elementary School. I went to Washington Intermediate School. And then here's the turning point. The first half-year of my sophomore year, I went to Kaimukī High School. Ok, we lived right by Crane Park. I grew up there. See, I had two homes. On the weekdays, during the schooling, I lived with my parents. But on the weekends, I belonged to my grandparents down in Mokule'ia. And that's the part I enjoyed the most, spending time with my grandparents.

Topical Breakouts

The following sections are quotations from the interviews, organized by topic. Interviewees provided information on their connections to the project lands, archaeological sites and cultural practices, the natural environment, Pūpūkea history, and change through time. They also shared their concerns and recommendations for the proposed Pūpūkea Commercial development. Whereas excerpts from the anonymous interviewee are not included in the topical breakouts, information provided by this interviewee has been added to the Summary of Ethnographic Survey section and Summary and Recommendations chapter.

Connections to the Pūpūkea area

Ok, my grandfather was an esteemed carpenter for Waialua, and one of the testaments to his quality workmanship is that he remodeled Otake Store, and it's still standing today. Another project is when they first came up with Meadow Gold Dairies, he's the guy that was the supervisor in charge of building the structures for Meadow Gold Dairy. And another project would be in Pupukea, when Mr. Sullivan used to have a mansion up on Pupukea, the hills. He's the Foodland manager, the owner. He [my grandfather] did some repair work over there. But more specifically, to this specific project area, my grandfather was hired by Mrs. Elaine Niimi, who was a realtor. And he did many a repair work for her, and some of the repair work [that my grandfather did] was done on that specific parcel [of the project site] when it was houses and structures for rental, mostly for housing rental, yeah? So I used to go with my grandfather and my uncles, and they did a lot of carpentry work. Plus for me personally, the most construction work that I did for them was that I helped do the roofing for both houses with my grandfather and my uncle. So that brings memories... The fire station, I can say some more personal accolades, like my uncle was a fireman over there. [Tom Shirai]

...I have a lot of family up in the Pupukea hills especially, branches of my grandpa's family, cousins, uncles, aunts, and so on and so forth. And some of em still reside there 'til today, and friends and classmates and all those kind of things. But more significantly is when I started to do my genealogy research, and researching my family's legacy, I come to find out [laughs], they own some unique parcels down there. I may be on that property [for the project we are talking about], it says Pupukea. And so I thought that was unique, and that's why I thought, ...[to] add that to the discussion and history of the place. So I did get the Land Commission Award to see, and I was like, "Wow, that's pretty unique." I didn't know they had parcels all over the place. [Tom Shirai]

There is one thing I can share aesthetic-wise, every Sunday, I'm familiar with that area because when I was growing up, my grandmother was a Jehovah's Witness, and the church was at Sunset Beach. I have an uncle, an aunty, and my cousins, and my aunty's family, the Mira family, donated land at one time to build the Kingdom of Jehovah Witness [church] over there. It's on their property, so we got to go there. And my uncles, and my grandfather-them, they kōkua little bit, help construct that church. And my grandmother, being that [she was] Jehovah Witness, we go there, we pass there. And let me tell you, Koa, I saw a sight, just like it's a once-in-a-lifetime. You could see, from Kamehameha Highway, when you just past there, one day we saw the island of Kaua'i. You could see Kaua'i, one very clear, clear day, the kine like how you see right now from here to Mount Ka'ala, like that kind, but was a clear day. You can see the whole mountain, no moa clouds, and was clear, was sunny. There is a newspaper article that shows the picture, but you gotta dig for em. I seen em, I remember, I saw that picture. It's a color picture. So it must be in the Advertiser or Star Bulletin archives. It was a beautiful picture, a once-in-a-lifetime. [Tom Shirai]

But that parcel, a couple streets away from there, my grandfather had a good friend who was in the Army. He was a dentist. And his name was George Koranawsky, and he's Ukranian. He's from New York, and we call him my grandfather's Haole son. He loved my grandfather. My grandfather loved him and helped him a lot. Today, he's not only a successful doctor, but also an orthodontist, an orthopedic surgeon for the mouth. Doesn't stop there, he's a multimillionaire today. He owns a hotel or condominium in Atlantic City. He came that successful because my grandfather helped him with a lot of life skills and stuff like that. He did a lot of repair work for him too because he was in real estate. And he had his house, and he had a plumeria farm. And my grandparents used to go down dea cut the grass and stuff like that. So it was an established relationship with people like Chuck Machado Lu'au, you know, that kine stuff li'dat. So that's what I can share about Pupukea. [Tom Shirai]

Ok, so I moved to the North Shore in 1968, and I have been active in community affairs since 1968. And I have been active on the neighborhood board for almost 40 years now, ever since its inception. And I worked in a historical park in Waimea Valley for over 30 years. And so I've always been paying attention. I give classes on the history of Waimea Valley to the lifeguards every summer, to the junior lifeguards. And so people seem to think I know more than the next guy... [Bob Leinau]

Pūpūkea History

So I can give some general references to this specific piece of property. If you go all the way back, if you go back to Kamapua'a, These lands were given to Kamapua'a by Lonoawohi. Olopana was not friends with his illegitimate son Kamapua'a, and so he caught Kamapua'a finally after many years, and took him to a heiau to be killed. And Lonoawohi the kahuna flipped. They grabbed the, this is where I always get scrambled on names here, but they grabbed the other chief, spared Kamapua'a's life, and he was very grateful. So he received all the lands with wai, so that included Hakipu'u, Waiahole, Waikāne, Waimea, and Pūpūkea, were the lands that he ended up with eventually. His family felt that there were too many "wai"-lands that got given away. And so the Pūpūkea lands, the land that this development is on, was dedicated to the Pa'ao class. And they held those lands all the way through to from about 1095, what have you thereabouts, all the way through to when [the kahuna] Hewahewa came. When Kamehameha came and conquered, everybody who came and conquered put their kahuna in there, the Pa'ao class [of priests]. And Hewahewa died in 1837. So that was pretty much the end of the kahuna tenure. [Bob Leinau]

Ok, so you have this area that's very rich along the sea. And then of course the mauka lands always provided whatever they did. In later years, of course, they provided the sandalwood, which was the original currency for the Hawaiians and changed their lifestyle around significantly. Even Kamehameha had already bought guns with revenues from sandalwood. So Waimea was actually a port. The ships would pull in to a deep, sandy cove there. And so sandalwood was going on there probably until around 1830, when it pretty much went away. And there are still some big anchors. There's one big giant anchor off the point still. It's probably from those times with the big flukes on it. [Bob Leinau]

The other thing that is important, I think, is that as this project moves forward, is to consider the adjacencies in the context of the area. That area also had some Hawaiian references to Pele when she came through there. If you look to the north out at Ke Iki Point, out at Kalalua Point, there's that Ukali O Pele, which are stones, coral stones, that Pele turned a family into stone. I'm not real clear whether she did it as a favor for them to guard the area, or if they were nīele, and she did it as a punishment. But the Ukali O Pele are still out there. [Bob Leinau]

The other story that ties to the area is Hi'iaka was in the area in Waimea, and she saw a handsome kanaka there. He was a lawai'a. He was a he'e nalu, a surfer. He was a konohiki. And his name was Pili'a'ama. And as the story goes, she kinda liked the looks of this guy, a handsome guy, and she chased him. She went after this guy, and he ran away. And there's rock on the side of Kamehameha Highway that still has his footprint in it where he dove into the cliff and disappeared. [laughs] [Bob Leinau]

There's also the story of Kaluaomaua. The Three Tables area, there's the story of a lady who, one of the ways that you could get fresh water was to go out with a gourd and collect water from underneath the ocean. You could tip it over, and it would suck in fresh water from where the water was coming out, the wai. And so she went out there, collecting water for her people and didn't come back. But there's three corals that float there, and supposedly she turned into the lua, or the rocks where that water comes out. [Bob Leinau]

So the Hawaiian culture and the stories of that area are rich. There's another one, with Pu'u O Mahuka heiau up on the top of Pūpūkea bluff. On the Hawaiian Islands there were a lot of trails. You know, [like] on Maui there was a highway, we call it a highway. But they

had a ala, and it's said that the trail went through the Hanapohaku property, and that still to this day, night marchers move down that road from time to time. And people along that coastline there have things that happen at night in their houses where things are moved, and nobody knows how that went happen. So the story of the night marchers and Pu'u O Mahuka is very much alive too. [Bob Leinau]

Going back down to the property, the great Māhele guys started buying large grants. Pupukea, the first crops up there, Libby had pineapple up there. There was, I can't remember the guy's name right now, he had avocados. There was an acerola farm up there. There were several dairies up on the hill. And so the government ran a road down called...the Old Government Road. It ran through the Boy Scouts Camp. And it came all the way down to the juncture of Pupukea Road where Foodland is now, and where Niimi Store was. [Bob Leinau]

The Niimi Store was built shortly after Dillingham's railroad came out. I think it was built in like 1902 or something. And that was a real focal point. I believe the train stopped there. The farmers had a chance to load or unload. And so the store was a real hang out. It was a place that the people could do commerce. There was not a lot of commerce on the north shore. So that was probably the first store that I can think of that would have been in business. So that was all part of the Hanapohaku three parcels. The Niimi family had a retail operation in Kahuku, and they moved it down to Pupukea when they attained the ownership. And it did a lot of things. You know, it was food, it was a feed store for everybody who had chickens. There was a nursery there for a while. They had a lot of stuff. [Bob Leinau]

The Natural Environment

It was also called "Kapo'o." Kapo'o describes the nature of the area right across the street where the waves come and hit the coral reef, the shelf, and they splash way up in the air. So not only do people come to this area for diving and because this is a marine life conservation district there. There's a mile of coastline today. But they also stop to see these waves, these giant waves exploding on the coral. Actually it isn't coral. It's coral-algaenous. Most of that reef was put down by algae that glues it all together, but that's another story. [Bob Leinau]

And so one story I heard was that at the back side of this property, there was a spring. And I have every reason to believe that's probably true especially when it's considered in proximity of Hauola. And if you dive the coral reef along the coral facing there at Kapo'o, you'll see a lot of fresh water seepages coming out. Its' dissolved holes in the karst land and in the coral. So this area has fresh water underneath the alluvium. Ok, so that's a little bit about the geology. [Bob Leinau]

Actually, the reef structure, that structure at Ke Iki Beach, when it goes out to Kalalua Point, is a very large coral-algaenous structure, and it turns into a coral, you know, a vertical face. And I'm told that's the largest coral vertical face, or coral-algaenous vertical face, on the island. It's a unique structure. And it is the area that kinda goes down to just about where the fire department is. So it's pretty much from Shark's Cove to the fire department, is the area I think is Kapo'o. But I don't know if they were really heavy about metes and bounds. The area was referenced as Kapo'o because of the nature of the waves. [Bob Leinau]

You know, I wish I knew more. We're always trying to find names. One of the names I've been told for Shark's Cove, clearly that wasn't a Hawaiian name, but I asked Richard Spillner, who was born on the beach at Waimea Bay in 1933 or '34, what they called Shark's Cove when he was growing up. And he said that they called it "Ko'a" meaning "Chunks of coral," because the waves blast in there so big that it really doesn't have a sand beach. It has chunks of coral. So actually "Ko'a Cove" would be a really appropriate name.

And it may very well be the name that's been there for a very long time, but I've never been able to find it in print. [Bob Leinau]

Well, the fishing's already kapu except at Waimea Bay where you can have two poles, two hooks. The rest of it is considered poaching. But you know, the Hawaiians had kapus too. And the whole near shore waters on this whole island has just been raped. Most people think that the marine life conservation district [fronting the project site] works, is a good idea. Some of them don't. Some say, "You took something away from me." Other people understand there's a spillover in the wind, and that there's something for future generations. That's the real objective, to teach people. Wouldn't it be nice if you could take your kid down and show em schools of uhu? Well I've swam twice from Waimea Bay to Hale'iwa in the last couple years and not seen one uhu...So the word "sustainable" gets thrown around a lot, but we crossed that line a long time ago, and we need to reel this puppy back in. And the "we" should be all of us. Unfortunately there are guys that say, "Eh you trying to take something away from me, brah." You know what, hey wake up. [Bob Leinau]

Archaeological Sites and Cultural Practices

Ok, I can share little things like I know there's a Hawaiian name, that I don't know off hand, for Shark's Cove. But I also know that old-time fishermen and residents of all nationalities used to go there with bamboo pole whip and catch fish, like nenu especially. [Tom Shirai]

Of course you see the Three Tables. Everybody knows that. And there's a Hawaiian name for that. It's the "Pele Stones" and what not and stuff. [Tom Shirai]

...I would say that this project is not near cliffs, yeah? And those cliffs are documented, such as being burial caves. And that's a hot issue. What I could share is that one of your reference points that is near there would be, besides the Waimea Valley, is that when they realigned Kamehameha Highway, going around the rockfall mitigation, you know, the exposure of iwi kupuna in burial caves, you know, the grading or whatever they needed to make, or for the landslide or rockfall, they did come across that [iwi kupuna]...So that's why you see certain parts with the netting over there, and the netting is hugging the edges over there. That's why it's like that, you know, at various locations around the mountains and stuff. It's a known place for those things. So that's one of the first cultural things that's gonna come up. It's burials in caves. Yes, we get [iwi] in the sand at various places and stuff, but mostly the sensitivity is directed more so towards the cliffs, the foothills, and what not. [Tom Shirai]

So going back to Pupukea, the way the lands were used, of course there was the mauka/makai. The makai side, of course, was really important because of its fisheries and food sources. There's still to this day, over 21 kinds of limu growing on the papa right now. And it's been known for its good fishing until recent times when it pretty much got wiped out. [Bob Leinau]

So also in this area, up on the bluff above Pupukea, is Pu'u O Mahuka Heiau which is the largest heiau on the island [of O'ahu]. [The kahuna] Ka'ōpūlupulu reputedly built that. That would have been in the mid-1770s although lots of temple sites were built in sequence. This particular one has celestial coordinates. It lines up exactly with summer solstice, and there's a step down which lines up exactly with the equinox. And so these things weren't randomly done. This one was supposedly a luakini heiau. And of course, in 1819 when Kamehameha died, Hewahewa, the kahuna in Waimea Valley, along with Ka'ahumanu and Liholiho, sat down, broke the kapu of eating, they broke the 'ainoa, or had an 'ainoa, I guess, it was free. And after that they went up, and all the heiau fell into disrepair, and the tikis were destroyed. [Bob Leinau]

There are two tikis, however, that did come out of Waimea Valley. In Waimea Valley, there were a lot of burials, and all along the pali on both sides of Waimea Valley. There's

a lot of lava tubes and a lot of burials. So it's reasonable to assume that there were probably burials all along the mauka side. Also, just above the mauka side, just above this property, there's a drainage of a gulch. The gulch is called Hauola. Hauola might be interpreted as "a healthy hau," I don't know, but it drains out. And all along that pali, there were water seeps. And of course, where water was, it pretty much drove where the Hawaiian population went. Every living thing on the planet needs fresh water. [Bob Leinau]

So there's the broader context that goes beyond the metes and bounds of the property. And I think it's important to keep those stories alive. Keep the culture strong. So if Hanapohaku comes in, they need to be respectful of the broader context of the adjacencies, and that deals with their customers. Their customers can overwhelm the City & County park next door where practitioners still go and collect limu, hālili. And also, out on the point right across the street, this was an area where Hawaiians gathered pa'akai. There's large salt pans out there on the coral and flattened out. And so these things are all remnants and relics and touchstones for Hawaiian culture. [Bob Leinau]

Actually there's one other burial that I heard of. I think that it was during the time that the people were getting smallpox. I heard that at Kaluaomaua, the last set of rocks before you go out, that there was a mass burial there at one time. A lot of people died, and rather than go up in the caves, they just went to the soft sand. [Bob Leinau]

But, you're not supposed to take rocks that have life on them, not supposed to take coral. The idea is you take pictures. But the salt pans are still there, and if someone took some salt, no one's gonna make huhū about that. And the guys who collect limu, you're allowed to take limu kohu and līpēpē, are the two types that you're allowed. You're allowed a wet pound per person per day. And of course it was harvested at that rate, there wouldn't be any. So they oughtta kapu that too. [Bob Leinau]

Change Through Time

And that area, you know that coral area that's right next to it?... Yeah, that was formed mostly because of dynamite blasting because they were mining for a little while. And that's why it's shaped like that. [Tom Shirai]

All I can say is as time goes by, you get modern development, and what was once to me sporadic, isolated lunch wagons, now it's just like it's becoming their own industry. We got like, my goodness, like here in Hale'iwa, like 23 lunch wagons. It's like an "easy-out" instead of going to one restaurant. And it adds to social problems like traffic, the 'ōpala, and all that kine stuff... you have a once pristine, sleepy town turned into a tourist trap. How I can best say it, like for example, like Baja, Mexico, or Tijuana, you know, you see what happened, that kine stuff. It's all catered to tourists. Hale'iwa is that way. Lahaina is like that. And what I'm very, very saddened by is that then you have this influx of people coming from all over, and then that influx, with each layer coming, then the original culture gets covered, layer after layer after layer, until it's way under, or unheard of, or erased. And that's the kind of things that saddens a lot of us. You know, Hale'iwa, for example, we have the North Shore Chamber of Commerce. Yes, they wanna preserve the historic Hale'iwa, yes, but their emphasis is the plantation era, or the World War II era. When you go into their office, the memorabilia reflects that. There's no pictures of taro patches. There's no pictures of excerpts of Land Commission Māhele maps, none of that. It shows people dressed in military clothes, that's it, it shows military people at Hale'iwa Beach Park. And to me, sure it's part of the history, but you're not telling the full story. You're not telling the full story of the place. And that hurts. We see it come alive only when they make books, for profit. Then we'll see, "Oh we got this from archival photographs." This and that and stuff, and it's like, "Why didn't you say that from the very beginning?" Now people are only gonna focus on this as a World War II town. "Taro patches, what you talking about," they're gonna say stuff like that. And that's not right. [Tom Shirai]

And most of the people who lived in the area, it was very rural, most of the people had gardens, you know, they grew a lot of their own food. And if you look at the Hanapohaku development right now, it still retains pretty much the original alluvial topography with the low corner being in the direction of the west corner. So I don't think anybody did anything too much. But I think it had been cleared for agriculture. So I think the prospect of finding any rock alignments in there with cultural significance or any artifacts are probably pretty remote. [Bob Leinau]

In the last few years, well the last 30 years, a lot of people used the property pretty much as a, because it was a vacant lot, they could go back there and just dump stuff. And they did. So the current owners, one of the first things they did was go in there and clear a lot of 'ōpala out of there. And they did some minor grading, but I think if you look back over the last 100 years before, probably there wasn't any serious grading. But I think that agricultural endeavors in that area were pretty minor and just surface related. I'm trying to visualize it. [pause] So pretty much what was in there when the current owners bought it was haole koa and weeds. [Bob Leinau]

Also, there's the tables. What's interesting too is that the tide pools, when they surveyed Drum Road in 1933, and they built it in 1934, the surge rock for that road that connects Helemano all the way to Kahuku and comes up through Pupukea, was built out of coral that was blasted. Those tide pools are man-made. Before, it was a higher papa, karst formation, similar to the one at Ke Iki. Interesting, huh? [Bob Leinau]

Back then, they blasted the coral for resource. Where the Catholic Church is now was built as a quarry for blue rock to build the road from Waimea to Kahuku. That was built in 1928. And in the '50s, Castle and Cooke was mining sand in Waimea to take to Waikīkī. And Glen Pau stopped that. He went to the governor and said, "A'ole." [Bob Leinau]

That tower there was a silo for crushed blue rock. Trucks would drive underneath, they'd open the jaws and fill the trucks and close em. Yeah, used to have a conveyor belt that went up the backside. I must be getting old. [Bob Leinau]

Well the only historical one would have been the Niimi Store. And that was a snooker job. That was a real education. He told Elaine Niimi, and he told the community, that after he built the Foodland, that he would rebuild the Niimi Store. You know, everybody liked that store. And that was all done, and he said, "Oh I change my mind." And that was it. There was nothing. So what you learn is that you don't trust developers... Yeah, he was gonna rebuild it. That's what he said all along. And the thing that hurts is that I was a friend of the community association at the time. And I wrote the letter supporting the building of the Foodland store, you know, predicated on no loss to the community. But we did. We lost a nice historical building. It was a part of the community, it was old. But look at Hale'iwa, that's what makes this town. [Bob Leinau]

Concerns and Recommendations

And the thing is too, it's hurtful that the tourist industry has banked on an original Hawaiian sport called surfing. They have made millions and millions, and what have they given back to the community, to improve these kinds of projects? Nothing... The thing is this. It [surfing] started out as you just go out and relax, catch a few waves and come back. When does it end with the thrill seeking, tow-in surfing, windsurfing, you know, jet ski? All we wanted to do, the purpose was to go out dea, catch couple waves, have a good time and come back in. That's it. And then when you see the advertisements, you won't see Hawaiian people out there. You see foreign people riding waves in foreign lands like South America or Mexico or California. And it's a false representation. I don't know what to say. [Tom Shirai]

Although it's just some documents that show genealogy and land tenure and stuff, at least you can see that it's Hawaiian land tenure dating back to the kingdom era. And in fact,

some of those street names are some of the kūpunas that were awarded [land claims], you know? I'll give you an example, there's in Pupukea, close by, one of the street names is Kumupali. And if you look it up, it's a kupuna, a man that was awarded a Land Commission Award in that area, you know, and that's why they get the names...Ok, I'll go and share something. I dropped a bomb [of info] on them. They thought it was just a street name, Kilioe Street. And then my question that I asked everyone was, "Do you know why that street is named Kilioe?" And nobody knew. And for you, I will share. Kilioe was the name of a kupuna that was awarded a Land Commission Award in that exact location. I said, "That's why it's called Kilioe Place." And they were like, wow. I said, "You guys didn't do your homework." These are people from this area. They are not randomly picked names. I said, "You bettah start paying attention, doing your work, then that helps you with however you wanna run with it." Do your research, then you get the kūpuna behind you. Even if you not from there, but if you acknowledge that, knowing why it's called Kilioe Place, and you can cite like one Bible verse, "Land Commission Award, so and so and so to Kilioe," then you've established a tie there and a respect...And it's another question like the story I told you before you turned on this tape recorder, about Waimea Valley. Yeah, shame. And so now I feel in my head, "Do I have to [say something]?" I'm 55 [years old] right now. You mean to say I gotta be at everything? I cannot relax? I cannot get a break from this? When you guys gonna step it up and show me something? When? I said, "This hurts me." You are supposed to be doing it, helping, and I'm supposed to relax, not me go do the ground work. [Tom Shirai]

Existing conditions, I would say that it's similar or parallel, same thing, to like how the Hale'iwa stores project is next to the fishpond, you know. You already have leakage. You already have sewage leakage going into, you know, those type of things that they're dealing with. So it's ongoing. It's not like it was done today, or they going build em and then [now there's leakage]. Septic tanks, that's a hot topic for those projects, septic tanks versus cesspools. And so, the March Neighborhood Board, we had a special meeting I think a couple years ago at Waimea Valley. The owners and Hanapohaku made a presentation and stuff, and they heard the concerns of the neighborhood. So I letting you know. On the website, you'll see the North Shore Neighborhood Board webpage, you'll see the videos and the special meeting. You go back, and you'll see em, yeah, about a two-hour meeting. I was dea [laughs], but you know had community members. One of the biggest opponents against it was the Mālama Pupukea people, you know, the sanctuary, MLCD, Marine Life Conservation District. That's the biggest one, and I know all those people. [Tom Shirai]

Yeah, that's [sewage leakage] what they brought up, a couple lawsuits against them. They're trying mitigation and stuff of that sort. We're just an advisory board, but we're aware of those things, and that's the hot topic. Plus traffic is another big concern, traffic studies, added traffic, and so on and so forth. But those are the two main issues. [Tom Shirai]

I guess then, that if you're worried about those type of things, for the burial caves the protection would be for the social impacts of people going there and nosing around, cutting a trail, going up there and trying to scale the mountain and stuff, rock climbing or whatever... Huu, headache. I wouldn't even think about doing something like that, you know? That's unheard of because we know what going happen. You lucky if you just get one verbal reprimand [laughs]. Let's put it this way. You lucky if you can sit down afterwards [laughs]. Or, you no need go tattoo shop [both laughing], you get the same color, but more emphasis on the black and blue, that's the two primary colors. [Tom Shirai]

So if you're a Hawaiian, and you want to go down to this area, and all you see is cars and cars and more cars, hey guess what, there's no place to park. That's a bummer. Well, so go through the plan. How will this plan unfold? How much parking? How will it be with the retail square footage? Those things really are factors in the broader context. [Bob Leinau]

The other thing that needs to be considered is the waste stream. If this development is retail, maybe they'll have some cardboard boxes. If they have food and beverage all over the place, ho you going get plenty waste stream morning, noon, and night. And if the water goes into the ground, will it eventually end up on the reef? Will it change the nutrient loading? Will different limu start growing in these areas? Nature is a very delicate balance. And if these guys are too aggressive, it will affect things in a negative way. [Bob Leinau]

There's two ways [the development would affect the cultural significance of the area]. The biggest is that if they actually go through with it, and they just sell out. The other one is depending on how they do it. In other words, it's supposed to be community commercial. And will it have a nice soft cultural landscape of Hawai'i feel to it? Or will it turn into a marijuana dispensary with a bunch of derelicts hanging out? I mean, it's a huge if. They wanna do a dispensary, but they don't say what they wanna dispense. [both laughing] Let me guess. [Bob Leinau]

Ok, so if you want to make decisions about stuff, you should have data. So what the State should be doing a lot, and they don't, is water quality monitoring. And suspended solids, you know, bacterial counts, and other things are causing real problems, like the stuff in the sunscreen. It's something benzoin. I'm getting old. I can't remember everything as quick as I want. Those things, you know, if you get thousands of people coming to your spot, like they've got one of their businesses there is the snorkel guys, and the other thing is their customers, just like all the other customers, contribute to the foot traffic. So right now, we used to have a lot of accesses, and we've landscaped em out, put a fence, planted a lot of native plants, and we've got it narrowed down to a couple of accesses now. So it increases the amount of erosion in those specific areas, but on the whole, it reduces the amount of erosion because it cuts down the accesses. So if their project encourages people to come, and they're using the marine life conservation district as part of their marketing anchor destination, uh yeah, it'll have an impact on the adjacency. [Bob Leinau]

You know, they'll do a baseline, pick a day when it's not too rainy, cherry pick a day. But what you need is a longitudinal study. And no property owner feels like that's their burden. And the State, they're always cutting people's budgets. It's really hard. They don't take good care of this island. You know, our real product is the beauty of this place, and they don't get it. [Bob Leinau]

Well the developers own 10% of the road there, and the adjacent neighbors own 90% of it. And what happens is there are customers who are coming up and pissing in their yards and turning around in their driveways, and there was a lot of negative impact. So now they kind of got it blocked off. But who knows what the final shakedown will be? Nobody knows. But the neighbors have been impacted, and they don't like it. I mean, they've already been impacted [from past development]. So that's what they're looking at. [Bob Leinau]

Well, traffic engineers and the State DOT drive all that stuff. It really doesn't matter what the general public thinks. It's not a popularity, majority-rules situation. They do have, however, an agreement that goes along with that property. When Niimi got it zoned from agricultural to commercial, she had to consent to a couple of conditions that related to the property as a whole before it was subdivided into the three parcels Hanapohaku has and [the property] that Foodland has. So it says, "Make improvements to the road." Well, what does that mean? Nobody knows. I don't know what it means. Ok, so that's one of those things that's floating around out there. Nobody knows what it means. [Bob Leinau]

You know what would be nice, and a lot of people out here in Hale'iwa don't do it either, but it would be nice if they would use Hawaiian words when they can, and they would use the appropriate diacritical markings, too. It's Hawai'i, you know? And the more attention to detail, the more real it all is. And those are just little things. I've gone to a lot of shops out here [in Hale'iwa], and I say, "Why don't you make it pono? Straighten it out." I'm not trying to be pissy, maybe I am, but not for bad reasons. [laughs] [Bob Leinau]

Summary of Ethnographic Survey

The interviewees are familiar with the project area and have extensive knowledge of Pūpūkea and its surrounding region. From traditional times, the region has been connected to Kamapua'a who was given land there by Lonoawohi. Another prominent name which comes up in the mo'olelo is Hi'iaka, who fell in love with a surfer from the area named Pili'a'ama. From ancient times to the period of Western contact the Pūpūkea area had remained important. It is said that a mauka-makai trail that the "night marchers" still use runs through the project parcel. During the time of the Kamehameha dynasty, the kahuna Hewahewa lived in the area and cared for Pu'u O Mahuka Heiau. Around this time, the harvesting of sandalwood in the Pūpūkea uplands became an important industry until around 1830. Sometime in the early post-contact era, smallpox swept through the population, and a mass burial for those from Pūpūkea and the surrounding region took place in the sands near Kaluaomaua. In the latter half of the 1800s, Hawaiian families received Land Commission Awards for properties in Pūpūkea. Some of these families still live there while some have moved, but regardless they are still very much associated with this 'āina, and some of their names are still seen in the street names of the area. Modern businesses include an acerola farm and several dairies up mauka, and pineapple farming by Libby. Arguably the most important business to the community for many decades was the Niimi Store, which was a focal point for generations of residents. The developer of Foodland promised to rebuild Niimi Store after getting community support for the Foodland development, but after building Foodland, the developer reneged on the promise.

Due to the past history of land use, there is an absence of archaeological, cultural, and natural resources on the project parcel. Likewise, there are no traditional gathering practices or other cultural traditions which take place on the property these days. This is in contrast to the shoreline across the street from the property which still has natural resources such as salt, limu, and other marine resources. While salt gathering and limu harvesting are allowed, the fish in the waters across of the project area are off limits because the waters have been designated a conservation zone. Mauka of the project parcel is the famous Pu'u O Mahuka Heiau, and beyond that is the archaeologically and culturally rich valley of Waimea. As one consultant put it, Waimea and Pūpūkea are inextricably linked, and so this adds to the overall cultural significance of Pūpūkea in general. Along the cliffs behind the project properties are documented burial caves, and where the cliffline meets the ground, there is supposed to be a spring. One consultant pointed out that the presence of this spring in proximity to the inland gulch known as Hauola, along with the fresh water seepages below sea level along the coastline suggest that there is fresh water flowing naturally under the project property. The access to subterranean fresh water is memorialized in the mo'olelo of the woman who went to collect the water near Three Tables in ancient times and who is still present there in the rock formation. One consultant hinted that there may be some other cultural significance to the particular project parcel which might be unknown to the public, and this consultant volunteered to talk to the families in the area to make sure nothing is overlooked.

The interviewees went on to describe the changes of the area over time. The very landscape of the region has been altered due to the extraction of natural resources. Along the shore the coral was detonated with dynamite, and sand was mined for use in Waikīkī. There was also a "blue rock" quarry where the Saints Peter and Paul Catholic Church now stands. The quarried material was used to build the road from Waimea to Kahuku. Some of the other Pūpūkea lands were bulldozed for agriculture, and the lands of the particular project area had become a dumping ground when the Niimi Store went out of business after Foodland took its place. In contemporary times, Pūpūkea and the entire North Shore has witnessed a significant housing boom and population swell, and this along with growing numbers of tourists has led to an exponential increase in pedestrian and vehicular traffic. In addition, as one consultant made clear, the transformation of the North Shore into a tourist

trap has buried the Hawaiian identity of the place, and this sense of Hawaiian-ness needs to be brought back to the forefront.

The interviewees voiced several concerns regarding this project:

- Past and current developments which consume Hawaiian places and traditions without giving back to the community
- The effects on the environment from sewage seepage and the solid waste stream
- The already congested traffic and parking situation
- The impacts of people cutting mauka trails and rock climbing around sensitive areas near burial caves
- The lack of known details of the plan such as exact retail square footage and the types of businesses that will be located there
- The already documented trespassing of visitors on private properties
- The unclarified and/or unfulfilled road improvement stipulations which were previously discussed for the area

The interviewees also shared some of their recommendations and measures to mitigate potential adverse effects of the proposed development:

- To counter the population explosion in the region, give the area's Hawaiian and long-time Local families the first pick for jobs
- To calm the concerns of the community, reach out to the community and create dialogue now before it's too late, and also, let the community know ahead of time what kinds of businesses will be located at the new development
- To head toward an optimal business flow, follow or improve upon the parking plan, delivery truck system, water usage, etc. that Foodland is currently using
- To steer away from making traffic worse, do not install another traffic light along the main road in front of the development
- To foster a greater sense of Hawaiian place, create a Hawaiian presence at the new development through a business such as an Eddie Aikau museum and/or restaurant
- To address the issue of bathroom access, construct restrooms on the project property which will be accessible to the general public and kept clean every day
- To be respectful of the original Pūpūkea community, do research and acknowledge the piko families of the area
- To be respectful of the native Hawaiian language, encourage its use at the new development and make sure that the language is used correctly
- To ensure critical environmental data is collected and analyzed, support a longitudinal study on the environmental implications of development such as the effects of benzoin (from suntan lotion) on water quality and the impacts of erosion due to public accesses, etc.

SUMMARY AND RECOMMENDATIONS

The North Shore has been an important region of O‘ahu since pre-contact times and has retained its importance today. The Pūpūkea area, and by association, the adjacent ahupua‘a of Waimea, are known for their cultural, archaeological, and natural resources. This study highlights the unique past of Pūpūkea and demonstrates the importance of this place to the community. Three community members were interviewed to share their mana‘o and to help identify any potential cultural resources or practices that might be affected by the proposed development.

Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study revealed that Pūpūkea from mauka to makai has been culturally significant, providing many of the natural resources which supported traditional subsistence activities such as farming, fishing, limu gathering, salt collecting, and drawing from the subterranean supply of fresh water.

Historically, the lands of Pūpūkea supported the sandalwood trade and were also cultivated with pineapple, used for acerola farming, and supported dairy ranching and rock quarrying. Along the coast, there was the mining of sand for transport elsewhere. After the coming of the railroad, the Niimi store, the grounds of which were located at and adjacent to the project property, was an important retailer that provided goods for the community and became a gathering place for generations of residents. Today, the Niimi Store has been replaced by Foodland and several lunch wagons, as well as small businesses catering to the tourists. The North Shore in general has been transformed into a major tourist destination, or as one interviewee put it, a tourist trap. This, along with the population boom, has had an impact on the natural environment and the environmental resources. Traditional salt collecting and limu gathering is still permitted, but the fishing along the coast in front of the project property is now prohibited due to the creation of a marine conservation area.

Ethnographic interviews pointed out the connection that Pūpūkea has with Waimea. Consultants agreed that although there has been a complete modification of the project parcel, there are still many known sites of cultural significance throughout the uplands and coastal lands of Pūpūkea and of Waimea next door. And despite the change that has taken place throughout the region, many Hawaiians and long-time Local families still treasure their familial and spiritual connection to Pūpūkea. There were no cultural resources or practices identified for the property that are extant today, although it was noted that the project lands might lie along an ancient mauka-makai trail route.

Potential Effects of the Proposed Project

The interviewees shared that there is the possibility that the proposed project might impact the environment if the sewage infrastructure is not proactively designed up to par. In addition, the development is in an area that already has a major problem with traffic and parking. However, as one interviewee stated, population explosion on the North Shore has already happened, and the tourists will come regardless of whether or not this development takes place because they are coming for the scenery and beaches. This interviewee emphasized that if this development includes stores and/or restaurants, it will benefit those on the North Shore because they will have more choices, and as a result, possibly lower prices. Another potential effect that was brought up was the added suppression of the Hawaiian culture that this development might bring. This could be countered by deliberately infusing Hawaiian culture and language into the proposed development and also by acknowledging the piko families of the area. Another possible effect mentioned in the interviews is the added number of visitors that this development might bring and the straying of these added visitors onto private property and/or culturally sensitive areas, such as the cliffline which has been

known to house iwi kūpuna. A mitigation suggestion is that any increase in visitors needs to be tempered with a respect to the boundaries of private parcels and culturally sensitive properties.

Confidential Information Withheld

During the course of conducting the ethnographic research for this project, one of the interviewees requested to keep their identity anonymous and asked that the transcription of their interview not be published. This interviewee, however, did give permission for us to print a copy of their transcript and make it available to the developer and also to paraphrase the information of the transcript to include in this Cultural Impact Assessment.

Conflicting Information

No conflicting information was obvious in analyzing the gathered sources. However, there was a slight difference in perspective gleaned from the interviews. For example, the proposed development could be looked at as an added project taking away from the Hawaiian identity to cater to tourists, or with the right planning, it could be an opportunity to perpetuate the Hawaiian culture and educate the visitors in such matters through the types of activities/businesses it allows there. The development will not help the current traffic problem in the area, but it could benefit the population by offering more choices in food establishments and stores, and this in turn, could decrease the prices of food, goods, and services. It could also offer more jobs to the Local community. All perspectives are valid, but the advantages/disadvantages of the project will depend on the execution of careful planning.

Recommendations

All interviewees offered many good points to consider. They had some questions regarding the specifics of the development which should be answered to alleviate their concerns. It is recommended that research be done and plans be made to recognize in this development: the Hawaiian language, the Local culture, the area's piko families, and the historical significance of the place. This would help educate visitors to the commercial development and foster cultural sensitivity, appreciation, and respect. Efforts should be made to ensure that the long-time residents have preferential hiring over new transplants and over those living elsewhere. One interviewee volunteered to gather the area's long-time residents and bring them to apply for employment at the new commercial development. Perhaps this matter could be followed up with this kupuna. Due to the lack of restrooms in the area, as a way to give back to the community, a restroom could be constructed on the property which would be accessible to the general public during normal operational hours of the businesses. And finally, a longitudinal study should be supported to gather data on the effects of the solid waste stream and sewage seepage, the effects of tourism on water quality (such as the effect of benzoin from suntan lotion into the waters), and the impacts of public accesses to the erosion of the environment and the protection of archaeological/cultural resources.

There are no existing cultural resources or current cultural practices that were identified for the project area itself. However, background research and oral history interviews confirmed the presence of archaeological, cultural, and natural resources in the project area vicinity, and it is not clear how these will be affected by the proposed construction. Interviews with three community members stressed their concerns regarding this and offered recommendations to mitigate any adverse effects. With regard to the environment, no natural resources were identified on the particular project parcels, with the exception of fresh water which may or may not exist below ground. It is recommended that the community continues to be consulted during all phases of the proposed Pūpūkea Commercial development, and that any other future concerns and recommendations brought forward by the community are be considered.

GLOSSARY

acerola	The shrub/tree <i>Malpighia glabra</i> L. that produces a cherry-like fruit used in juices and jellies.
‘āhole	Mature stage of the Hawaiian flagtail fish. The young stage is ‘āholehole.
ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
‘ai noa	To eat freely without kapu.
‘āina	Land.
aku	The bonito or skipjack (<i>Katsuwonus pelamis</i>), a prized eating fish.
ali‘i	Chief, chiefess, monarch.
‘a‘ole	No, never, not; to have none.
hālili	Shells of the family <i>Architectonidae</i> , also known as the sundial shell.
Haole	White person, American, Englishman, Caucasian; formerly any foreigner.
haole koa, koa haole	The small tree <i>Leucaena glauca</i> , historically-introduced to Hawai‘i.
hau	The indigenous tree <i>Hibiscus tiliaceus</i> , which had many uses in traditional Hawai‘i. Sandals were fashioned from the bark and cordage was made from fibers. Wood was shaped into net floats, canoe booms, and various sports equipment and flowers were used medicinally.
he‘e	Octopus (<i>Polypus</i> sp.).
he‘e nalu	Surfing, surf rider.
heiau	Place of worship and ritual in traditional Hawai‘i.
huhū	Mad, offended, to become angry.
‘ike	To see, know, feel; knowledge, awareness, understanding.
‘ili, ‘ili‘āina	Traditional land division, usually a subdivision of an ahupua‘a.
iwi	Bone.
Kahiki	A far away land, sometimes refers to Tahiti.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kala	The surgeonfish or unicorn fish, <i>Teuthidae</i> .
kama‘āina	Native-born.
kanaka	Human, person, man, Hawaiian.
kapu	Taboo, prohibited, forbidden.
ko‘a	Fishing shrine.
koa haole	The small tree <i>Leucaena glauca</i> , historically-introduced to Hawai‘i.
kōkua	Help, assistance, helper, co-operation.
konohiki	The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

kukui	The candlenut tree, or <i>Aleurites moluccana</i> , the nuts of which were eaten as a relish and used for lamp fuel in traditional times.
kula	Plain, field, open country, pasture, land with no water rights.
kuleana	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
kupuna	Grandparent, ancestor; kūpuna is the plural form.
ku‘ula	A stone god used to attract fish, an altar near the sea, or a hut where fishing gear was kept with ku‘ula images to invoke their power.
lawai‘a	Fisherman; to catch fish.
limu	Refers to all sea plants, such as algae and edible seaweed.
limu koku	The prized edible seaweed <i>Asparagopsis taxiformis</i> .
limu līpēpē, līpe‘epe‘e	The short, red seaweeds of the genus <i>Laurencia</i> .
lua	The ancient style of fighting involving the breaking of bones, dislocation of joints, and inflicting pain by applying pressure to nerve centers. Also hole, pit; toilet.
luakini	Large heiau of human sacrifice.
Māhele	The 1848 division of land.
makai	Toward the sea.
mālama	To care for, preserve, or protect.
mana‘o	Thoughts, opinions, ideas.
manini	The surgeonfish <i>Acanthurus triostegus</i> , common in Hawaiian waters.
mauka	Inland, upland, toward the mountain.
mele	Song, chant, or poem.
menehune	Small people of legend who worked at night to build structures such as fishponds, roads, and heiau.
midden	A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.
moku	District, island.
moi	The threadfish <i>Polydactylus sexfilis</i> , a highly prized food item.
mo‘o	Lizard, dragon, water spirit.
mo‘o, mo‘o‘āina	Narrow strip of land, smaller than an ‘ili.
mo‘olelo	A story, myth, history, tradition, legend, or record.
nalu	Wave, surf.
nenuē	The chub, rudder, or pilot fish (<i>Kyphosus bigibbus</i> , <i>K. vaigiensis</i>).
nīele	Curious, inquisitive; to keep asking questions.
night marchers	The legendary warrior ghosts that march at sacred places on certain nights. It is said to avoid death, one must lie face down on the ground to avoid their detection.
‘ohana	Family.

‘ō‘io	Ladyfish, bonefish (<i>Albula vulpes</i>).
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
‘ōpala	Rubbish, trash, garbage, junk.
pa‘akai	Salt.
pali	Cliff, steep hill.
papa	Flat surface, reef, table, level, class, rank.
piko	Navel; summit; center.
plumeria	Ornamental trees of the genus <i>Plumeria</i> , widely used in landscaping, especially at temples and graveyards.
pōhaku	Rock, stone.
pono	Correct, proper, good.
sandalwood	Iliahi (<i>Santalum</i>), several varieties endemic to Hawai‘i. Known for their aromatic wood and medicinal qualities. Heavily exported in the 1800s.
saprolitic rock	Soft, decomposing bedrock.
sugarcane	The Polynesian-introduced <i>Saccharum officinarum</i> , or kō, a large grass traditionally used as a sweetener and for black dye.
‘uala	The sweet potato, or <i>Ipomoea batatas</i> , a Polynesian introduction.
uhu	An adult parrot fish, one of two genera of the <i>Scaridae</i> family known to occur in Hawai‘i.
‘ōpelu	Mackerel scad (<i>Decapterus pinnulatus</i> and <i>D. maruadsi</i>).
wai	Water or liquid other than salt water.

REFERENCES

- Athens, J.S. and C. Magnusen
1998 *Sunset Beach Park Archaeological Inventory Survey, O'ahu, Hawai'i*. International Archaeological Research Institute, Inc., Honolulu.
- Beaglehole, J.C. (ed.)
1967 *The Journals of Captain James Cook, Vol. III, Part One*. Hakluyt Society. Cambridge University Press, Cambridge, United Kingdom.
- Beck, J.A., J.D. McIntosh, and P.L. Cleghorn
2004 *Archaeological Assessment for the Proposed North Shore Center at Pūpūkea (TMK 5-9-11:17) Located in Pūpūkea Ahupua'a, District of Ko'olaupua, Oahu*. Pacific Legacy, Inc., Kailua, Hawai'i.
- Berdy, C., M. Elmore, J.R. Moore, and J. Kennedy
2002 *An Archaeological Inventory Survey Report for a Property Located at TMK: 5-9-23:1 & 5-9-24:1 (Por.) and 6-1-02:22 (Por.) in Pūpūkea and Waimea Ahupua'a, Ko'olaupua and Waialua Districts, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Hale'iwa, Hawai'i.
- Carson, M.
2000 *Archaeological Survey at Sunset Beach*. Pacific Legacy, Kailua, Hawai'i.
- Chinen, J.
1961 *The Great Mahele*. University of Hawai'i Press, Honolulu.
- Clark, John
1977 *Beaches of O'ahu*. The University Press of Hawai'i, Honolulu.
2005 *Beaches of O'ahu*. Revised Edition. The University Press of Hawai'i, Honolulu.
- Colin, B.L. and H.H. Hammatt
2000 *A Letter Report on the Disinterment of an Inadvertent Human Burial Find on the Board of Water Supply Sunset Beach Waterline Project on Kenui Road, Pūpūkea Ahupua'a, Ko'olaupua, O'ahu (TMK 5-9-19:51) (State Site # 50-80-01-5532)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Cordy, D.L., A. Hazlett, and H.H. Hammatt
2008 *Archaeological Monitoring Report for Construction of Parking Lot Improvements at 'Ehukai Beach Park, Pūpūkea Ahupua'a, District of Ko'olaupua, O'ahu TMK: [1]5-9-020:022,023*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Dening, G.
1995 *The Death of William Gooch: A History's Anthropology*. University of Hawai'i Press, Honolulu.
- Denison, D.O.
1979 *Archaeological Reconnaissance of Property Across from Pūpūkea Beach Park*. Windward Community College, Kāne'ohe, Hawai'i.

- Donn, J.M.
1902 *North Coast of Oahu*. Reduced from Reg. Maps in Gov't Survey Office. May 20, 1902.
Reg. No. 2146. Scale 1 in. = 1,000 ft.
- Dunbar, H.
1989 Pu'u o Mahuka National Register Nomination Form. Division of State Parks, DLNR,
Honolulu.
- Elmore, M. and J. Kennedy
1999 *An Archaeological Monitoring Report for the Sunset Beach Support Park Located at
TMK:5-9-15:10 and 11 Paumalu Ahupua'a, Ko'olauloa District, Island of Oahu*.
Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Estioko-Griffin, A.
1986 *A Brief Historical Overview of the Pu'u o Mahuka Heiau Koolauloa, Oahu*. Report on file
at the Hawai'i State Historic Preservation Division, Kapolei, Hawai'i.
- Footo, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*.
U.S. Department of Agriculture, Soil Conservation Service. Published in cooperation with
the University of Hawaii Agricultural Experiment Station, Washington, D.C.
- Fornander, A.
1969 *An Account of the Polynesian Race*. Vol. 2, Tuttle and Co., Rutland, Vermont.
- Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and
D.M. Delparte
2013 Online Rainfall Atlas of Hawai'i. Bull. Amer. Meteor. Soc. 94, 313-316, doi:
10.1175/BAMS-D-11-00228.1.
- Griffin, A.
1991 *Assessment of a Burial Inadvertently found at Ehukai Beach, Pupukea, Waialua, Oahu*,
TMKL 5-9-20:22 & 23. State Historic Preservation Division.
- Handy, E.S., E.G. Handy, and M.K. Pukui
1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised Edition.
Bernice P. Bishop Museum Bulletin 23, Bishop Museum Press, Honolulu.
- Hammatt, H.H.
2014 *Archaeological Monitoring Report for the Sunset Beach Elementary School Electrical
Upgrades Project, Pūpūkea Ahupua'a, Ko'olauloa District, O'ahu TMK: [1] 5-9-005:018*.
Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Haun, A.E. and D. Henry
2001 *Archaeological Inventory Survey Sunset Beach Agricultural Subdivision TMK: 5-9-05:66
Land of Pupukea Ko'olauloa District, Island of Oahu*. Haun & Associates, Kea'au, Hawai'i.
- Hoover, W.
2005 "New owner sees little change at Kammie's." *Honolulu Advertiser*. April 9, 2005.

- Jones, C.K. and H.H. Hammatt
2004 *Archaeological Monitoring of Kamehameha Highway, from Pūpūkea to Waiale'e, District of Ko'olauloa, Island of O'ahu* (TMK: 5-8-01, 5-8-03-06, 5-9-01-04, 5-9-07-16). Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Ka Leo o Ka Lahui*
1893 *Ka Moololo o Hiiakaikapoliopole*. March 23, 24. Vol. 2, No. 668, page 4.
- Kamakau, S.M.
1992 *Ruling Chiefs of Hawaii, Revised Edition*. The Kamehameha Schools Press, Honolulu.
- Kawachi, C.
1988 *Field Inspection of an Inadvertent Burial on Ke-Iki Road in Pupukea, Ko'olauloa, O'ahu*. TMK 5-9-03:29. State Historic Preservation Division, Honolulu.
- Kawachi, C. and M. Smith
1989 *Field Inspection of an Inadvertent Burial on Ke-Iki Road in Pupukea, Ko'olauloa, O'ahu*, TMK 5-9-03:46. State Historic Preservation Division, Honolulu.
- Kennedy, J.
1991 *Inventory Survey and Subsurface Testing Results for Ehukai Beach Park, TMK: 5-9-20:22&23 Located in the Ahupua'a of Pupukea, Island of Oahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Kennedy, J. and T. Denham
1992 *Archaeological Monitoring Report for 'Ehukai Beach Park Improvements Located at Pupukea Ahupua'a, Ko'olauloa, Island of Oahu*. TMK: 5-9-20:22 & 23. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Kuykendall, R.S.
1967 *The Hawaiian Kingdom*. U.H. Press, Honolulu.
- Macdonald, G.A., A.T. Abbot, and F.L. Peterson
1983 *Volcanoes in the Sea the Geology of Hawaii*. Second Edition. University of Hawaii Press, Honolulu.
- Mayberry, J.D. and A.E. Haun
1988 *Archaeological Reconnaissance Survey and Limited Subsurface Testing Pupukea-Paumalu Development Project Area*. Paul H. Rosendahl, PhD, Inc., Hilo, Hawai'i.
- McAllister, J.G.
1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104, Honolulu.
- McElroy, W.K. and P.L. Lima
2015 *Burial Site Component of an Archaeological Data Recovery and Preservation Plan for SIHP 50-80-01-7678, Pūpūkea Ahupua'a, Ko'olauloa District, Island of O'ahu, Hawai'i* (TMK: (1) 5-9-020:029). Keala Pono Archaeological Consulting, Kāne'ohe, Hawai'i.
2016 *Archaeological Monitoring Report for TMK: (1) 5-9-020:029 in Pūpūkea Ahupua'a, Ko'olauloa District, Island of O'ahu, Hawai'i*. Keala Pono Archaeological Consulting, Kāne'ohe, Hawai'i.

- 2017 *DRAFT—Archaeological Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu, Hawai‘i*. Keala Pono Archaeological Consulting, Kāne‘ohe, Hawai‘i.
- McGerty, L. and R.L. Spear
2011 *An Archaeological Monitoring Report for the Pūpūkea Road Rockfall Mitigation Project, Phase I, Pūpūkea Ahupua‘a, Ko‘olauloa District, O‘ahu Island, Hawai‘i TMK (1) 5-9-005 and 011*. Scientific Consultant Services, Inc., Honolulu.
- Moore, J.R. and J. Kennedy
2006 *An Archaeological Inventory Survey Report for a 14 Acre Parcel Located at TMK: 5-9-23:01 & 5-9-24:01 (Por.) and 6-1-02:22 (Por.) in Pūpūkea and Waimea Ahupua‘a, Ko‘olauloa and Waialua Districts, Island of O‘ahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai‘i.
- Nakuina, M.
2005 *The Wind Gourd of La‘amaomao*. Kalamakū Press, Honolulu.
- North Shore News*
2013 *A Fond Farewell to Elaine Niimi*. *North Shore News* 30 (19):3.
- Paki, P.
1972 *Legends of Hawaii: Oahu’s Yesterday*. Honolulu.
- Pantaleo, J.
2000 *Archaeological Assessment for the Sunset Beach Recreation Center (TMK 5-9-07:021)*. Jeffrey Pantaleo Consultants, Honolulu.
- PBR Hawai‘i & Associates
2014 *Camp Pūpūkea Master Draft Environmental Assessment*. Honolulu.
- Pukui, M.K., S.H. Elbert, and E.T. Mookini.
1976 *Place Names of Hawaii*. University Press of Hawaii, Honolulu.
- Smith, M. and M. Yent
1991 *Archaeological Investigations at Puu O Mahuka Heiau State Monument (Site 50-80-01-249) and Nearby Sites (50-80-01-2502 and 50-80-001-3951) Pūpūkea, Koolauloa, Oahu (TMK: 5-9-05:4, 21 and 68)*. Division of State Parks DLNR, Honolulu.
- Soehren, L.J.
2010 *A Catalog of Hawaiian Place Names*. Lloyd J. Soehren, Honoka‘a, Hawai‘i.
- Sterling, E. and C. Summers
1978 *Sites of O‘ahu*. Bishop Museum Press, Honolulu
- Tulchin, T. and H.H. Hammatt
2005 *Archaeological Field Inspection and Literature Review for a Proposed Potential Rockfall Mitigation Project along Pūpūkea Road, Pūpūkea Ahupua‘a, Ko‘olauloa District, Island of O‘ahu TMK (1) 5-9-11 por. and 5-9-18 por.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2009 *Archaeological Inventory Survey for the Pūpūkea Road Rockfall Mitigation Project, Pūpūkea Ahupua‘a, Ko‘olaupia District, O‘ahu Island TMK: [1]5-9-018:025-032 por. and 038 por.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Tulchin, T., M. Mann, D.W. Shideler, and H.H. Hammatt
2002 *Archaeological Monitoring Report for ‘Ehukai Beach Park Bath House Improvements Work, Pūpūkea Ahupua‘a, District of Ko‘olaupia Island of O‘ahu TMK: 5-9-20-22 & 23.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Wall, W.E.
1904 *Pupukea-Paumalu Homesteads, Koolauloa, Oahu.* Hawaii Territory Survey. HTS Plat 2036. Scale 1 in. = 1,000 ft.

APPENDIX A: AGREEMENT TO PARTICIPATE

**Agreement to Participate in the Cultural Impact Assessment for the
Pūpūkea Commercial Project
Dietrix J. U. Duhaylonsod, Ethnographer, Keala Pono Archaeological Consulting**

You are invited to participate in a Cultural Impact Assessment (CIA) for the Pūpūkea Commercial Project in Ko‘olauloa, on the island of O‘ahu (herein referred to as “the Project”). The Project is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of G70. The ethnographer will explain the purpose of the Project, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Project is written below. Feel free to ask the ethnographer questions if the Project or procedures need further clarification. If you decide to participate in the Project, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about the Project property in Pūpūkea and its surrounding areas on the North Shore of O‘ahu Island through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, mo‘olelo, mele, or oli associated with this area. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices in properties on the current subject properties. This Assessment will also attempt to identify any affects that the proposed development may have on cultural resources present, or once present within the Project area.

Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Project may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Project will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in Project material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection, and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

Consent Form

I, _____, am a participant in the Pūpūkea Commercial Project Cultural Impact Assessment (herein referred to as “Project”). I understand that the purpose of the Project is to conduct oral history interviews with individuals knowledgeable about the subject property and surrounding area on the North Shore of O‘ahu Island. I understand that Keala Pono Archaeological Consulting and/or G70 will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Keala Pono and G70 ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Keala Pono and G70 my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Keala Pono and G70 and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and G70 may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature	Date

Print Name	Phone

Address	

Thank you for participating in this valuable study.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, _____, am a participant in the Cultural Impact Assessment for the Pūpūkea Commercial Project (herein referred to as “Project”) and was interviewed for the Project. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading “CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS.”

I agree that Keala Pono Archaeological Consulting and/or G70 may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading “OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS.”

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Consultant Signature	Date
Print Name	Phone
Address	

APPENDIX D: INTERVIEW WITH BOB LEINAU

TALKING STORY WITH

BOB LEINAU (BL)

Oral History for the Pupukea Commercial project by Dietrix Duhaylonsod (DD)
For Keala Pono 4/17/2017

Note: Bob Leinau shared his personal background in a previous cultural impact assessment for a project in Paumalū. He has given his permission for us to use that portion of the previous cultural impact assessment to introduce himself here.

DD: Today is April 17, 2017. We're sitting at the Surf And Salsa [food truck] in Hale'iwa, sitting with Uncle Bob Leinau. And we're gonna be talking about the proposed development in the Pupukea area next to the Foodland across of Shark's Cove, called the Pupukea Commercial project. And it's a pleasure again to get together with Uncle Bob and talk story, so before we go any further, I'd just like to say again, "Thank you," for taking the time out of your day to talk story with us. Aloha.

BL: Aloha

DD: So when we talked story last year, you gave your background, and if you don't mind, I'd like to use some of that to share about your background?

BL: Same guy, same person.

DD: [laughs] Ok, so then maybe we can start by talking about your association to that area, the Pupukea Commercial project area? Could you talk about your association to that area and how you've acquired any knowledge about the area?

BL: Ok, so I moved to the North Shore in 1968, and I have been active in community affairs since 1968. And I have been active on the neighborhood board for almost 40 years now, ever since its inception. And I worked in a historical park in Waimea Valley for over 30 years. And so I've always been paying attention. I give classes on the history of Waimea Valley to the lifeguards every summer, to the junior lifeguards. And so people seem to think I know more than the next guy, maybe, but whatever.

So I can give some general references to this specific piece of property. If you go all the way back, if you go back to Kamapua'a, These lands were given to Kamapua'a by Lonoawohi. Olopana was not friends with his illegitimate son Kamapua'a, and so he caught Kamapua'a finally after many years, and took him to a heiau to be killed. And Lonoawohi the kahuna flipped. They grabbed the, this is where I always get scrambled on names here, but they grabbed the other chief, spared Kamapua'a's life, and he was very grateful. So he received all the lands with wai, so that included Hakipu'u, Waiahole, Waikāne, Waimea, and Pupukea, were the lands that he ended up with eventually. His family felt that there were too many "wai"-lands that got given away. And so the Pupukea lands, the land that this development is on, was dedicated to the Pa'ao class. And they held those lands all the way through to from about 1095, what have you thereabouts, all the way through to when [the kahuna] Hewahewa came. When Kamehameha came and conquered, everybody who came and conquered put their kahuna in there, the Pa'ao class [of priests]. And Hewahewa died in 1837. So that was pretty much the end of the kahuna tenure.

So going back to Pupukea, the way the lands were used, of course there was the mauka/makai. The makai side, of course, was really important because of its fisheries and food sources. There's still to this day, over 21 kinds of limu growing on the papa right now. And it's been known for its good fishing until recent times when it pretty much got wiped out.

It was also called "Kapo'o." Kapo'o describes the nature of the area right across the street where the waves come and hit the coral reef, the shelf, and they splash way up in the air. So not only do people come to this area for diving and because this is a marine life conservation district there. There's a mile of coastline today. But they also stop to see these waves, these giant waves exploding on the coral. Actually it isn't coral. It's coral-algaenous. Most of that reef was put down by algae that glues it all together, but that's another story.

Ok, so you have this area that's very rich along the sea. And then of course the mauka lands always provided whatever they did. In later years, of course, they provided the sandalwood, which was the original currency for the Hawaiians and changed their lifestyle around significantly. Even Kamehameha had already bought guns with revenues from sandalwood. So Waimea was actually a port. The ships would pull in to a deep, sandy cove there. And so sandalwood was going on there probably until around 1830, when it pretty much went away. And there are still some big anchors. There's one big giant anchor off the point still. It's probably from those times with the big flukes on it.

So also in this area, up on the bluff above Pupukea, is Pu'u O Mahuka Heiau which is the largest heiau on the island [of O'ahu]. [The kahuna] Ka'ōpuluhulu reputedly built that. That would have been in the mid-1770s although lots of temple sites were built in sequence. This particular one has celestial coordinates. It lines up exactly with summer solstice, and there's a step down which lines up exactly with the equinox. And so these things weren't randomly done. This one was supposedly a luakini heiau. And of course, in 1819 when Kamehameha died, Hewahewa, the kahuna in Waimea Valley, along with Ka'ahumanu and Liholiho, sat down, broke the kapu of eating, they broke the 'ainoa, or had an 'ainoa, I guess, it was free. And after that they went up, and all the heiau fell into disrepair, and the tikis were destroyed.

There are two tikis, however, that did come out of Waimea Valley. In Waimea Valley, there were a lot of burials, and all along the pali on both sides of Waimea Valley. There's a lot of lava tubes and a lot of burials. So it's reasonable to assume that there were probably burials all along the mauka side. Also, just above the mauka side, just above this property, there's a drainage of a gulch. The gulch is called Hauola. Hauola might be interpreted as "a healthy hau," I don't know, but it drains out. And all along that pali, there were water seeps. And of course, where water was, it pretty much drove where the Hawaiian population went. Every living thing on the planet needs fresh water.

And so one story I heard was that at the back side of this property, there was a spring. And I have every reason to believe that's probably true especially when it's considered in proximity of Hauola. And if you dive the coral reef along the coral facing there at Kapo'o, you'll see a lot of fresh water seepages coming out. Its' dissolved holes in the karst land and in the coral. So this area has fresh water underneath the alluvium. Ok, so that's a little bit about the geology.

Going back down to the property, the great Māhele guys started buying large grants. Pupukea, the first crops up there, Libby had pineapple up there. There was, I can't remember the guy's name right now, he had avocados. There was an acerola farm up there. There were several dairies up on the hill. And so the government ran a road down called, it was called the Old Government Road. It ran through the Boy Scouts Camp. And it came all the way down to the juncture of Pupukea Road where Foodland is now, and where Niimi Store was.

The Niimi Store was built shortly after Dillingham's railroad came out. I think it was built in like 1902 or something. And that was a real focal point. I believe the train stopped there. The farmers had a chance to load or unload. And so the store was a real hang out. It was a place that the people could do commerce. There was not a lot of commerce on the north shore. So that was probably the first store that I can think of that would have been in business. So that was all part of the Hanapohaku three parcels. The Niimi family had a retail operation in Kahuku, and they moved it down to Pupukea when they attained the ownership. And it did a lot of things. You know, it was food, it was a feed store for everybody who had chickens. There was a nursery there for a while. They had a lot of stuff.

And most of the people who lived in the area, it was very rural, most of the people had gardens, you know, they grew a lot of their own food. And if you look at the Hanapohaku development right now, it still retains pretty much the original alluvial topography with the low corner being in the direction of the west corner. So I don't think anybody did anything too much. But I think it had been cleared for agriculture. So I think the prospect of finding any rock alignments in there with cultural significance or any artifacts are probably pretty remote.

In the last few years, well the last 30 years, a lot of people used the property pretty much as a, because it was a vacant lot, they could go back there and just dump stuff. And they did. So the current owners, one of the first things they did was go in there and clear a lot of 'ōpala out of there. And they did some minor grading, but I think if you look back over the last 100 years before, probably there wasn't any serious grading. But I think that agricultural endeavors in that area were pretty minor and just surface related. I'm trying to visualize it. [pause] So pretty much what was in there when the current owners bought it was haole koa and weeds.

The other thing that is important, I think, is that as this project moves forward, is to consider the adjacencies in the context of the area. That area also had some Hawaiian references to Pele when she came through there. If you look to the north out at Ke Iki Point, out at Kalalua Point, there's that Ukali O Pele, which are stones, coral stones, that Pele turned a family into stone. I'm not real clear whether she did it as a favor for them to guard the area, or if they were nīele, and she did it as a punishment. But the Ukali O Pele are still out there.

The other story that ties to the area is Hi'iaka was in the area in Waimea, and she saw a handsome kanaka there. He was a lawai'a. He was a he'e nalu, a surfer. He was a konohiki. And his name was Pili'a'ama. And as the story goes, she kinda liked the looks of this guy, a handsome guy, and she chased him. She went after this guy, and he ran away. And there's rock on the side of Kamehameha Highway that still has his footprint in it where he dove into the cliff and disappeared. [laughs]

There's also the story of Kaluaomaua. The Three Tables area, there's the story of a lady who, one of the ways that you could get fresh water was to go out with a gourd and collect water from underneath the ocean. You could tip it over, and it would suck in fresh water from where the water was coming out, the wai. And so she went out there, collecting water for her people and didn't come back. But there's three corals that float there, and supposedly she turned into the lua, or the rocks where that water comes out.

So the Hawaiian culture and the stories of that area are rich. There's another one, with Pu'u O Mahuka heiau up on the top of Pupukea bluff. On the Hawaiian Islands there were a lot of trails. You know, [like] on Maui there was a highway, we call it a highway. But they had a ala, and it's said that the trail went through the Hanapohaku property, and that still to this day, night marchers move down that road from time to time. And people along that coastline there have things that

happen at night in their houses where things are moved, and nobody knows how that went happen. So the story of the night marchers and Pu'u O Mahuka is very much alive too.

So there's the broader context that goes beyond the metes and bounds of the property. And I think it's important to keep those stories alive. Keep the culture strong. So if Hanapohaku comes in, they need to be respectful of the broader context of the adjacencies, and that deals with their customers. Their customers can overwhelm the City & County park next door where practitioners still go and collect limu, hālili. And also, out on the point right across the street, this was an area where Hawaiians gathered pa'akai. There's large salt pans out there on the coral and flattened out. And so these things are all remnants and relics and touchstones for Hawaiian culture.

So if you're a Hawaiian, and you want to go down to this area, and all you see is cars and cars and more cars, hey guess what, there's no place to park. That's a bummer. Well, so go through the plan. How will this plan unfold? How much parking? How will it be with the retail square footage? Those things really are factors in the broader context.

The other thing that needs to be considered is the waste stream. If this development is retail, maybe they'll have some cardboard boxes. If they have food and beverage all over the place, ho you going get plenty waste stream morning, noon, and night. And if the water goes into the ground, will it eventually end up on the reef? Will it change the nutrient loading? Will different limu start growing in these areas? Nature is a very delicate balance. And if these guys are too aggressive, it will affect things in a negative way.

DD: Alright, wow, that's a wealth of things to consider.

BL: You can edit that any way you want.

DD: No, you can see the significance of the area going back to Kamapua'a and Pele and Hi'iaka. And then, I see some themes with water, mentioning the fresh water coming out at different areas around the coast as well as being connected through story with Hauola, and possibly, you were saying that the spring might be on the property toward the back.

BL: I haven't seen it. I only heard that there was one.

DD: Ok. And then the other thing that stands out is how ceremonial this place was when you mention Pa'ao and Hewahewa and Ka'ōpuluhulu with the heiau on top, very good things of significance to keep in mind, like you said, to have respect for the history of the area.

So let's see, if we could talk about place names, you mentioned Kapo'o. Would that be Shark's Cove, or?

BL: Actually, the reef structure, that structure at Ke Iki Beach, when it goes out to Kalalua Point, is a very large coral-algaenous structure, and it turns into a coral, you know, a vertical face. And I'm told that's the largest coral vertical face, or coral-algaenous vertical face, on the island. It's a unique structure. And it is the area that kinda goes down to just about where the fire department is. So it's pretty much from Shark's Cove to the fire department, is the area I think is Kapo'o. But I don't know if they were really heavy about metes and bounds. The area was referenced as Kapo'o because of the nature of the waves.

DD: Ok, are there any other place names that you'd like to share about the area?

BL: You know, I wish I knew more. We're always trying to find names. One of the names I've been told for Shark's Cove, clearly that wasn't a Hawaiian name, but I asked Richard Spillner, who was born on the beach at Waimea Bay in 1933 or '34, what they called Shark's Cove when he was growing up. And he said that they called it "Ko'a" meaning "Chunks of coral," because the waves blast in there so big that it really doesn't have a sand beach. It has chunks of coral. So actually "Ko'a Cove" would be a really appropriate name. And it may very well be the name that's been there for a very long time, but I've never been able to find it in print.

DD: Ok, thanks for sharing that.

BL: Also, there's the tables. What's interesting too is that the tide pools, when they surveyed Drum Road in 1933, and they built it in 1934, the surge rock for that road that connects Helemano all the way to Kahuku and comes up through Pupukea, was built out of coral that was blasted. Those tide pools are man-made. Before, it was a higher papa, karst formation, similar to the one at Ke Iki. Interesting, huh?

DD: Oh, so they blasted that.

BL: Yeah. Back then, they blasted the coral for resource. Where the Catholic Church is now was built as a quarry for blue rock to build the road from Waimea to Kahuku. That was built in 1928. And in the '50s, Castle and Cooke was mining sand in Waimea to take to Waikīkī. And Glen Pau stopped that. He went to the governor and said, "A'ole." [laughs] Yeah.

DD: Yeah. So the Catholic Church, you're talking about St. Peter and Paul, right on the corner?

BL: Yeah. That tower there was a silo for crushed blue rock. Trucks would drive underneath, they'd open the jaws and fill the trucks and close em. Yeah, used to have a conveyor belt that went up the backside. I must be getting old.

DD: [laughs] That's before my time. [both laughing] Ok, so I just want to see if we're missing anything as far as how the place has changed. You mentioned that it's all previously disturbed with haole koa and bushes there, and that it was a dumping ground. Are there any other changes that you recall on the property?

BL: No.

DD: Ok, so because of the prior disturbance on the ground, there are probably no rock alignments or anything. I know that you did mention burials further upland and in the cliffs.

BL: Actually there's one other burial that I heard of. I think that it was during the time that the people were getting smallpox. I heard that at Kaluaomaua, the last set of rocks before you go out, that there was a mass burial there at one time. A lot of people died, and rather than go up in the caves, they just went to the soft sand.

DD: So this is makai of the road?

BL: Yes, it was in the sand, makai of the road.

DD: Ok. And there are no burials, to the best of your knowledge, on the subject property?

BL: Not that I know of.

DD: What about any historical buildings?

BL: Well the only historical one would have been the Niimi Store. And that was a snooker job. That was a real education. He told Elaine Niimi, and he told the community, that after he built the Foodland, that he would rebuild the Niimi Store. You know, everybody liked that store. And that was all done, and he said, "Oh I change my mind." And that was it. There was nothing. So what you learn is that you don't trust developers.

DD: Oh, the developer was going to make a new Niimi Store.

BL: Yeah, he was gonna rebuild it. That's what he said all along. And the thing that hurts is that I was a friend of the community association at the time. And I wrote the letter supporting the building of the Foodland store, you know, predicated on no loss to the community. But we did. We lost a nice historical building. It was a part of the community, it was old. But look at Hale'iwa, that's what makes this town.

DD: Yeah, like Arakawa's [store in Waipahu].

BL: Yeah, kinda like Arakawa's. The most popular building in Hale'iwa for years and years and years was the Aoki Store, that little red shave ice. More people took pictures, more artists painted it, more whatever whatever, and Kamehameha [Schools Bishop Estate] just knocked it down. They said, "It's too old. We gotta get rid of this guy. We gotta build some more stuffs." But that's what people like. They like the old, they really like that.

DD: Right. So if this proposed development goes through, do you think that it would affect any place of cultural significance, maybe not on the property but around the property? What are your thoughts on that?

BL: There's two ways. The biggest is that if they actually go through with it, and they just sell out. The other one is depending on how they do it. In other words, it's supposed to be community commercial. And will it have a nice soft cultural landscape of Hawai'i feel to it? Or will it turn into a marijuana dispensary with a bunch of derelicts hanging out? I mean, it's a huge if. They wanna do a dispensary, but they don't say what they wanna dispense. [both laughing] Let me guess.

DD: [laughs] Is that the new cash crop?

BL: I'm just sayin'.

DD: Ok, you also mentioned some traditional gathering practices across the street, in the past, the gathering of salt, the various seaweeds, and then you mentioned the fishing there. How do you think that this development would affect any of those practices, if at all?

BL: Well, the fishing's already kapu except at Waimea Bay where you can have two poles, two hooks. The rest of it is considered poaching. But you know, the Hawaiians had kapus too. And the whole near shore waters on this whole island has just been raped. Most people think that the marine life conservation district [fronting the project site] works, is a good idea. Some of them don't. Some say, "You took something away from me." Other people understand there's a spillover in the wind, and that there's something for future generations. That's the real objective, to teach people. Wouldn't it be nice if you could take your kid down and show em schools of uhu? Well I've swam twice from Waimea Bay to Hale'iwa in the last couple years and not seen one uhu. I mean, it's like "[sound effect]." So the word "sustainable" gets thrown around a lot, but we crossed that line a long time ago, and we need to reel this puppy back in. And the "we" should be

all of us. Unfortunately there are guys that say, “Eh you trying to take something away from me, brah.” You know what, hey wake up.

DD: Big picture, it’s the big picture. So people don’t fish in front there anymore because it’s a preserve right?

BL: Right.

DD: So do you know if anyone is still collecting salt there?

BL: Technically, you’re not supposed to take anything out there.

DD: Oh, ok.

BL: But, you’re not supposed to take rocks that have life on them, not supposed to take coral. The idea is you take pictures. But the salt pans are still there, and if someone took some salt, no one’s gonna make huhū about that. And the guys who collect limu, you’re allowed to take limu kohu and līpēpē, are the two types that you’re allowed. You’re allowed a wet pound per person per day. And of course it was harvested at that rate, there wouldn’t be any. So they oughtta kapu that too.

DD: So are there any other measures that are not in place that should be looked at regarding this development to mitigate any adverse effects?

BL: Ok, so if you want to make decisions about stuff, you should have data. So what the State should be doing a lot, and they don’t, is water quality monitoring. And suspended solids, you know, bacterial counts, and other things are causing real problems, like the stuff in the sunscreen. It’s something benzoin. I’m getting old. I can’t remember everything as quick as I want. Those things, you know, if you get thousands of people coming to your spot, like they’ve got one of their businesses there is the snorkel guys, and the other thing is their customers, just like all the other customers, contribute to the foot traffic. So right now, we used to have a lot of accesses, and we’ve landscaped em out, put a fence, planted a lot of native plants, and we’ve got it narrowed down to a couple of accesses now. So it increases the amount of erosion in those specific areas, but on the whole, it reduces the amount of erosion because it cuts down the accesses. So if their project encourages people to come, and they’re using the marine life conservation district as part of their marketing anchor destination, uh yeah, it’ll have an impact on the adjacency.

DD: Right, and you’re suggesting some kind of water quality study.

BL: Oh they’ll have a guy do a study. You know, they’ll do a baseline, pick a day when it’s not too rainy, cherry pick a day. But what you need is a longitudinal study. And not property owner feels like that’s their burden. And the State, they’re always cutting people’s budgets. It’s really hard. They don’t take good care of this island. You know, our real product is the beauty of this place, and they don’t get it.

DD: Right, right. Any other mitigation measures?

BL: Well the developers own 10% of the road there, and the adjacent neighbors own 90% of it. And what happens is there are customers who are coming up and pissing in their yards and turning around in their driveways, and there was a lot of negative impact. So now they kind of got it blocked off. But who knows what the final shakedown will be? Nobody knows. But the neighbors have been impacted, and they don’t like it. I mean, they’ve already been impacted [from past development]. So that’s what they’re looking at.

DD: Could you envision any measures to help with the traffic?

BL: Well, traffic engineers and the State DOT drive all that stuff. It really doesn't matter what the general public thinks. It's not a popularity, majority-rules situation. They do have, however, an agreement that goes along with that property. When Niimi got it zoned from agricultural to commercial, she had to consent to a couple of conditions that related to the property as a whole before it was subdivided into the three parcels Hanapohaku has and [the property] that Foodland has. So it says, "Make improvements to the road." Well, what does that mean? Nobody knows. I don't know what it means. Ok, so that's one of those things that's floating around out there. Nobody knows what it means.

DD: Got it. Thanks for sharing that. So are there any other cultural concerns the community might have that we haven't discussed that you think we should talk about?

BL: You know what would be nice, and a lot of people out here in Hale'iwa don't do it either, but it would be nice if they would use Hawaiian words when they can, and they would use the appropriate diacritical markings, too. It's Hawai'i, you know? And the more attention to detail, the more real it all is. And those are just little things. I've gone to a lot of shops out here [in Hale'iwa], and I say, "Why don't you make it pono? Straighten it out." I'm not trying to be pissy, maybe I am, but not for bad reasons. [laughs]

DD: Right. It's an educational opportunity.

BL: There you go.

DD: And are there any other community people or kupuna you think we should talk to?

BL: The person who ought to know the most is Elaine Niimi's daughter, Susan Niimi.

DD: Susan Niimi?

BL: Susan Niimi, who lives up on the hill, and her mom was affiliated with that property for a long time. And I tried to call her to ask her if there was anything she felt would be pertinent or germane or otherwise, and she didn't return the call.

DD: Oh ok, I'll pass her name on. Was the original store her parents'? Or her grandparents'?

BL: Her mother was Elaine Niimi. Elaine Niimi acquired that name through marriage, and they divorced.

DD: It's Ni-i-mi?

BL: N – i – i – m – i. If you go to Google and type in Niimi Store, the pictures will come up.

DD: Ok. I'll google it.

BL: Yeah.

DD: Well, unless there's anything else, I guess that concludes, yeah?

BL: I want to thank you for lunch today.

DD: No, I want to thank *you*. I enjoy talking story with you.

BL: Well you're an easy person to talk to. I know I'm in way over my head. I shouldn't even be talking about this stuff, you know, haole boys aren't supposed to be talking about Hawaiian stuffs, Hawaiians are supposed to talk about Hawaiian stuffs.

DD: Well it is 'ike, and you're sharing things that you've learned and things that have been shared with you, so it is 'ike, and we appreciate it.

BL: I really wish our area had more kupuna, and it doesn't. There are not a lot of piko families out here. So they always talk about, oh go talk to the kupuna, but where do you go? So it's hard. I try to keep my chin up, I wish I knew more.

DD: Well it is a lot, what you've shared, it gives a lot of background, a lot of good significance about the area, so we really appreciate that. So once again, thank you to Uncle Bob Leinau for taking the time, he came from working with the students in Waialua today to meet with us. So I'd just like to say, "Mahalo and have a good day. Aloha."

BL: Mahalo and Aloha.

APPENDIX E: INTERVIEW WITH TOM SHIRAI

TALKING STORY WITH
TOM SHIRAI (TS)

Oral History for the Pupukea Commercial project by Dietrix Duhaylonsod
(DD) For Keala Pono 4/17/2017

Note: Uncle Thomas Shirai shared his personal background in a previous cultural impact assessment for a project in Hale‘iwa. He has given his permission for us to use that portion of the previous cultural impact assessment to introduce himself here.

DD: Aloha, today is Monday, April 17, 2017, and it’s a good day because I’m talking story with Uncle Thomas Shirai. We’re over here at Hale‘iwa McDonald’s, and it’s really good to see him again. And of course before we go any further, I gotta say, “Mahalo nui loa,” to Uncle for spending time today. So mahalo, Uncle, and aloha.

TS: Mahalo very much to you, Koa, and it’s very good to see you again.

DD: Same hea, Uncle. So you know, the last time we talked story, you shared some of your personal background, and I was thinking that we could transfer that over, unless there’s anything else you’d like to add about your background?

TS: Ok, yeah, I think from the last project, I will share that what I did for educational purposes is that a lot of people now have a different perspective of what Hale‘iwa really means and how things fall into play when you really do your research. And I’m very, very grateful that you translated a newspaper article that was pertinent to that report that you prepared for that project. And it sets things to add to the real meaning of what Hale‘iwa really is. And I must say that many people, Local and non-Local, did not know. Or the ones that might know had made their passage. And so that was one of the things that I held kapu because I still mourn my grandfather, and as time goes by now, that’s why I decided that I had to move on and ‘oki. I didn’t do it to show off, I just wanted to share this truth. And so when I did share that, a lot of em, for them it was very gratifying because it was the first time they heard that story. [laughs] I said, “Yes, it’s not about a seabird.” I said, “The seabird, that’s another story in Waialua. It’s not here. Even though the song says ‘Hale‘iwa beautiful home’, you know, nice house, but there’s a symbolism that goes with that, and that was that fern.”

And you going to the United Nations, and that [United Nations] flag has the two olive branches. Look at today’s state seal, it has the two iwaiwa ferns. And going back to that Kuokoa [Hawaiian language newspaper] article, and it didn’t stop there. It didn’t stop at Kukaniloko. That whole district, that’s where we find Mailikukahi, the chief, and the thing was this. How significant was that? That’s where the ahupua‘a system was made, in Waialua. So that’s the kind of things Uncle shared with them, and now they have a better grasp.

DD: Yeah, so Uncle’s referring to when we talked story about the Hale‘iwa project, and there’s a lot of information that enlightened a lot of people, you know, like some of the meanings people learned about Hale‘iwa. That was a good one, Uncle, thank you for sharing for that one.

TS: But Aunty has ties there too, you know. Like the Surf and Sea, I explained about her grandfather and stuff li‘dat. So I hope all goes well with that project. Did you want me to just continue into Pupukea?

DD: Yeah, well maybe we could start with, I know you were talking to me offline about connections to the area.

TS: Wait, I'm sorry, I am so sorry, I forgot one more relevant thing to add to that. Recently, our councilman, Ernest Martin, introduced a resolution. It expands the Hale'iwa Special District from its current location. Now it goes more towards the north to Pua'ena Point. So that's something relevant to that project.

DD: Right, right, it's relevant to it.

Ok, so maybe we could start this one with how you became associated with that Pupukea site and how you got to know about that place?

TS: Ok, my grandfather was an esteemed carpenter for Waialua, and one of the testaments to his quality workmanship is that he remodeled Otake Store, and it's still standing today. Another project is when they first came up with Meadow Gold Dairies, he's the guy that was the supervisor in charge of building the structures for Meadow Gold Dairy. And another project would be in Pupukea, when Mr. Sullivan used to have a mansion up on Pupukea, the hills. He's the Foodland manager, the owner. He [my grandfather] did some repair work over there. But more specifically, to this specific project area, my grandfather was hired by Mrs. Elaine Niimi, who was a realtor. And he did many a repair work for her, and some of the repair work [that my grandfather did] was done on that specific parcel [of the project site] when it was houses and structures for rental, mostly for housing rental, yeah? So I used to go with my grandfather and my uncles, and they did a lot of carpentry work. Plus for me personally, the most construction work that I did for them was that I helped do the roofing for both houses with my grandfather and my uncle. So that brings memories.

DD: So Uncle is talking about Mrs. Niimi. And they [the Niimi family] used to live on that property that we're talking about, so that's some first-hand experience about the project area.

TS: Yes. Even in her later years, Mrs. Niimi used to periodically come to the Neighborhood Board, you know, to attend meetings, just to be informed or whatever. And she remembered who I was [with a surprised tone of voice].

DD: [laughs]

TS: And we'd say to each other and reminisce a little bit about my grandfather and stuff like that. And it was very nice to see her, yeah.

DD: Nice ties to the area.

What about that specific and place and the places maybe across by the ocean or on the hill, is there anything significant that comes to mind regarding the cultural history of the area that you could share?

TS: Ok, I can share little things like I know there's a Hawaiian name, that I don't know off hand, for Shark's Cove. But I also know that old-time fishermen and residents of all nationalities used to go there with bamboo pole whip and catch fish, like nenu especially.

The fire station, I can say some more personal accolades, like my uncle was a fireman over there. And that area, you know that coral area that's right next to it?

DD: Right.

TS: Yeah, that was formed mostly because of dynamite blasting because they were mining for a little while. And that's why it's shaped like that. Of course you see the Three Tables. Everybody knows that. And there's a Hawaiian name for that. It's the "Pele Stones" and what not and stuff.

But more personally, I have a lot of family up in the Pupukea hills especially, branches of my grandpa's family, cousins, uncles, aunts, and so on and so forth. And some of em still reside there 'til today, and friends and classmates and all those kind of things. But more significantly is when I started to do my genealogy research, and researching my family's legacy, I come to find out [laughs], they own some unique parcels down there. I may be on that property [for the project we are talking about], it says Pupukea. And so I thought that was unique, and that's why I thought, "Why not share that with Koa here," and add that to the discussion and history of the place. So I did get the Land Commission Award to see, and I was like, "Wow, that's pretty unique." I didn't know they had parcels all over the place.

And you know, the Hawaiians back then, they not doing it for aesthetics. They doing it because there's something special. Like maybe they had agricultural things going on there. Maybe they had water resources, maybe it had marine resources, you neva know. But it wasn't because you like the land so they can build one million-dollar house. It wasn't because of that [both laugh].

There is one thing I can share aesthetic-wise, every Sunday, I'm familiar with that area because when I was growing up, my grandmother was a Jehovah's Witness, and the church was at Sunset Beach. I have an uncle, an aunty, and my cousins, and my aunty's family, the Mira (sp?) family, donated land at one time to build the Kingdom of Jehovah Witness [church] over there. It's on their property, so we got to go there. And my uncles, and my grandfather-them, they kōkua little bit, help construct that church. And my grandmother, being that [she was] Jehovah Witness, we go there, we pass there. And let me tell you, Koa, I saw a sight, just like it's a once-in-a-lifetime. You could see, from Kamehameha Highway, when you just past there, one day we saw the island of Kaua'i. You could see Kaua'i, one very clear, clear day, the kine like how you see right now from here to Mount Ka'ala, like that kind, but was a clear day. You can see the whole mountain, no moa clouds, and was clear, was sunny. There is a newspaper article that shows the picture, but you gotta dig for em. I seen em, I remember, I saw that picture. It's a color picture. So it must be in the Advertiser or Star Bulletin archives. It was a beautiful picture, a once-in-a-lifetime.

DD: Wow, thank you for sharing your connection to Pupukea, Uncle, I remember from last time we talked that you're very connected from Pupukea all the way to Kawaihāpai side.

TS: Mmhmm.

DD: As far as you remember, how has the area changed? We're talking about that place where they plan to build this commercial center. Can you talk about how it's changed, how it's different now?

TS: [laughs] I no can say em on the radio.

DD: [laughs]

TS: I no can say em on top this recorder [pause] but all I can say is as time goes by, you get modern development, and what was once to me sporadic, isolated lunch wagons, now it's just like it's becoming their own industry. We got like, my goodness, like here in Hale'iwa, like 23 lunch wagons. It's like an "easy-out" instead of going to one restaurant. And it adds to social problems like traffic, the 'ōpala, and all that kine stuff.

Being in the service like you, Koa, we seen, when you have it all catered to tourism, you have a once pristine, sleepy town turned into a tourist trap. How I can best say it, like for example, like Baja, Mexico, or Tijuana, you know, you see what happened, that kine stuff. It's all catered to tourists. Hale'iwa is that way. Lahaina is like that. And what I'm very, very saddened by is that then you have this influx of people coming from all over, and then that influx, with each layer coming, then the original culture gets covered, layer after layer after layer, until it's way under, or unheard of, or erased. And that's the kind of things that saddens a lot of us.

You know, Hale'iwa, for example, we have the North Shore Chamber of Commerce. Yes, they wanna preserve the historic Hale'iwa, yes, but their emphasis is the plantation era, or the World War II era. When you go into their office, the memorabilia reflects that. There's no pictures of taro patches. There's no pictures of excerpts of Land Commission Māhele maps, none of that. It shows people dressed in military clothes, that's it, it shows military people at Hale'iwa Beach Park. And to me, sure it's part of the history, but you're not telling the full story.

You're not telling the full story of the place. And that hurts. We see it come alive only when they make books, for profit. Then we'll see, "Oh we got this from archival photographs." This and that and stuff, and it's like, "Why didn't you say that from the very beginning?" Now people are only gonna focus on this as a World War II town. "Taro patches, what you talking about," they're gonna say stuff like that. And that's not right.

DD: Right. It's very important that people don't leave out parts of history, especially the pre-contact history. That's the foundation of what this place is and was, you know, Hale'iwa and Pupukea.

TS: And the thing is too, it's hurtful that the tourist industry has banked on an original Hawaiian sport called surfing. They have made millions and millions, and what have they given back to the community, to improve these kinds of projects? Nothing.

DD: Some people don't even now it started here. They think it started in California.

TS: Oh yes. The thing is this. It [surfing] started out as you just go out and relax, catch a few waves and come back. When does it end with the thrill seeking, tow-in surfing, windsurfing, you know, jet ski? All we wanted to do, the purpose was to go out dea, catch couple waves, have a good time and come back in. That's it. And then when you see the advertisements, you won't see Hawaiian people out there. You see foreign people riding waves in foreign lands like South America or Mexico or California. And it's a false representation. I don't know what to say.

DD: Well, we should tell the story the correct way it's supposed to be told. And so we try to do that. [pause]

And what about that parcel of Pupukea land, do you think that traditional sites are on there? Any burials? Anything culturally that we should be aware of?

TS: I can honestly say that I don't know too much about that area because I wasn't raised too much over there. But at least I've shared some sort of relationship. And although it's just some documents that show genealogy and land tenure and stuff, at least you can see that it's Hawaiian land tenure dating back to the kingdom era. And in fact, some of those street names are some of the kūpunas that were awarded [land claims], you know? I'll give you an example, there's in Pupukea, close by, one of the street names is Kumupali. And if you look it up, it's a kupuna, a man that was awarded a Land Commission Award in that area, you know, and that's why they get the names. We had one in Hale'iwa here recently, that Hale'iwa Plantation Village, the Mr. Wallace project, did you hear of that one?

DD: No, I neva.

TS: Ok, I'll go and share something. I dropped a bomb [of info] on them. They thought it was just a street name, Kilioe Street. And then my question that I asked everyone was, "Do you know why that street is named Kilioe?" And nobody knew. And for you, I will share. Kilioe was the name of a kupuna that was awarded a Land Commission Award in that exact location. I said, "That's why it's called Kilioe Place." And they were like, wow. I said, "You guys didn't do your homework." These are people from this area. They are not randomly picked names. I said, "You bettah start paying attention, doing your work, then that helps you with however you wanna run with it." Do your research, then you get the kūpuna behind you. Even if you not from there, but if you acknowledge that, knowing why it's called Kilioe Place, and you can cite like one Bible verse, "Land Commission Award, so and so and so to Kilioe," then you've established a tie there and a respect.

And Uncle has family that directly tied. Like for this Pupukea project, I remember some of the Land Commission Awards, but this one is very significant. In that parcel for that Hale'iwa one, they did title research, and they got the Land Commission Awards. But when they went to a specific parcel, it was just like they hit one dead end. And the name of that parcel is a very significant land holding because at one time, it was part of my family's. It was Land Commission Award 7713 to Princess Victoria Kamamalu.

DD: The one in Pupukea, or the one in

Hale'iwa? TS: The one in Hale'iwa.

DD: Oh ok.

TS: That project, when they did that, I know what happened. They couldn't find nottin'. It just showed it was from Princess Kahanu to Castle and Cooke. That's not true. I showed them. I says, "Here's my family's deed, at one time." I showed them that, and they were like, "Oh my!" And then I said, "That is why I decided to say something, because you guys did not do your work." I said, "And also, the constituents that provided comment didn't do their homework also. How come?" I neva say nottin' because I cannot be in all places at one time.

And it's another question like the story I told you before you turned on this tape recorder, about Waimea Valley. Yeah, shame. And so now I feel in my head, "Do I have to [say something]?" I'm 55 [years old] right now. You mean to say I gotta be at everything? I cannot relax? I cannot get a break from this? When you guys gonna step it up and show me something? When? I said, "This hurts me." You are supposed to be doing it, helping, and I'm supposed to relax, not me go do the ground work.

When we went to the meeting, oh! Pau! Even the Land Commission Board, they neva heard anybody say something like that about that project. And it's like, "I told you." I said, "I told you." And then I said, you know, the same thing, and sure enough too I found the actual picture in 1890 of one taro patch in dea, mean, yeah, and it includes like from Keliioi Place, it's a land division over there within the ahupua'a system, one smaller land division, you know that. And when I told em that, then sure enough, bing, I show them, ok, go on Waihona dot com again, 15 names, 15 kūpuna, 15 Land Commission Awards. You guys all missing something. What am I saying? "You wanna rezone this to building?" I said that these are all people that said that this land was for agriculture. And I neva see them complain about "this land [is] junk." I heard them say, "I get six lo'i. Ten lo'i. Two sweet potato patch. I get one stream near my property. I nearby the fishpond." I said, "They neva complain about nottin' and say, 'All this kine [is] junk.'" They made the best of it. So **you** must be screwing up.

DD: That's a big difference in perspective, of looking at the land.

TS: And then, I tied it into my own, lo and behold, you know, Koa, in one simple city directory, that's my kupuna's name. It shows where they from. And it shows the occupation, yeah. That place where they like zone, it shows my kupuna's name, John Keahipaka; occupation, taro planter; year, 1900. And not only my tutus, others get something like that inside the directory. They must have been damn good at what they did to get that title back then, "fisherman" or "taro farmer", very prestigious. They neva get em because oh they caught one big school fish one time. No, no, it's consistent. Could you imagine if they had all the modern equipment that we have today? They would be like hundred times more bettah than us. They could laugh at everybody.

But that parcel, a couple streets away from there, my grandfather had a good friend who was in the Army. He was a dentist. And his name was George Koranawsky, and he's Ukranian. He's from New York, and we call him my grandfather's Haole son. He loved my grandfather. My grandfather loved him and helped him a lot. Today, he's not only a successful doctor, but also an orthodontist, an orthopedic surgeon for the mouth. Doesn't stop there, he's a multimillionaire today. He owns a hotel or condominium in Atlantic City. He came that successful because my grandfather helped him with a lot of life skills and stuff like that. He did a lot of repair work for him too because he was in real estate. And he had his house, and he had a plumeria farm. And my grandparents used to go down dea cut the grass and stuff like that. So it was an established relationship with people like Chuck Machado Lu'au, you know, that kine stuff li'dat. So that's what I can share about Pupukea.

DD: What about, do you think that if they were to build there, do you think it would affect any traditional gathering practices, or any access to gathering places?

TS: Existing conditions, I would say that it's similar or parallel, same thing, to like how the Hale'iwa stores project is next to the fishpond, you know. You already have leakage. You already have sewage leakage going into, you know, those type of things that they're dealing with. So it's ongoing. It's not like it was done today, or they going build em and then [now there's leakage]. Septic tanks, that's a hot topic for those projects, septic tanks versus cesspools.

And so, the March Neighborhood Board, we had a special meeting I think a couple years ago at Waimea Valley. The owners and Hanapohaku made a presentation and stuff, and they heard the concerns of the neighborhood. So I letting you know. On the website, you'll see the North

Shore Neighborhood Board webpage, you'll see the videos and the special meeting. You go back, and you'll see em, yeah, about a two-hour meeting. I was dea [laughs], but you know had community members. One of the biggest opponents against it was the Mālama Pupukea people, you know, the sanctuary, MLCDC, Marine Life Conservation District. That's the biggest one, and I know all those people.

DD: So the main concern would be leakage underground to the ocean?

TS: Yeah, it's ongoing, I would say.

DD: Do you have any suggestions to lessen the effects?

TS: Yeah, that's what they brought up, a couple lawsuits against them. They're trying mitigation and stuff of that sort. We're just an advisory board, but we're aware of those things, and that's the hot topic. Plus traffic is another big concern, traffic studies, added traffic, and so on and so forth. But those are the two main issues.

DD: Do you know if they brought up measures to lessen the adverse effects of added traffic? Or would you like to toss out any suggestions here?

TS: That's between, I would say, more appropriately, for the general public that lives up around there especially.

DD: Right.

TS: Yeah, they deal with it. Oh boy [both laughing].

DD: Are there any other cultural concerns you think that the community might have regarding the area?

TS: Ah, just to reiterate, although yes, the cultural information I've shared is not as in-depth as the previous project, but I would say that this project is not near cliffs, yeah? And those cliffs are documented, such as being burial caves. And that's a hot issue. What I could share is that one of your reference points that is near there would be, besides the Waimea Valley, is that when they realigned Kamehameha Highway, going around the rockfall mitigation, you know, the exposure of iwi kupuna in burial caves, you know, the grading or whatever they needed to make, or for the landslide or rockfall, they did come across that [iwi kupuna].

DD: Ohhhhh, ok, ok.

TS: So that's why you see certain parts with the netting over there, and the netting is hugging the edges over there. That's why it's like that, you know, at various locations around the mountains and stuff. It's a known place for those things. So that's one of the first cultural things that's gonna come up. It's burials in caves. Yes, we get [iwi] in the sand at various places and stuff, but mostly the sensitivity is directed more so towards the cliffs, the foothills, and what not.

DD: Ok, and that's pretty far back from where the project is?

TS: Yes, exactly.

DD: Ok.

TS: I guess then, that if you're worried about those type of things, for the burial caves the protection would be for the social impacts of people going there and nosing around, cutting a trail, going up there and trying to scale the mountain and stuff, rock climbing or whatever.

DD: Nowadays, you got these people doing stuff like that, yeah?

TS: Huh, headache. I wouldn't even think about doing something like that, you know? That's unheard of because we know what going happen. You lucky if you just get one verbal reprimand [laughs]. Let's put it this way. You lucky if you can sit down afterwards [laughs]. Or, you no need go tattoo shop [both laughing], you get the same color, but more emphasis on the black and blue, that's the two primary colors. [both still laughing]

DD: Auwe [laughs]. What about other community people, do you know any other community people that you think we should talk to?

TS: Ah, yeah, you know, you get Bob Leinau, the Mālama Pupukea people. [pause and thinking] Let's see. I can say there's four Neighborhood Board members, Bob Leinau, Sherilyn Ku.

DD: Sherilyn Ku?

TS: She's more with the Sunset Beach Association further up the coastline. And [pause] I cannot think of this guy's last name. But Bob Leinau, and Denise Antolini...

DD: Denise Antolini?

TS: Yeah, she used to be the Chief Executive Officer for the Mālama Pupukea. They're all members.

DD: They're all in the same hui?

TS: Yeah, if you draw up that webpage, you'll see a whole bunch of those people. Some of them are cultural practitioners. And you can go there. Like me, I have family, but they don't bother this kine stuff. But if you like other stuff like hunting and fishing, mean brah, they get em. This is not their thing, to talk about this kine things. But they're there. They're still living there. And in fact, Councilwoman Kimberly Pine, she's from Pupukea.

DD: Really?

TS: Yeah, she's from Pupukea. I went to school with some of her family, classmates and stuff like that. She was a kid, when I was a senior, they was all in the 7th grade. [Class of] '79, that's a dinosaur already, and then you get [class of] '80, so we the last of the dinosaurs, last of the Mohicans. But yeah, she from there. Her family still lives in Pupukea. Maybe you can ask her. And she's also the zoning chair.

And getting back to the Hale'iwa Village Project, that's what happened there too. You know, you got all this rich history about the place that I've showed you, pre-Western history, and when you read the environmental assessment, two-pages, when you read it, it not the Land Commission Awards or the title searches, which I thought was relevant, not just the title search

page and boundaries and stuff, that should've been included in the cultural history, like how you guys prepare, you go break it down step by step, which parcel is what's the kupuna name. What's the contents of it? That's historical data. They had to look for em. And it's like, "Who the hell is these guys?" I don't know why they would hire em. The feelings I got when I read em was just like put together.

DD: Who did that one?

TS: It was just some off the wall company. And the guys that did the title search, something "Hawai'i" or something, and if this was just a regular title research, that's fine. But you're dealing with parcels with Hawaiian names on em. They're not looking to get their land back here, but you can't dissect the cultural part from this part because they go hand in hand. They tell the history of the place. And if you don't acknowledge that, wow, you get what's comin'. That's all I can say. So that's what I can share.

DD: Ok, well, this is a lot, Uncle, you know, as always. You have a wealth of knowledge to share, and thank you for always being generous with sharing, and letting us know the significance and importance, and always keeping it in perspective of what we should be mindful of. We really, really appreciate it. And once again, it's always a pleasure to see you and talk story with you. So mahalo again, and have a good day. Aloha.

TS: Yeah, well, thank you very much for spending time with me, and glad to share my mana'o with you. Aloha.

APPENDIX E

STATE HISTORIC PRESERVATION DIVISION ACCEPTANCE OF ARCHAEOLOGICAL ASSESSMENT REPORT

**ARCHAEOLOGICAL ASSESSMENT FOR
TMK: (1) 5-9-011:068, 069, AND 070 IN
PŪPŪKEA AHUPUA‘A, KO‘OLAULOA DISTRICT,
ISLAND OF O‘AHU, HAWAI‘I**

STATE HISTORIC PRESERVATION DIVISION ACCEPTANCE OF
ARCHAEOLOGICAL ASSESSMENT REPORT

DAVID Y. IGE
GOVERNOR OF
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SUZANNE D. CASE
CHAIRPERSON
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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
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August 22, 2017

Andrew D. Yani, Manager
Hanapohaku LLC
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Haleiwa, Hawai'i 96712
Email: Hanapohakullc@gmail.com

IN REPLY REFER TO:
Log No.: 2017.00580
Doc. No.: 1708SH08
Archaeology

Dear Mr. Yani:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –
Archaeological Assessment for TMK: (1) 5-9-011:068, 069, and 070
Pūpūkea Ahupua'a, Ko'olauloa District, Island of O'ahu
TMK: (1) 5-9-011:068, 069, and 070**

Thank you for the opportunity to review the draft report titled, *Archaeological Assessment for TMK: (1) 5-9-011:068, 069, and 070 in Pūpūkea Ahupua'a, Ko'olauloa District, Island of O'ahu, Hawai'i* (McElroy and Lima, March 2017). The State Historic Preservation Division (SHPD) received this submittal on March 28, 2017.

Due to the negative findings, the archaeological inventory survey (AIS) results are reported as an archaeological assessment (AA) per Hawaii Administrative Rules (HAR) §13-275-5. This AA report was prepared by Keala Pono Archaeological Consulting, LLC at the request of G70 and on behalf of the landowner, Hanapohaku LLC. The project area is located on the coast of Pūpūkea and totals 2.72 acres. The project area includes three parcels and is bounded by Pahoe Road to the north, Kamehameha Highway to the west, Foodland to the south, and a private parcel on the east. The landowner proposes to develop a rural community commercial center to provide a combination of goods and services to residents and visitors of the community. Three new buildings will be constructed, one-to-two stories tall, totaling approximately 30,000 square feet. The buildings will be set back from Kamehameha Highway and include a park-like green space, walkways, and bicycle parking; supporting infrastructure will include driveways, parking with solar canopies, drainage, water supply, and wastewater.

The AIS included a pedestrian survey covering 100% of the project area in 10 meter transects as well as the excavation of eleven test trenches. No historic properties were documented during the AIS. The area has been disturbed by modern development activities, such as paving and bulldozing. Due to the negative findings and because soils in which human remains are often interred were not encountered during the AIS, the archaeological assessment indicates no further archaeological work is recommended. The SHPD concurs.

The report meets the requirements of HAR §13-276-5. **It is accepted.** Please send one hardcopy of the document, clearly marked FINAL, along with a text-searchable PDF version to the Kapolei SHPD office, attention SHPD Library.

Andrew D. Yani
August 22, 2017
Page 2

Please contact Stephanie Hacker at (808) 692-8046 or at Stephanie.Hacker@hawaii.gov for matters regarding archaeological resources or this letter.

Aloha,

A handwritten signature in black ink that reads "Susan A. Lebo". The signature is written in a cursive, flowing style.

Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Jeff Overton, G70 Design, (Pupukea@G70.design) (Jeff@G70.design)
Windy McElroy, Keala Pono Archaeological Consulting, LLC (wkm@keala-pono.com)

ARCHAEOLOGICAL ASSESSMENT FOR
TMK: (1) 5-9-011:068, 069, AND 070 IN
PŪPŪKEA AHUPUA‘A, KO‘OLAULOA DISTRICT,
ISLAND OF O‘AHU, HAWAI‘I

**FINAL—Archaeological Assessment for TMK: (1) 5-9-011:068,
069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island
of O‘ahu, Hawai‘i**



Prepared For:

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August 2017



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**FINAL—Archaeological Assessment for TMK: (1) 5-9-011:068,
069, and 070 in Pūpūkea Ahupua‘a, Ko‘olauloa District, Island
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Prepared By:

Windy Keala McElroy, PhD
and
Pūlama Lima, MA

August 2017



MANAGEMENT SUMMARY

An archaeological inventory survey (AIS) was conducted for a proposed commercial development in Pūpūkea Ahupua‘a, Ko‘olauloa District, on the island of O‘ahu on TMK: (1) 5-9-011:068, 069, and 070. Due to negative findings, the AIS results are presented as an archaeological assessment (AA). The archaeological work included pedestrian survey that covered 100% of the 1.1 ha (2.72 ac.) project area, as well as test excavations consisting of 11 trenches.

No surface archaeological remains were found during pedestrian survey of the parcels. The entire area has been disturbed by modern activity, such as bulldozing and paving. Subsurface testing produced no findings and no Jaucas or beach sand was encountered, therefore archaeological monitoring is not recommended.

CONTENTS

MANAGEMENT SUMMARY.....	i
FIGURES.....	iv
TABLES.....	iv
INTRODUCTION.....	1
Project Location and Natural Environment.....	1
TRADITIONAL CULTURAL AND HISTORIC BACKGROUND.....	6
Place Names.....	6
Pre-Contact Pūpūkea.....	11
Land Use.....	11
Wind Name.....	11
Mo‘olelo.....	11
Hi‘iaka and Pilia‘ama.....	11
Pōhaku of Significance.....	14
Pu‘u o Mahuka Heiau.....	14
Pūpūkea in the Historic Era.....	15
Early Historic to Post-Contact Period.....	15
Mid-19 th Century and the Māhele.....	15
1900–the Mid-1900s.....	16
Modern Land Use.....	16
Previous Archaeology.....	20
Summary of Background Information.....	26
Anticipated Findings and Research Questions.....	26
METHODS.....	27
RESULTS.....	28
Community Consultation.....	28
Pedestrian Survey.....	28
Subsurface Testing.....	28
Summary of Findings.....	30
SUMMARY AND RECOMMENDATIONS.....	40
GLOSSARY.....	41
REFERENCES.....	43

FIGURES

Figure 1. Project area on a 7.5 minute USGS Waimea quadrangle map.....	3
Figure 2. Project area (in red) on a TMK plat map.	4
Figure 3. Soils in the vicinity of the project area.....	5
Figure 4. Portion of a map showing the north coast of O‘ahu (Donn 1902).	17
Figure 5. Portion of a Pupukea-Paumalu Homesteads map (Wall 1904).	18
Figure 6. USGS 1962 aerial photo of Pūpūkea.	19
Figure 7. Location of previous archaeological studies in the vicinity of the project area.	21
Figure 7. Location of known archaeological sites in the vicinity of the project area.	22
Figure 8. Excavation of TR 1 with mini excavator. Orientation is to the southwest.....	27
Figure 9. Open gravel-paved area. Orientation is to the north.	29
Figure 10. Bulldozed area. Orientation is to the south.	29
Figure 11. Disturbed, vegetated area. Orientation is to the east.	30
Figure 12. Location of trenches on aerial imagery.	31
Figure 13. Wider view of trench locations on a 1992 USGS map.....	32
Figure 14. TR 7 north face profile drawing.....	35
Figure 15. TR 7 north face photo.	35
Figure 16. TR 5 north face profile drawing.....	36
Figure 17. TR 5 north face photo.	36
Figure 18. TR 8 north face profile drawing.....	37
Figure 19. TR 8 north face photo.	37
Figure 20. TR 1 east face profile drawing.....	38
Figure 21. TR 1 east face photo, north end of the trench.	38
Figure 22. TR 11 west face profile drawing.....	39
Figure 23. TR 11 west face photo.	39

TABLES

Table 1. Previous Archaeology in Pūpūkea.....	23
Table 2. Sediment Descriptions.....	33
Table 3. Trench Locations and Dimensions	34

INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for a proposed commercial development in Pūpūkea Ahupua‘a, Ko‘olauloa District, on the island of O‘ahu on TMK: (1) 5-9-011:068, 069, and 070. This work was designed to identify, document, assess significance, and provide mitigation recommendations for any historic properties that may be located in the project area in anticipation of the proposed construction.

This report is drafted to meet the requirements and standards of state historic preservation law, as set out in Chapter 6e of the Hawai‘i Revised Statutes and the State Historic Preservation Division’s (SHPD’s) draft *Rules Governing Standards for Archaeological Inventory Surveys and Reports*, Hawaii Administrative Rules (HAR) §13–276. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275-5(b)(5)(A).

The report begins with a description of the project area and an historical overview of land use, Hawaiian traditions, and archaeology in the area. The next section presents methods used in the fieldwork, followed by results of the survey. Project results are summarized and recommendations are made in the final section. Hawaiian words and technical terms are defined in a glossary at the end of the document.

Project Location and Natural Environment

Hanapohaku LLC is proposing to develop a rural community commercial center in Pūpūkea, O‘ahu to provide a mix of goods and services to residents and visitors of the community. The property is classified as Urban in the State Land Use Designation, is zoned for B-1 Neighborhood Business in the City and County of Honolulu Land Use Ordinance, and is designated for a Rural Community Commercial Center in the North Shore Sustainable Communities Plan. The existing Foodland grocery store is included in the center. Three new buildings will be constructed, one to two stories in height, totaling approximately 30,000 SF. The buildings will set back from Kamehameha Highway with a park-like green space, walkways, and bicycle parking. Supporting infrastructure will include driveways, parking with solar panel canopies, drainage, water supply, and wastewater.

The project area is located on the coast of Pūpūkea on the north shore of O‘ahu (Figures 1 and 2). One of 23 ahupua‘a in the Ko‘olauloa Moku, Pūpūkea is bounded to the northeast by Paumālū Ahupua‘a, and to the southwest by Waimea Ahupua‘a and Moku.

TMK: (1) 5-9-011:068, 069, and 070 total 1.1 ha (2.72 ac.), and are owned by Hanapohaku, LLC. This project area that includes the three parcels is bounded by Pahoe Road on the north, Kamehameha Highway on the west, Foodland on the south, and a private parcel on the east. Topography is relatively flat, and vegetation consists of pockets of koa haole, grass, and weeds. Rainfall averages approximately 115 cm (45 in.) per year (Giambelluca et al. 2013). The project area is roughly equidistant from two watercourses, Kālunawaika‘ala Stream, which lies approximately 1 km (3,280 ft.) to the north, and the larger Waimea River, that is 1 km (3,280 ft.) to the south. The project area lies at approximately 12 m (40 ft.) above mean sea level (amsl), and is 150 m (492 ft.) from the coastline at the beaches known as Sharks Cove and Three Tables.

Geology of the project area centers around the Ko‘olau Mountain Range, the massive shield volcano that serves as a backdrop for the windward O‘ahu coast. Formed roughly 1.8–2.6 million years ago, the Ko‘olau mountains produced tholeiitic and olivine basalts with trace amounts of oceanite (Macdonald et al. 1983). Below the Ko‘olau Mountains is the sandy coastal plain that was formed during a time when the sea level was higher. Soils are of the Kaena-Waialua association, which were

used for sugarcane, pasture lands, orchards, truck crops, urban development, and recreation, but must be drained before they are cultivated (Foote et al. 1972). The soil series is described as follows:

Deep, mainly nearly level and gently sloping, poorly drained to excessively drained soils that have a fine-textured to coarse-textured subsoil or underlying material; on coastal plains and talus slopes and in drainageways. (Foote et al. 1972)

Specifically, soil types in the project area are Waialua silty clay, 3–8% slopes (WkB) (Foote et al. 1972) (Figure 3). These soils are found on coastal plains and are typically used for pasture, sugarcane, and truck crops (Foote et al. 1972:128).



Legend
■ Project Area

Keala Pono



Layer Credits: USGS Topographical Waimea Quadrangle Map 1998

Figure 1. Project area on a 7.5 minute USGS Waimea quadrangle map.

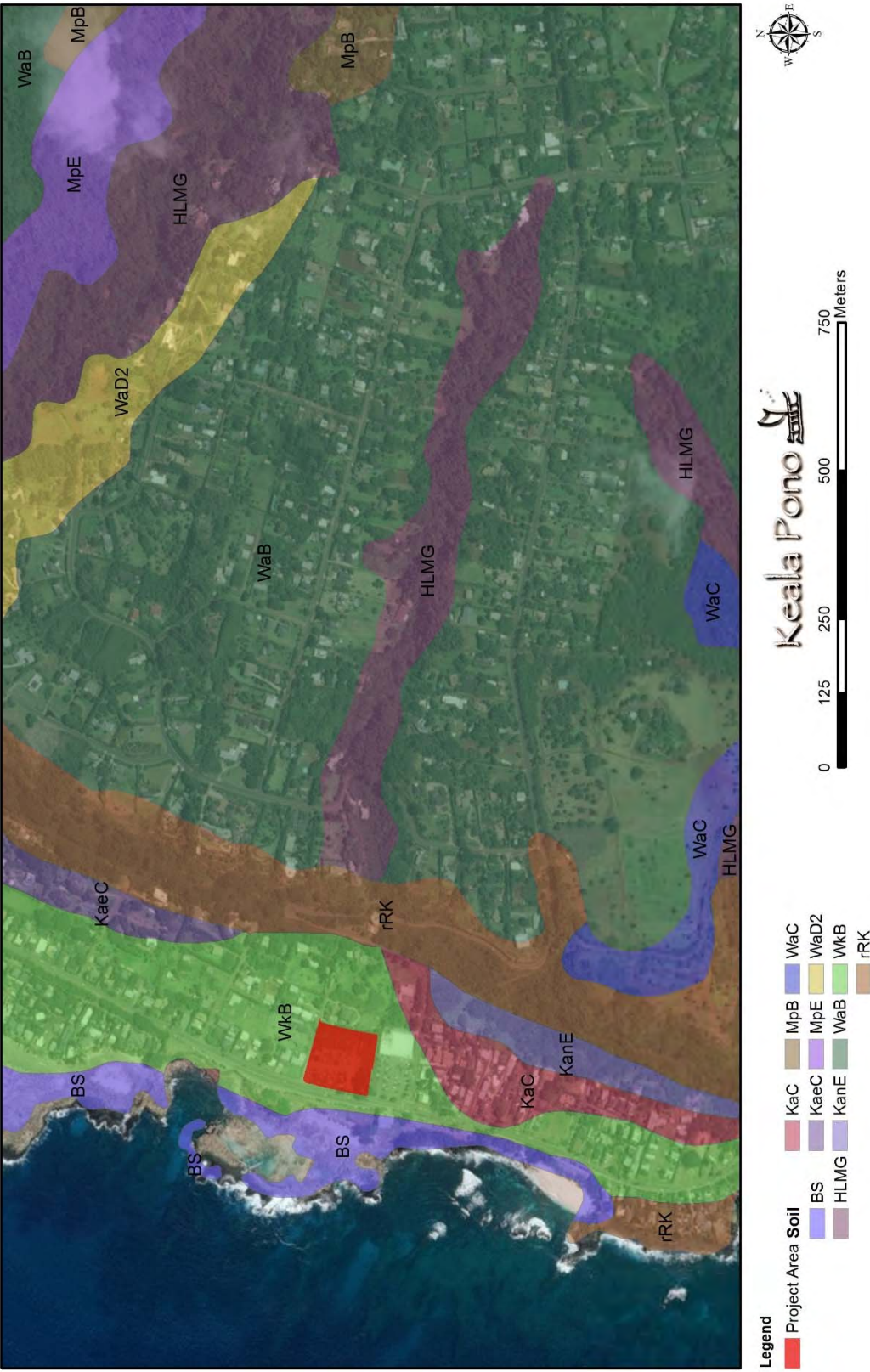


Figure 3. Soils in the vicinity of the project area.

TRADITIONAL CULTURAL AND HISTORIC BACKGROUND

A brief historic review of Pūpūkea Ahupua‘a is provided below, to offer a better holistic understanding of the use and occupation of the project area. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, and SHPD library. In addition, internet resources such as the Papakilo database, Ulukau database, and the State of Hawai‘i Department of Accounting and General Services (DAGS) website were consulted. Historical maps, archaeological reports, and historical reference books were among the materials examined.

Place Names

Traditional Hawaiian place names are often referred to in ‘ōlelo no‘eau, mo‘olelo, and mele. Other sources that have documented traditional Hawaiian place names include historic maps, ethno-historic accounts, ethnographic surveys, and early historic land claim records, such as Land Commission Award (LCA) Claims, Grant Claims, and Boundary Commission Testimonies (BCT). The name of a place and its interpretation can reveal significant information about the traditional beliefs and practices associated with an area. In ancient Hawai‘i, it was common to name places based on their environment, the resources found in the area, the people that live there, events that happened in the area, and religious or spiritual associations. The name Pūpūkea literally translates to “white shell” (Pukui et al. 1976:195). The sea was an important resource in the region, as fresh water for farming was not abundant in the ahupua‘a.

The following compilation includes Pūpūkea place names, names of features, mo‘o ‘āina, heiau, kū‘ula, and ‘ili ‘āina, along with any translation and lexicology information that could be obtained for each place. The place names and descriptions were gleaned from *A Catalog of Hawaiian Place Names: Compiled from the Records of the Boundary Commission and The Board of Commissioners to Quiet Land Titles of the Kingdom of Hawaii* (Soehren 2010). Translations obtained from Pukui et al. (1976) are abbreviated as PEM in the text.

Ahupohaku

Feature: *mo‘o ‘āina*

Claim no. 9976 by Lono is for his “Apana 1. Mooaina o Ahupohaku.”

Lexicology: ahu-pōhaku.

PEM: stone heap.

Aleka

Feature: *mo‘o ‘āina*

Claim no. 10238 by Kalama is for his “Apana 3. Aleka, hookahi mala uala.” Claim no. 2737 by Puhipapa for his “Apana 1. A moo aina was not awarded.

Lexicology: ‘aleka.

PEM: Large tree of the pine family, cedar, fir.

Auwahi

Feature: *mo‘o ‘āina*

Claim no. 11010 by Waha: “Apana 1. Auwahi ka aina, he aina kanu.”

Lexicology: auwahi.

PEM: smoky glow.

Camp Pupukea

Feature: place
Boy Scout camp.
Lexicology: pūpū-kea.
PEM: White shell.

Hakuola Gulch

Feature: gulch
Stream rises at about 520 ft. elevation, ends at about 120 ft.
Lexicology: haku-ola.
PEM: living lord.

Ka Lua o Maua

Feature: rock
Site 254. Number of stones in the water, one of which is known as Kalua o Maua, first small inlet on the Kahuku side of Waimea Bay...similar to Laniwahine and is representative of a woman who was a great fisher... (McAllister 1933:151; Sterling and Summers 1978: 145)
Lexicology: ka-lua-maua.
PEM. The pit of Maua

Kaaiipu

Feature: *mo 'o 'āina*
Claim no. 8039 by Aena is for "Apana 2. Kaaiipu. He aina paakai".
Lexicology: ka-'ai-pū.
PEM: the eating together.

Kaaukakua

Feature: *mo 'o 'āina*
Claim no. 2905 by Kailialoha: "Kaaumakua ka aina ma Pupukea" (Foreign Testimony 11:511), "i ka ili aina o Kaaumakua" (Native Register 3:687).

Kalaekoa

Feature: Boundary point
Course 9 of the Pupukea/Waimea boundary runs "to top of hill Kalaekoa"
Lexicology: ka-lae-koa.
PEM: the koa tree point.

Kalahopele Gulch

Feature: gulch

Kaleleiki

Feature: stream
Lexicology: ka-lele-iki.
PEM: the short leap.

Kalunawaikaala Stream

Feature: stream
Lexicology: ka-luna-wai-ka'ala.
PEM: water from the heights [of] Ka'ala.

Kamaee

Feature: *Kū‘ula*

Site 253. Piles of stones, near mountain side of road near Waimea. One of the most prominent piles has a depression a few inches deep and about 2 feet in diameter. This was known as Kamae‘e fishing shrine (ko‘a), and fish offerings were placed in the mouth like aperture.” (McAllister 1933:150; Sterling and Summers 1978:145).

Kamao

Feature: *mo‘o ‘āina*

Claim no. 10924 by Uluehu: “Apana 1. Kamao kahi kanu.”

Lexicology: Perhaps ka-ma‘o.

Kanakaiki

Feature: *mo‘o ‘āina*

Claim no. 10924 by Uluehu: “Apana 2. Kanakaiki aina paakai ia.”

Lexicology: kanaka-iki.

PEM: Small man.

Kanawai

Feature: *mo‘o ‘āina*

Claim no. 10238 by Malamanui: “Apana 1. Kanawai ka moo aina.”

Lexicology: kânāwai.

Kaohaimoa

Feature: *mo‘o ‘āina*

Claim no. 2904 by Kanae: Apana 1. Kaohaimoa ka moo.”

Kapi

Feature: *mo‘o ‘āina*

Claim no. 7420 by Kaiwi: “Kapi ka moo ma Pupukea he aina kula.”

Lexicology: kâpī. PE: to sprinkle, as with salt. Ka-pī.

PEM: several possible meanings.

Kapuaa

Feature: *mo‘o ‘āina*

Claim no. 7421 by Kalainaina: “Apana 1. Kapuaa ka moo aina.” Claims no 7422 by Kaawa and no. 8136 by Holoikauai for parcels in kapuaa were denied.

Lexicology: ka-pua‘a.

PEM: the pig.

Kapuupuu

Feature: *mo‘o ‘āina*

Claim no. 8039:2 by Aena at Kaaipu is bounded on the Waianae side by “aina o Hina, kapaia Kapuupuu.”

Lexicology: ka-pu‘upu‘u

Keokea

Feature: *mo‘o ‘āina*

Claim no. 11010 by Waha: “Apana 2. Keokea he aina paakai.”

Lexicology: ke-ō-kea. PEM: the white sand (ō is short for one).

Kiinoho

Feature: *mo 'o 'āina*

Claim no. 2904 by Kanae is “ma Kiinoho kekahi kula”. Claim no. 4261 by Kauila for his “Apana 1. Kiinoho moo ma Pupukea” was not awarded.

Lexicology: ki'i-noho.

Kiwaa

Feature: *mo 'o 'āina*

Claim no. 4261 by Kauila for his “Apana 3. Kiwaa aina paakai” was not awarded.

Lexicology: kīwa‘a

Kuaiula 2

Feature: *mo 'o 'āina*

Claim no. 8039 by Aena: “Apana 1. Kuaiula 2 moo he kula.”

Kukuauau

Feature: *'ili 'aina*

Claim no. 2736 by Pohakahi is “i ka ili aina o Kukuauau, eha ili uala, hookahi kula uala...” Written “Kukauau” in FT (Foreign Register).

Maunawai

Feature: place

Lexicology: mauna-wai.

PEM: water mountain.

Pakulena Stream

Feature: stream

Lexicology: pākū-lena.

PEM: yellow barrier.

Piliaama

Feature: stone

Site 252. Stone known as Piliaama... The natural depression upon the stone is said to be the footprint of a man and of a crab.” (McAllister 1933:150; Sterling and Summers 1978:144)

Lexicology: pili-‘a‘ama

Pohakaa

Feature: *mo 'o 'āina*

Claim no. 10824 by Punahoa: “Apana 1. Pohakaa moo aina.”

Lexicology: Perhaps pōhā-ka‘a.

PEM: rolling stone (pōhā is short for pōhaku).

Pupukea

Feature: *ahupua 'a*

Returned by Kamamalu at the Māhele, retained by the Gov. indices list 19 kuleana.

Claims no. 4261 by Kauila, no 4337 by Nalimaku, no. 7442 by Kaawa were not awarded.

Lexicology: Pūpū-kea.

PEM: white shell.

Puu o Mahuka Heiau

Feature: *heiau*

“It is the largest heiau on Oahu” (McAllister 1933:142)...credited to Menehune, and a place where chiefesses gave birth. It was probably at this heiau that three of Vancouver’s crewmen were offered in sacrifice in 1794. The images here are said to have been destroyed by order of Kamehameha II in 1819” (Sterling and Summers 1978:142).

Lexicology: pu‘u o mahuka.

PEM: hill of escape.

Puu Waihuena

Feature: boundary point

Lexicology: pu‘u wai-hu‘ena.

PEM: flowing water hill.

Puulu

Feature: *mo‘o ‘āina*

Claim no. 4261 by Kauila: “Apana 2. Puulu hookahu mala uala.” Also claim no. 4723 by Ku: “Puulu ka moo aina ma Pupukea.”

Lexicology: pū‘ulu.

PEM: group, crowd, army, party, gang, retinue.

Sunset Beach

Feature: place

Residential area and surfing beach.

Umipuna

Feature: *mo‘o ‘āina*

Claim no. 4323 by Kawili: “Apana 1. Umipuna ka moo aina, ahupuaa Pupukea.”

Lexicology: ‘umi-puna.

Wahiolu

Feature: *mo‘o ‘āina*

Claim no. 3990 by Haona: “Apana 2. Pahale ma moo aina ma Pupukea, Wahiolu ka inoa.”

Lexicology: Perhaps wahi ‘olu.

PEM: cool place.

Waimea

Feature: village

Near Waimea Bay.

Lexicology: wai-mea.

PEM: reddish water (as from erosion of red soil).

Pūpūkea Beach Park lies directly across the street from the project area. The park includes two main beaches known as Sharks Cove and Three Tables:

Pūpūkea, or “white shell,” is a long and narrow eighty-acre beach park with a rocky shore. Two small pocket beaches lie within the rocks, one at either end of the park. Among the most popular dive sites on the North Shore, these small beaches are known as Sharks Cove and Three Tables.

Sharks Cove was named by the scuba divers who use it as an entry/exit point. One popular story says that the outline of a reef outside the cove resembles a shark when seen from above. Three Tables was named for the three sections of flat reef that lie off the beach. The tables emerge above the surface of the ocean at low tide. Both of these beaches are primarily summer dive sites, the powerful winter surf precluding most in-water activities in the park. (Clark 2005:112–114)

Pre-Contact Pūpūkea

The following section presents information on the project area in pre-contact times, before the arrival of Westerners in Hawai‘i in 1778. Included are land use information, a wind name, and mo‘olelo of Pūpūkea.

Land Use

Pūpūkea did not likely support wetland agriculture in times past and its economy probably focused more on fishing and the exploitation of coastal resources, along with dryland agriculture. Handy et al. (1991) provide further details:

Two other *ahupua‘a* situated between Kaunala and Waimea, namely Paumalu and Pupukea, are not of a topography to support wet-taro culture of ancient type....The narrow seaward plain had no water. According to *kama‘aina* informants, the gulches or streams in these two localities never were planted. (Handy et al. 1991:463)

It is said that Kamapua‘a, ruler of O‘ahu awarded all lands containing the word “wai” (water, wealth) to the kahuna Lono-a-wohi. After Kamapua‘a left O‘ahu to visit his parents’ home in Kahiki, his father Kahikiula took his place as ruler of O‘ahu (Fornander 1969:43) and re-distributed the “well-watered” lands. Although Pūpūkea was not among these wet lands, Kamakau states that during the re-distribution, “the kahuna class were given the lands of Waimea, Pupukea, Waiahole, and Hakipu‘u...Pupukea belonged to the priests of Kualī‘i” (Kamakau 1992:231). The kahuna class held these lands until the days of high chief Kahahana.

Wind Name

A general wind name for the Pūpūkea area is Mālualua, a northeasterly wind (Nakuina 2005:43). No rain names or other wind names could be found for the ahupua‘a.

Mo‘olelo

Several mo‘olelo pertinent to Pūpūkea were found during research. These stories include an account of the goddess Hi‘iaka and her encounter with a fisherman of Pūpūkea, reports of significant stones, and the history of Pu‘u o Mahuka Heiau.

Hi‘iaka and Pīlia‘ama

According to oral tradition, and a publication in a 19th century Hawaiian newspaper, Hi‘iaka, sister of the volcano goddess, Pele, traveled to the Pūpūkea area and while there chanted of the places she visited. A clipping of the original newspaper article and translation are provided below (*Ka Leo o ka Lahui* 1893 in Sterling and Summers 1978:144):

Ko laua nei hele aku la no ia a
ke kula o Kulima. nana aku laua
nei o ke kopi mai o ke kai o Pupukea
ka ilua o ka lau o kai l'ima. ua
hele wale a pala ka lau o ka ilima
i ke ahupua'a, ohi aku keia i kela
mau pua'a.

He kai kapi ike ona
Ko Kalamaula i Pupukea ✓
Ua hele a pala i ke kai
Ke ono o ka ilima
E hiki aku ai i Kapi
E iho aku ai i Piliamaama la
Aia i pili wale —e
Aia la ke lele ala
Aole i ka welo —e.
——:Aole i puehu:——

(*Ka Leo o ka Lahui* 1893)

They continued to the plain of Kulima and watched the sea of Pupukea throwing its sprays upward. It swept over the leaves of the ilima, yellowing them, then Hi'aka chanted:

The sea sprays up over the sand,
The yellowing sea of Pupukea,
Yellowing the leaves of the ilima,
With its sprays,
This is the way to Kapi,
This is the trail to Pilia'ama
(last three lines not translated) (Sterling and Summers 1978:144)

Another article provides a continuation of Hi'aka's visit to Pūpūkea. A clipping of the original newspaper article and translation are provided below (*Ka Leo o ka Lahui* 1893 in Sterling and Summers 1978:144):

I ka pau ana oia mele aia nei.
ko laua nei hele aku la no ia a hala
ia wahi, a malaila aku a Waiiaie.
a malaila aku a hala ia mau wahi
aku, a Pupukea laua nei, ike laua
nei ia Piliaaama e noho ana e
lawaiia, nana aku laua nei i ka la-
waiia mai o Piliaaama, kani kahea
aia nei.

O Piliaaama kanaka lawaiia o ka
pali

Hee puewai o Waimea

Konohiki aku o Ihikoko

Lawaiia hi-aku o Kaipahu la

He aha ua ia?

Pane mai o Piliaaama ia laua
nei, no ka ninau ana aku a Hiiaka-
ikapoliopole i ka ia ma ke mele.

Hai mai o Piliaaama ia laua
i ka inoa o ka ia ana e lawaiia ana.
he kata ka ia he Moi ka ia. he oio
ua ia, he ahole ka ia, he paaua
pau ka oielo ana mai o Piliaaama
ia laua nei, kani aku no ke oli
a Hiiakaikapoliopole penei.

O Piliaaama kanaka lawaiia

Kane hiialo oe a Kapuewai

Lawaiia aku o Kapapaiki la

He aha ua ia e?

Pane mai o Piliaaama, he uhu
ua ia, he Opule ka ia, he Manini ka
ia, he Hinane ua ia, he papai no
hoi ua ia, pau na ia e lawaiia ianei
la e au.

(Ka Leo o ka Lahui 1893)

At Pupukea they spied Piliaama fishing as they watched Hiiaka called:

O Piliaama fisherman of the cliffs
Who surfs the mouth of the stream of Ihukoko
Who catches aku fish
What are you catching now?

He answered that he was catching some kala, moi, oio and aholu. She called again:

O Piliaama, fisherman,
Beloved husband of Kapuewai,
Who fishes for aku at Kapapaiki,
What else do you catch?

He answered, “some uhu, opelu, manini, hinane and also some crabs. I do all kinds of fishing here” (Sterling and Summers 1978:144).

Pōhaku of Significance

Two special stones were noted by McAllister (1933) in Pūpūkea. One of these stones was called Piliaama:

The natural depression upon this stone is said to be the footprint of a man and of a crab. According to my informant, Hookala, a man of low birth but exceedingly handsome and strong once lived in the vicinity. An alii woman who passed was enamored of this man and approached him. She came toward him, but he moved away. She followed. He began running, and she gave chase. When she had almost overtaken him, he vanished, and there remained this stone with his footprint and that of a crab. (McAllister 1933:150)

Another significant stone was known as Kalua o Maua:

Ho‘okala [an informant] remembers that Kalua o Maua is similar to Laniwahine [*mo‘o* of the Waialua area] and is representative of a woman who was a great fisher. One night, when she had gone torching, her husband was unable to see her from their place on the side of the hill. Searching for her, he found her in the form of this stone swimming about in the water. It is said that wherever this stone is found there is fresh water in the ocean. (McAllister 1933:151)

Pu‘u o Mahuka Heiau

Located on the cliffs of Pūpūkea, overlooking Waimea Valley, stands Pu‘u o Mahuka, which is thought to be a heiau luakini. Pilahi Pahi writes about this in his book, *Legends of Hawaii: Oahu’s Yesterday*, and credits the construction of the heiau to the ali‘i Kahahana, and his high priest, Ka‘ōpuluhulu. It is said that Kahanana asked Ka‘ōpuluhulu if it was wise to wage war with Kaua‘i. The priest replied that a heiau would need to be constructed so that he could receive a sign. Kahahana had Kupopolo Heiau built near the shores of Waimea, but Ka‘opuluhulu did not receive the sign. He instructed Kahahana to build a heiau at a higher location and Pu‘u o Mahuka was erected. There, Ka‘opuluhulu received the sign to not invade Kaua‘i. Pahi writes, “Pu‘u-O-Mahuka, remains among the lofty cliff as an emblem of the power of ‘thought’ which can produce peace or war” (Pahi 1972:58–59).

Pūpūkea in the Historic Era

Following the arrival of Westerners in 1778, Pūpūkea saw major transformations. The uplands were cultivated in pineapple, and lowlands were increasingly used for residential housing. These changes are evident in historic accounts, Māhele data, and maps and photographs of the landscape.

Early Historic to Post-Contact Period

The first account mentioning the Pūpūkea area was written by Captain Charles Clerke as he sailed around the north shore of O‘ahu. On February 28, 1779, Captain Clerke anchored in Waimea Bay and recorded this description in his journals:

I stood into a Bay just to the Wt[est]ward of this point the Eastern Shore of which was by far the most beautifull Country we have yet seen among these Isles, here was a fine expanse of Low Land bounteously cloath'd with Verdure, on which were situate many large Villages and extensive plantations; at the Water side it terminated in a fine sloping, sand Beach. . . . This Bay, its Geographical situation consider'd is by no means a bad Roadsted, being sheltered from the NEbN SEterly to SWbW with a good depth of Water and a fine firm sandy Bottom; it lays on the NW side of this Island of Wouahoo . . . surrounded by a fine pleasant fertile Country. (Beaglehole 1967:569)

James King, also on the same voyage as Captain Clerke, stated:

The appearance of so fine a river running thru: a deep Valley made us drop Anchor...I walk'd a little farther & observed it to be the produce of 2 branches, or small streams or rivers, that came down 2 Valleys...the bank of this river as well as the face of this NW part of Wo‘ahoo was as beautiful as any Island we have seen & appear'd very well cultivated & popular; they told us here that most of the Men were gone to Morotai to fight Tahyteree... (Beaglehole 1967:584–585)

In 1792, the *Daedalus*, captained by George Vancouver, anchored off the coast of Waimea and a party was sent ashore for fresh water. Three members of the party ventured inland in Waimea Valley and were beaten to death by tattooed men. The bodies were possibly taken to Pu‘u o Mahuka Heiau:

They [the Hawaiians] took the bodies to a heiau (‘temple’), cooked them and divided them among O‘ahu chiefs. They themselves said the heiau was at Mokuleia, about twelve miles along the coast to the west. European interpreters of Hawaiian history, wishing to be more commonsensical, suggest that the heiau might have been Pu‘u-o-Mahuka at Waimea itself. (Dening 1995:25)

Mid-19th Century and the Māhele

The change in the traditional land tenure system in Hawai‘i began in 1845 with the introduction of The Organic Act. The Organic Act of 1845 and 1846 essentially initiated what is known as the Māhele system, or the division of Hawaiian lands. This new system introduced the concept of private property in the Hawaiian society, and required Hawaiians, commoners and royalty alike, to submit claim to their lands.

In 1848, the crown (Hawaiian government) and the ali‘i (royalty) received their land titles, which are known as the Crown Lands. In 1850 a second Māhele was conducted, this time allowing commoners, and others who could prove residency, to put claim to their land. Those with successful claims were awarded with land known as kuleana parcels. Though many Hawaiians did not submit or follow through on claims for their lands, the distribution and descriptions of Land Commission

Awards (LCAs) can provide significant insight to the patterns of land use, residence, environment, and activities in the project area.

During the Māhele, Pūpūkea Ahupua‘a was awarded to Kamehameha III. However, because his documented awards on O‘ahu did not include any awards from the Ko‘olauloa District, it has been suggested that Kamehameha III gave Pūpūkea to the government (Chinen 1961:26, PBR Hawaii & Associates 2014). Boundary Commission Document No. 14985 validated this statement, as Pūpūkea Ahupua‘a was indicated as “Crown Lands.” A total of 31 kuleana claims were made for Pūpūkea Ahupua‘a. Of these, nine were not awarded. Unlike typical small land boundaries, most of the 22 awarded claims in Pūpūkea were comprised of narrow land strips. There were no LCA awards given for the project parcels or immediate vicinity.

Shortly following the Māhele, sugarcane cultivation became a profitable endeavor in Hawai‘i. In 1889 the OR&L railroad was built from Honolulu to Kahuku to accommodate the sugar plantations on the north shore of O‘ahu, and the Waimea Railroad station was built at the intersection of the Government Road and the Pūpūkea Road (Kuykendall 1967:68).

1900–the Mid-1900s

In the early 1900s, though the railroad was the main focus of economic activity on O‘ahu, farming in the Pūpūkea highlands became profitable as crops were harvested and transported, using the railroad, to central markets across the island (Clark 1977). In particular, avocados were very lucrative, with 400 acres of avocado trees planted in the Pūpūkea uplands in the early 1900s (Clark 1977:123). After the owner, Fredrick Haley, Sr., sold the 400 acres of avocado lands to Libby, McNeil, and Libby, pineapple became a popular commodity of the area (Clark 1977:123). Pineapple plantations in Pūpūkea were founded as early 1919.

At this time, residential construction also began for the Pūpūkea-Paumalū Homesteads and the Pūpūkea-Paumalū Beach Tract. By 1943, even more development had occurred in the region. During the decline of plantation agriculture in the 1950s and 1960s more lots in Pūpūkea were sold for residential purposes. By the 1970s, both the highlands and coastal areas of Pūpūkea were thriving residential communities.

Two historic maps depict the project lands in the early 1900s. The first is a map of the north coast of O‘ahu from 1902 (Figure 4). The shoreline, coastal road, cliffs, and gulches are illustrated. The next map shows the Pūpūkea-Paumalū Homesteads in 1904 (Figure 5). The OR&L railroad and Government Road can be seen just makai of the project area. A structure labeled as “Waimea R.R. Station” is also close to the project area, at the intersection of what is now Kamehameha Highway and Pūpūkea Road. A school lot is depicted south of the bend in Pūpūkea Road, southeast of the project site. Farther southeast is Pu‘u o Mahuka, which is labeled as “Heiau.”

Modern Land Use

Today, Pūpūkea remains a mostly residential area, with some agricultural production in the uplands (Figure 6). The Pūpūkea-Paumalū Beach Tract (Sunset Beach area) was also sold for residential property, where many vacation homes were constructed. Pūpūkea is known as a popular surf area, and continues to attract homeowners, surfers, and tourists today (Clark 1977:125).

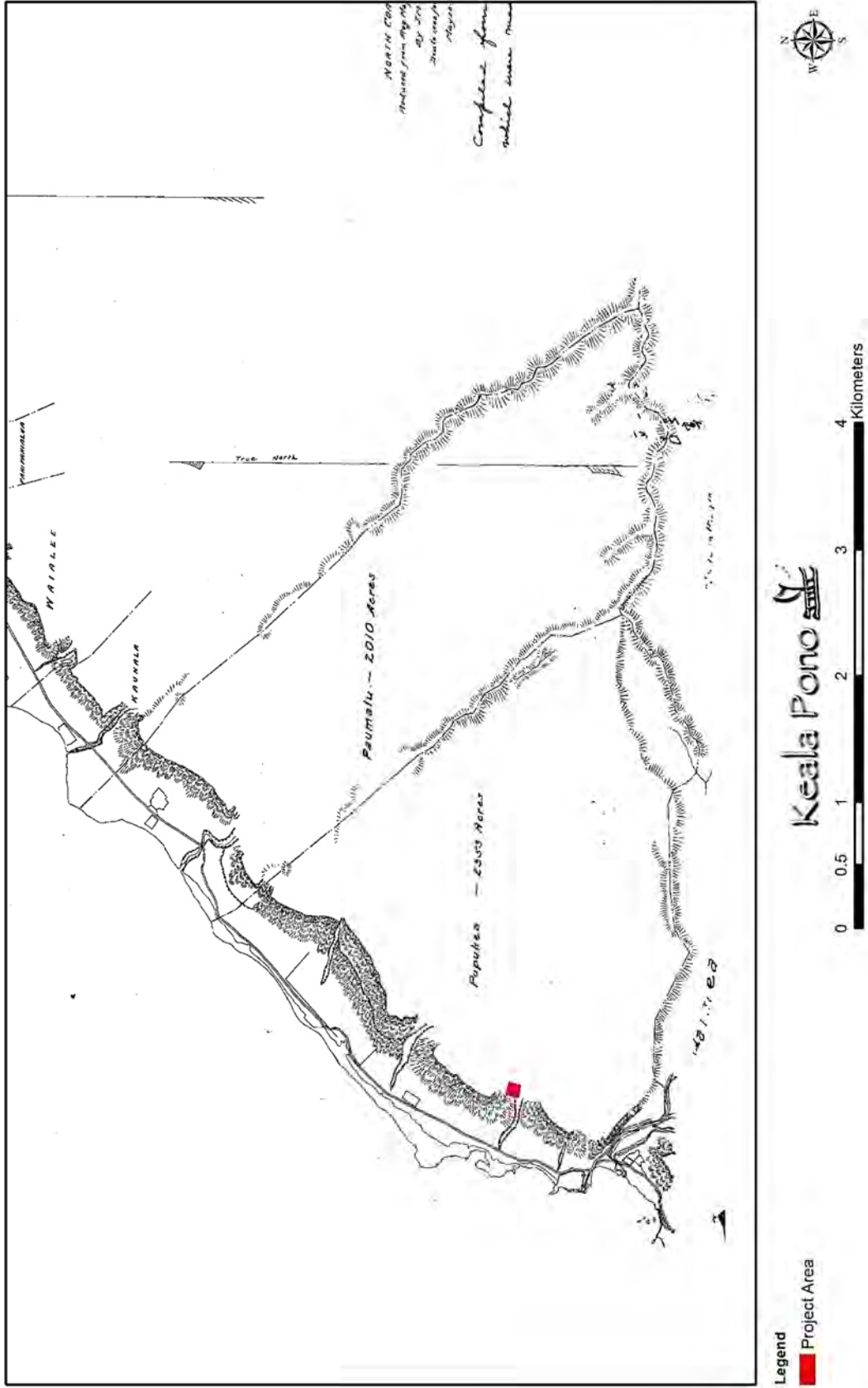
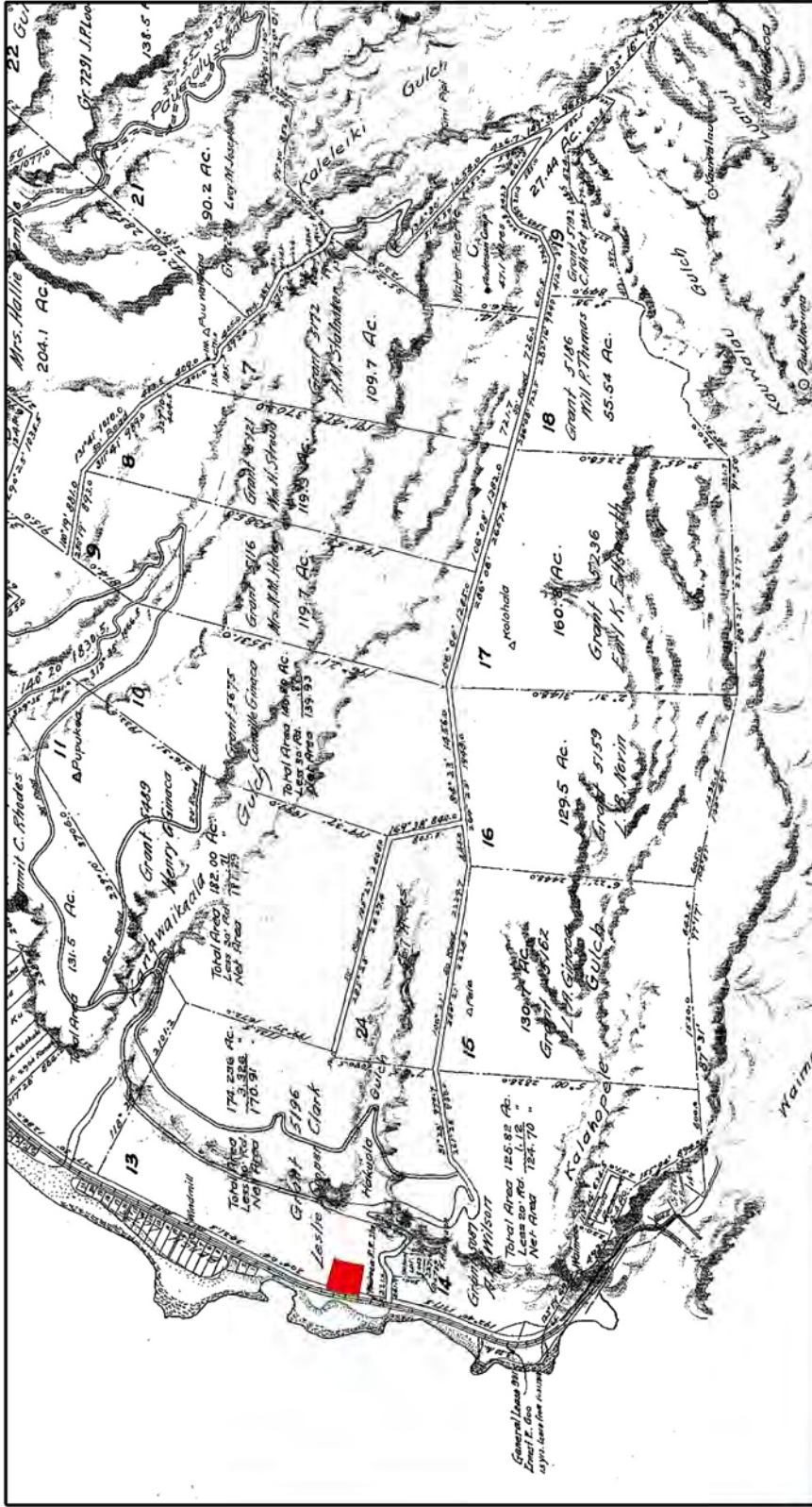


Figure 4. Portion of a map showing the north coast of O'ahu (Donn 1902).



Legend
■ Project Area

Keala Pono

0 0.5 1 2 Kilometers

Figure 5. Portion of a Pupukea-Paumalu Homesteads map (Wall 1904).



Legend
■ Project Area

Keala Pono

0 125 250 500 750 1,000 Meters

Layer Credits: 1962 Pūpūkea Aerial

Figure 6. USGS 1962 aerial photo of Pūpūkea.

Previous Archaeology

Pūpūkea has been the subject of many archaeological studies. The following discussion summarizes the findings of cultural resources identified in the vicinity of the subject properties, based on reports found at the SHPD library in Kapolei (Figure 7 and Table 1). State Inventory of Historic Places (SIHP) numbers are prefixed by 50-80-01 (Figure 8 and see Table 1).

The earliest archaeological work for the area was during McAllister's (1933) island-wide survey. McAllister recorded five sites in Pūpūkea Ahupua'a: Site 249, Pu'u o Mahuka Heiau; 252, the Piliaama Stone; 253, Kamae'e Ko'a; 254, the Kalua o Maua Stones; and 255 Pele's Follower's Stones. The latter site was described as a group of large rocks that are people whom Pele turned to stone so they would become immortal (McAllister 1933).

An early archaeological reconnaissance was conducted mauka of Pūpūkea Beach Park, and one site, SIHP 3364, was documented (Denison 1979). The site is a rectangular enclosure formed by rock walls. It was thought to be an animal pen dating to the historic era. Also mauka of Pūpūkea Beach Park, human remains were inadvertently discovered during construction on a residential property (Kawachi 1988). The remains were given the SIHP number 3955. Human remains were again uncovered during residential construction in the area (Kawachi and Smith 1989). The remains were designated as SIHP 4150. Another set of remains was documented for the area mauka of Pūpūkea Beach Park, but the original report that recorded the find could not be located. The remains, designated as SIHP 4285, were reported as a known site in a later archaeological report (Tulchin and Hammatt 2005). These four sites (an enclosure and several sets of human remains) are the closest archaeological sites to the project area (see Figure 7).

Archaeological reconnaissance with subsurface testing was conducted for the 1,130-acre Pupukea-Paumalu Development Project (Mayberry and Haun 1988). A total of 60 sites were identified (SIHP 3820–3873, 3971–3976, and 5830–5832), most of which were economic or agricultural, and some military or mortuary/ceremonial. Archaeological inventory survey was later conducted along one of the cliff areas covered by the reconnaissance (Carson 2000). Habitation, agricultural, and human burial sites were identified (SIHP 5830–5834).

Various work was completed at Pu'u o Mahuka Heiau. The first was a historical overview of the area (Estioko-Griffin 1986). Subsequently, the site was nominated for the National Register of Historic Places (NRHP) (Dunbar 1989). A 1991 report documented work completed at three sites in the area: Pu'u o Mahuka Heiau (Site 249), and SIHP 2502 and 3509, which are walled enclosures (Smith and Yent 1991). The enclosures are near the heiau but outside the State Park property. All three sites were mapped with a transit, and subsurface testing was conducted at the heiau. It was reported that "subsurface testing confirmed the presence of intact cultural deposits at the site and revealed two paving episodes in the eastern enclosure [of the heiau]" (Smith and Yent 1991:32). Two radiocarbon dates indicate construction or refurbishing of the heiau in the late-1700s or early-1800s (Smith and Yent 1991:34).

Several studies took place at 'Ehukai Beach Park. An early archaeological inventory survey had no findings (Kennedy 1991), but later studies identified a human burial (Griffin 1991), scattered human remains, and a firepit, all grouped together under SIHP 4452 (Kennedy and Denham 1992). The firepit was radiocarbon dated to cal. AD 1153–1421 (Kennedy and Denham 1992:24). Artifacts collected include a possible kukui nut candle, files and abraders, a broken adze, basalt flakes, and an iron ball. Later monitoring revealed four firepits, which were included with SIHP 4452 (Tulchin et al. 2002). Two radiocarbon dates were obtained: cal. AD 1410–1530 and 1650–1960 (Tulchin et al. 2002:29). Another monitoring project at 'Ehukai Beach Park yielded no findings (Cordy et al. 2008).

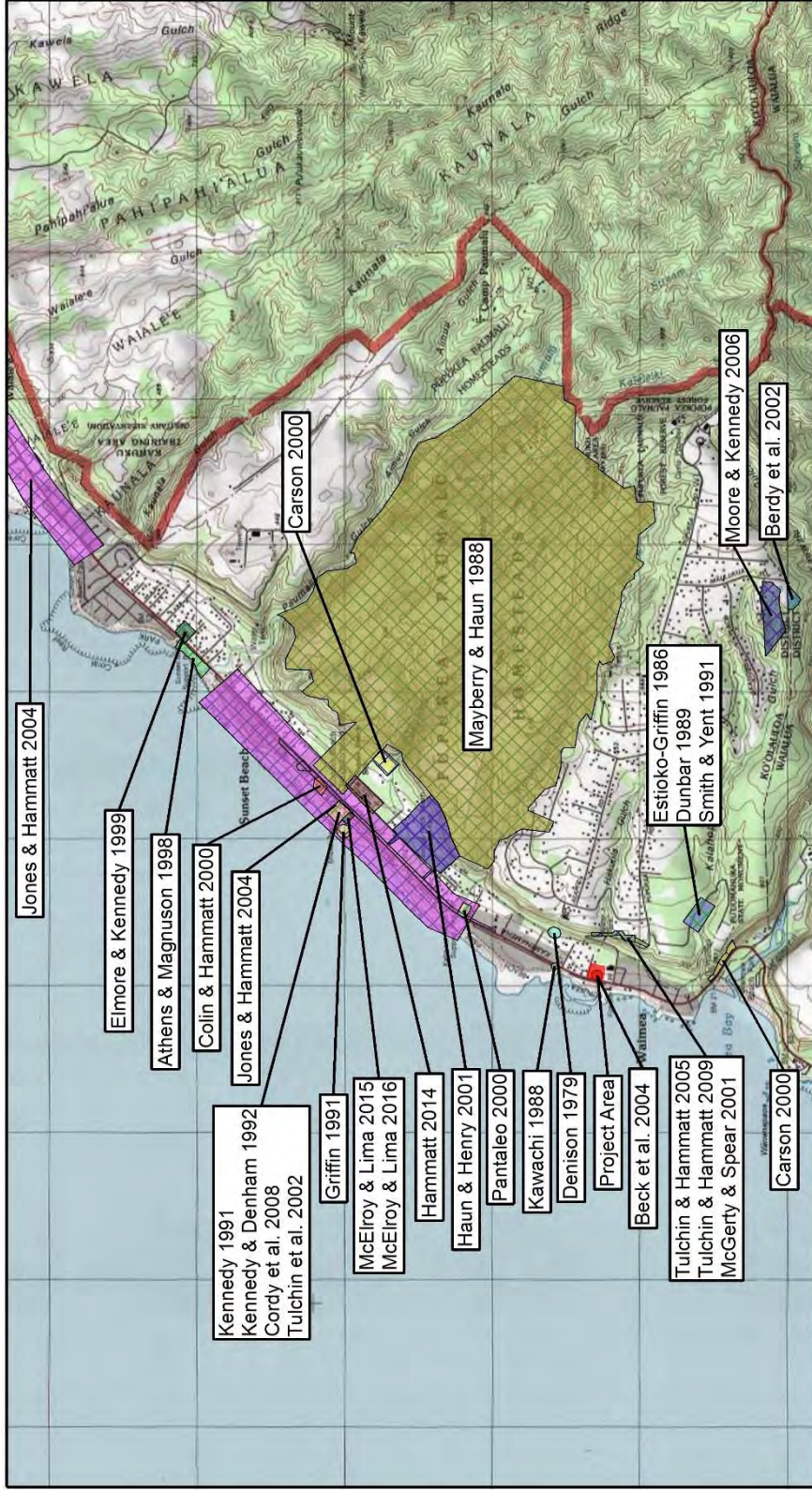


Figure 7. Location of previous archaeological studies in the vicinity of the project area.



Legend

- Project Area
- ▲ McAllister (1933) Site
- ▲ Historical Site
- ▲ Burial

0 0.75 1.5 3 Kilometers

Keala Pono

N
W E
S

Layer Credits: USGS Topographical Waima Quadrangle Map 1998

Figure 8. Location of known archaeological sites in the vicinity of the project area.

Table 1. Previous Archaeology in Pūpūkea

Author	Year	Location	Work Completed	Findings
McAllister	1933	O‘ahu	Survey	Recorded 5 sites in Pūpūkea: 249, 252, 253, 254, and 255; none are near the project area.
Denison	1979	Mauka of Pūpūkea Beach Park	Reconnaissance	Recorded SIHP 3364, a rectangular enclosure thought to be a historic animal pen.
Estioko-Griffin	1986	Pu‘u o Mahuka Heiau	Historical Overview	Provided historical context for the heiau.
Kawachi	1988	Mauka of Pūpūkea Beach Park	Burial Report	Recorded a human burial, SIHP 3955.
Mayberry & Haun	1988	Pupukea-Paumalu Development Project	Reconnaissance	Identified 60 sites, mostly economic or agricultural, with some military or mortuary/ceremonial.
Dunbar	1989	Pu‘u o Mahuka Heiau	NRHP Nomination	Completed NRHP nomination forms for Pu‘u o Mahuka Heiau.
Kawachi & Smith	1989	Mauka of Pūpūkea Beach Park	Burial Report	Documented SIHP 4150, a human burial.
Griffin	1991	‘Ehukai Beach Park	Burial Report	Recorded SIHP 4452, a human burial.
Kennedy	1991	‘Ehukai Beach Park	Inventory Survey	Negative findings.
Smith & Yent	1991	Pu‘u o Mahuka Heiau and Vicinity	Mapping and Subsurface Testing	Mapped Pu‘u o Mahuka Heiau (Site 249) and two walled enclosures (SIHP 2502 and 3951). Excavations at the heiau returned radiocarbon dates in the late-1700s to early-1800s.
Kennedy & Denham	1992	‘Ehukai Beach Park	Monitoring	Documented SIHP 4452, a previously recorded human burial, as well as scattered human remains, a firepit, and several artifacts.
Athens & Magnusen	1998	Sunset Beach	Inventory Survey	Identified subsurface midden deposits, SIHP 5585 and 5586.
Elmore & Kennedy	1999	Sunset Beach	Monitoring	Negative findings.
Carson	2000	Mauka of Sunset Beach	Survey	Identified 5 sites, SIHP 5830–5834, including habitation, agricultural, and human burial areas.
Colin & Hammatt	2000	Ke Nui Rd.	Burial Disinterment	Reported on SIHP 5532, a human burial.
Pantaleo	2000	Sunset Beach Recreation Center	Literature Review and Field Inspection	Negative findings.
Haun & Henry	2001	Sunset Beach Agricultural Subdivision	Inventory Survey	Recorded 14 sites, SIHP 5951–5964, consisting of burial, agricultural, and water storage locales. The burials were multiple individuals found in caves, one with the remains of a burial canoe.
Berdy et al.	2002	Pūpūkea Road	Inventory Survey	Negative findings.

Table 1. (Continued)

Author	Year	Location	Work Completed	Findings
Tulchin et al.	2002	‘Ehukai Beach Park	Monitoring	Identified four additional firepits of SIHP 4452.
Beck et al.	2004	Portion of the Current Project Area	Site Assessment Survey	Negative findings.
Jones & Hammatt	2004	Kamehameha Hwy.	Monitoring	Identified SIHP 6519, two human burials; as well as 6520, a firepit.
Tulchin & Hammatt	2005	Pūpūkea Rd.	Field Inspection & Literature Review	Recorded 5 sites: two historic roadbeds, two burial caves, and a historic storage cave. Four possible shelters were noted as potential sites. SIHP numbers were not assigned.
Moore & Kennedy	2006	Mālukua Rd.	Inventory Survey	Identified SIHP 6760, a historic water tank.
Cordy et al.	2008	‘Ehukai Beach Park	Monitoring	Negative findings.
Tulchin & Hammatt	2009	Pūpūkea Rd.	Inventory Survey	Documented 5 sites: SIHP 7034–7038, including historic features, a trail segment, burial caves, and a temporary habitation shelter.
McGerty & Spear	2011	Pūpūkea Rd.	Monitoring	Negative findings.
Hammatt	2014	Sunset Beach Elementary School	Monitoring	Negative findings.
McElroy & Lima	2015	Near ‘Ehukai Beach Park	Burial Site Component of an Archaeological Data Recovery and Preservation Plan	Set forth guidelines for treatment of SIHP 7678, a human burial that had been disturbed during initial construction on the property.
McElroy & Lima	2016	Near ‘Ehukai Beach Park	Monitoring	Identified SIHP 7679, a subsurface cultural layer with firepits.
No Report Found		Sunset Beach		SIHP 2353 is a series of petroglyphs in sandstone reef at Sunset Beach; a report on this site was not found in the SHPD library.
No Report Found		Mauka of Pūpūkea Beach Park		SIHP 4285 is an inadvertently discovered human burial; a report on this site was not found in the SHPD library.

Very close to ‘Ehukai Beach Park, a burial site component of an archaeological data recovery and preservation plan was prepared for a privately owned beachfront parcel (McElroy and Lima 2015). The plan set forth guidelines for treatment of SIHP 7678, a human burial that had been partially disturbed during initial construction on the subject property. Archaeological monitoring of construction identified an additional site, SIHP 7679, a subsurface cultural layer with five firepits (McElroy and Lima 2016). A sample of kukui nutshell returned a conventional radiocarbon age of 200 ± 30 BP, which calibrates to AD 1650–1685, AD 1730–1810, and AD 1925–Post 1950 (McElroy and Lima 2016:44–45).

Archaeological inventory survey was conducted at Sunset Beach (Athens and Magnusen 1998). Two subsurface midden deposits, SIHP 5585 and 5586, were identified. A radiocarbon date of cal. AD 1502–1652 was obtained for Site 5585 (Athens and Magnusen 1998:ii). Archaeological monitoring was later carried out for park improvements across the street, but there were no findings (Elmore and Kennedy 1999).

A human burial was found on Ke Nui Road (Colin and Hammatt 2000). The burial was thought to be traditional Hawaiian and was designated as SIHP 5532. Not far from this, archaeological monitoring was performed for the installation of a water main along Kamehameha Highway (Jones and Hammatt 2004). SIHP 6519 and 6520, consisting of human burials and a firepit, were found near the Sunset Beach Neighborhood Park. SIHP 6519 included two individuals identified as a young adult female and an adolescent of undetermined sex. SIHP 6520 is a firepit that was radiocarbon dated to cal. AD 1620–1960 (Jones and Hammatt 2004:34).

Archaeological inventory survey was conducted for the Sunset Beach Agricultural Subdivision, located on the mauka side of Kamehameha Highway (Haun and Henry 2001). A total of 14 sites were recorded (SIHP 5951–5964), including caves, walls, cisterns, and alignments. Feature functions were listed as burial, agricultural, and water storage. The burials were found within two caves (SIHP 5963 and 5964), which each contained the remains of multiple individuals. Fragments of a burial canoe were also found within one of the caves. The agricultural remains are thought to be ‘uala fields that date from the mid-1600s to the mid-1800s (Haun and Henry 2001:33).

Several studies were completed for rockfall mitigation on Pūpūkea Road. An initial field inspection and literature review recorded five sites consisting of two historic roadbeds, two burial caves, and a historic storage cave (Tulchin and Hammatt 2005). Four possible shelters were also noted as potential sites; these were four overhangs and a lava tube. SIHP numbers were not assigned at the time. Archaeological inventory survey assigned SIHP numbers to the five sites recorded earlier (SIHP 7034–7038) (Tulchin and Hammatt 2009). SIHP 7034 and 7035 are historic roads, while 7036 is a traditional or early historic trail. SIHP 7037 consists of historic storage caves, while 7038 includes six burial caves and a temporary habitation shelter. Charcoal recovered during excavation of the shelter returned a radiocarbon date of cal. AD 1440–1640 (Tulchin and Hammatt 2009:71). Archaeological monitoring was later conducted for Phase I of the project, and no new sites were documented (McGerty and Spear 2011).

An archaeological inventory survey in upper Pūpūkea identified one site (Moore and Kennedy 2006). The site is a historic water tank that was designated as SIHP 6760.

Site 2353 consists of petroglyphs carved into the limestone reef at Sunset Beach. The site is reported as previously identified (e.g., Tulchin et al. 2002), but the original report documenting the petroglyphs was not found in the SHPD library.

Several projects produced negative findings. These consist of a literature review and field inspection of the proposed Sunset Beach Recreation Center (Pantaleo 2000), an archaeological inventory survey of private property along Pūpūkea Road (Berdy et al. 2002), and archaeological monitoring at Sunset Beach Elementary School (Hammatt 2014).

Finally, what was called a “site assessment survey” was completed for a portion of the current project area (Beck et al. 2004:13). At the time of the survey, the project area was listed as TMK: (1) 5-9-011:017, and 2.143 acres were covered, consisting of all of the current parcel 070 and the mauka portions of parcels 68 and 69. There were no findings, and evidence of recent dumping and farming were reported. No subsurface testing was conducted.

Summary of Background Information

Pūpūkea is an area rich in pre- and post-contact history. With a traditional economy based largely on fishing and marine exploitation, the coastline was an important resource for the people that lived there. Because of the dearth of fresh water, wetland agriculture was not widely practiced, and dryland farming focusing on ‘uala cultivation factored largely into traditional lifeways.

The historic period brought about widespread changes to the Pūpūkea landscape. Crops such as avocado and pineapple were farmed, and large tracts of land supported housing developments. The OR&L railroad ran just makai of the project area, transporting sugarcane from the north shore plantations.

Previous archaeological work near the project area has had significant findings. The four archaeological sites closest to the project area consist of several human burials and an enclosure. A variety of site types have been documented in other parts of Pūpūkea, with human burials found near the coast and in caves. Traditional agricultural, ceremonial, and habitation areas, as well as a variety of historic sites have also been documented for Pūpūkea.

Anticipated Findings and Research Questions

Previous archaeological work within the project area consisted entirely of surface survey, with no subsurface testing conducted (Beck et al. 2004). No surface archaeological remains were identified, and studies conducted nearby can help inform on the kinds of subsurface archaeological resources that may be found. The closest subsurface sites to the project area are human burials, and these might be expected in the project area as well.

Research questions will broadly address the identification of the above archaeological resources and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Are there cultural features, deposits, or evidence of human burials within the survey area? Where are they located and what time period do they belong to?
2. Are there any vestiges of historic-era use of the project area, particularly surface remains or subsurface deposits associated with sugarcane, pineapple cultivation, or other forms of historic farming?

Once these basic questions are answered, additional research questions may be developed in consultation with SHPD, tailored to the specific kinds of archaeological resources that occur in the project area.

METHODS

Pedestrian survey was conducted on October 18, 2016 by Windy McElroy, PhD, Juanita Aguerrebere, BA, and Jeffrey Lapinad. Subsurface testing was conducted on February 16, 2017 by McElroy and Lapinad. McElroy served as Principal Investigator, overseeing all aspects of the project.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for the entire area. Archaeologists were spaced approximately 10 m apart. Of the 1.1 ha (2.72 ac.) survey area, 100% was covered on foot. Vegetation was generally light, consisting of isolated pockets of forested areas with an understory of grass. Most of the project area is open, and vegetation had little effect on visibility.

Test trenches (TR) were excavated in 11 locations across the project area. The excavation strategy was approved by SHPD beforehand via email. A mini excavator was used for excavation of the trenches (Figure 9). Vertical provenience was measured from the surface, and trenches were excavated to sterile deposits. Profiles were drawn and photographed, and sediments were described using Munsell soil color charts and a sediment texture flowchart (Thien 1979). Trench locations were recorded with a 3 m-accurate Garmin GPSmap 62st, and all trenches were backfilled after excavation.

The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2–35). No materials were collected and no laboratory analyses were conducted.



Figure 9. Excavation of TR 1 with mini excavator. Orientation is to the southwest.

RESULTS

Pedestrian survey and subsurface testing were conducted in the 1.1 ha (2.72 ac.) project area. No archaeological resources were found. Excavation of 11 test trenches did not yield any evidence of subsurface archaeological deposits or features.

Community Consultation

Community consultation will take the form of a cultural impact assessment (CIA), which is currently being conducted. The CIA is being prepared simultaneously with this AA report, and three interviews with community members are planned.

Pedestrian Survey

The surface survey included 100% of the 1.1 ha (2.72 ac.) project area. No surface archaeological remains were observed within any part of the project area; any archaeological features that may have once been present are no longer there because of the extensive modern use of these lands.

The entire parcel was found to be disturbed, with many areas paved in gravel (Figure 10) or bulldozed (Figure 11). There were small vegetated areas on the parcel that also showed signs of bulldozing (Figure 12). These findings are consistent with a previous surface survey that was completed for the properties (Beck et al. 2004).

Subsurface Testing

A subsurface testing plan was approved by SHPD before trenching began. The 11 trenches were excavated within the project area to determine the presence or absence of subsurface archaeological deposits or material (Figures 13 and 14). Trenches were excavated to a sterile deposit, characterized by saprolitic rock in its lower depths. No archaeological resources were found, and stratigraphy generally consisted of the sterile colluvial layer, sometimes overlain with various fill deposits (Table 2). Trench locations and dimensions are listed in Table 3.

Stratigraphy was similar throughout, with slight variations. Five variations in stratigraphy were noted (see Table 2), and each is illustrated with a profile drawing and photo:

1. A driveway or parking lot gravel surface with colluvium below (Figures 15 and 16). This was found in TR 2, 3, 6, 7, and 10.
2. The gravel parking lot surface with an agricultural soil below it, and the basal colluvial layer (Figures 17 and 18). This was observed at TR 4 and 5, where farming is a previous use of the area.
3. A single layer of colluvium (Figures 19 and 20). This was found in TR 8 and 9, which were excavated outside the gravel-paved areas.
4. The gravel parking lot surface, three layers of fill, and the basal colluvial deposit (Figures 21 and 22). This was evident in TR 1.
5. The gravel parking lot surface underlain by a layer of fill, an asphalt road or parking lot, and the basal colluvial deposit (Figures 23 and 24). This was found in TR 11.



Figure 10. Open gravel-paved area. Orientation is to the north.



Figure 11. Bulldozed area. Orientation is to the south.



Figure 12. Disturbed, vegetated area. Orientation is to the east.

Summary of Findings

Pedestrian survey of 1.1 ha (2.72 ac.) in Pūpūkea yielded no findings. The entire project area has been disturbed by previous activity, such as bulldozing and paving. Subsurface testing, consisting of 11 trenches, did not identify any subsurface cultural deposits or features. Stratigraphy consisted of a colluvial deposit, sometimes with fill layers or modern pavements above it.



Figure 13. Location of trenches on aerial imagery.

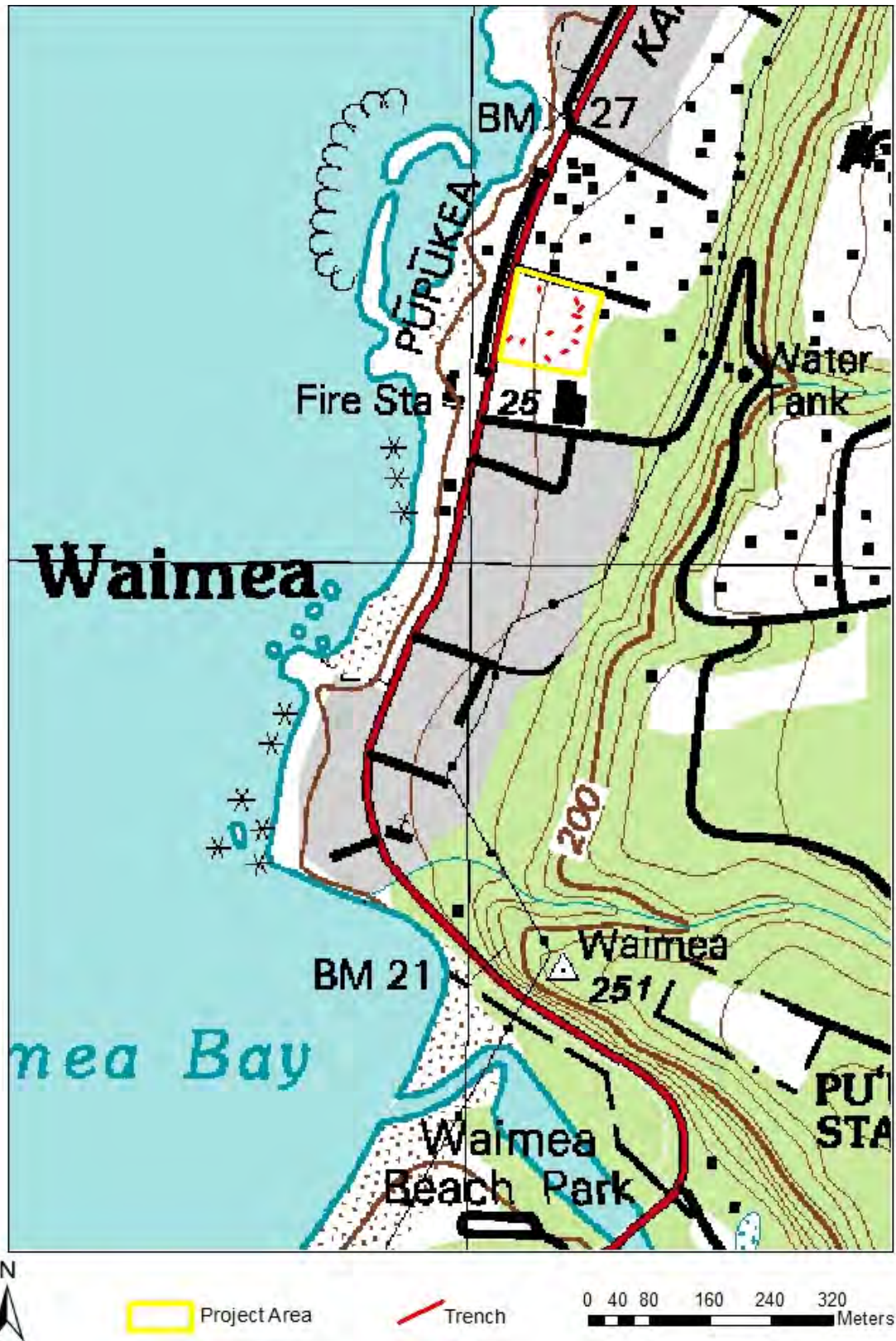


Figure 14. Wider view of trench locations on a 1992 USGS map.

Table 2. Sediment Descriptions

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 1	I	0–7	N/A	Fine to medium basalt gravel; smooth, very abrupt boundary.	Driveway Surface
	II	7–9	7.5YR 3/3	Sandy loam; 20% basalt gravel; smooth, very abrupt boundary.	Fill
	III	9–12	10YR 3/4	Sandy loam; 20% basalt gravel; smooth, very abrupt boundary.	Fill
	IV	12–24	7.5YR 4/4	Sandy loam; 15% basalt gravel; smooth, very abrupt boundary.	Fil
	V	24–230+	5YR 3/4	Sandy loam; 2% basalt cobbles; saprolitic rock; utility lines at 70–84 cmbs; base of excavation.	Natural Colluvium
TR 2	I	0–5	N/A	Fine to medium basalt gravel; smooth, very abrupt boundary.	Driveway Surface
	II	5–160+	5YR 3/4	Sandy loam; 2% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 3	I	0–10	N/A	Coarse basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	10–188+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 4	I	0–10	N/A	Coarse basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	15–52	7.5YR 2.5/2	Silty clay loam; smooth, very abrupt boundary.	Agricultural Soil
	III	52–154+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 5	I	0–10	N/A	Coarse basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	10–25	7.5YR 3/2	Silty clay loam; smooth, very abrupt boundary.	Agricultural Soil
	III	25–130+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 6	I	0–10	N/A	Coarse basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	10–150+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 7	I	0–10	N/A	Coarse basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	10–130+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 8	I	0–150+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium

Table 2. (Continued)

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 9	I	0–160+	5YR 3/2	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 10	I	0–8	N/A	Medium basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	8–180+	2.5YR 3/4	Sandy loam; 10% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium
TR 11	I	0–7	N/A	Fine basalt gravel; smooth, very abrupt boundary.	Parking Lot Surface
	II	7–16	5YR 3/2	Sandy loam; 2% basalt gravel; smooth, very abrupt boundary.	Fill
	III	16–20	N/A	Asphalt; smooth, very abrupt boundary	Old Road or Parking Lot
	IV	20–160+	5YR 3/2	Sandy loam; 5% basalt cobbles; saprolitic rock; base of excavation.	Natural Colluvium

Table 3. Trench Locations and Dimensions

Trench	Location	Length (m)	Width (m)	Depth (cmbs)
TR 1	Just inside the entrance driveway	4.9	2.3*	190
TR 2	Entrance driveway, north of realty office	8.1	.50	160
TR 3	Northeast corner of mauka parking lot	5.9	.50	188
TR 4	Just north of ice machine shed	4.2	.50	154
TR 5	South of ice machine shed	7.4	.50	130
TR 6	East center of mauka parking lot	7.9	.50	150
TR 7	Southeast of mauka parking lot, north of dumpsters	8.2	.50	130
TR 8	Just south of dumpsters	7.1	.50	150
TR 9	South center of property, 20 m north of Foodland parking lot	5.8	.50	160
TR 10	East side of central parking lot, 30 m north of TR 9	4.7	.50	180
TR 11	North side of makai parking lot, in front of Over the Rainbow entrance steps	6.5	.50	160

*TR 1 was excavated to 2.3 m wide on its north end to locate the end of a broken utility line

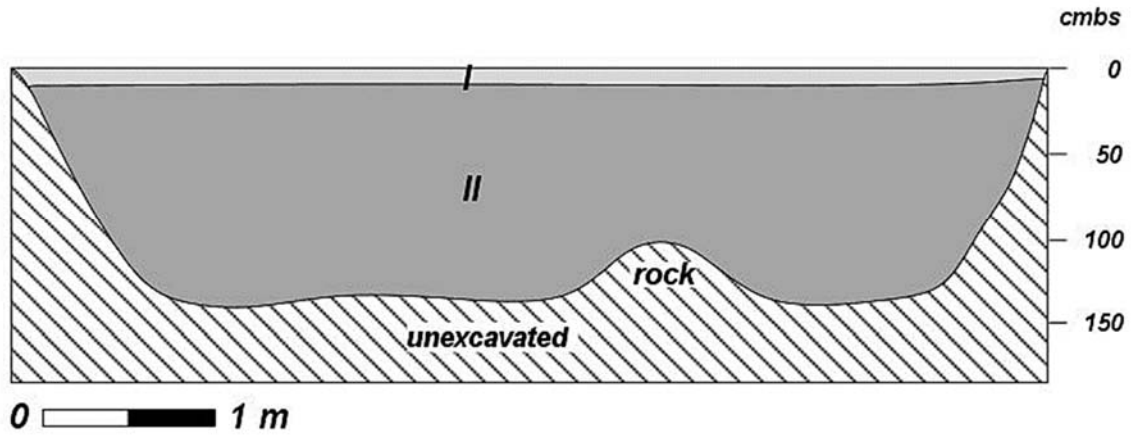


Figure 15. TR 7 north face profile drawing.



Figure 16. TR 7 north face photo.

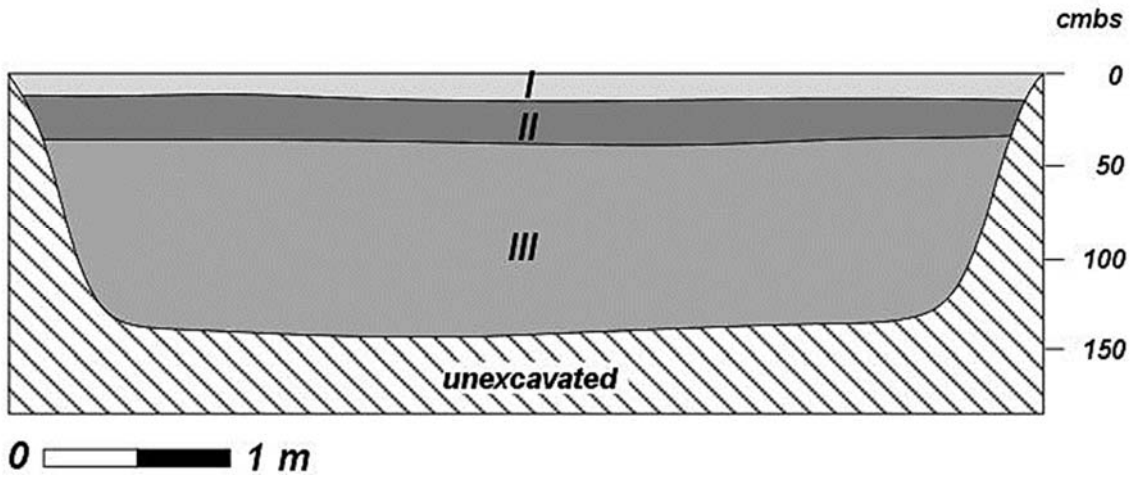


Figure 17. TR 5 north face profile drawing.



Figure 18. TR 5 north face photo.

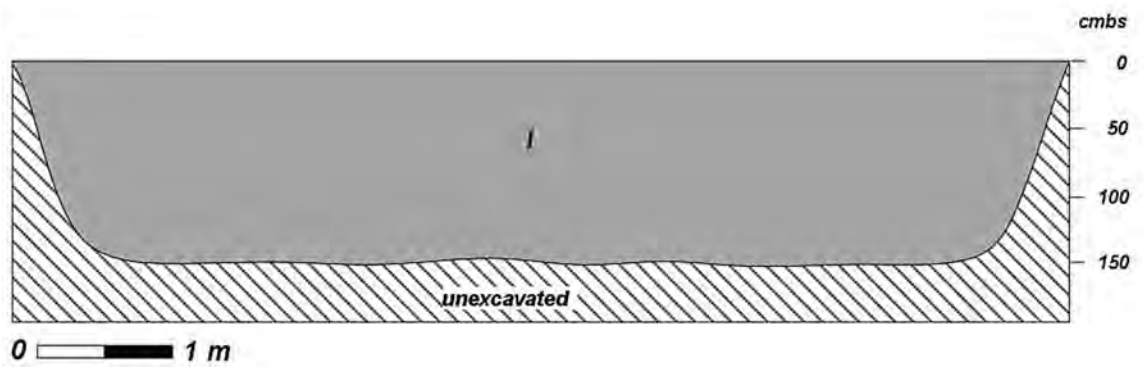


Figure 19. TR 8 north face profile drawing.

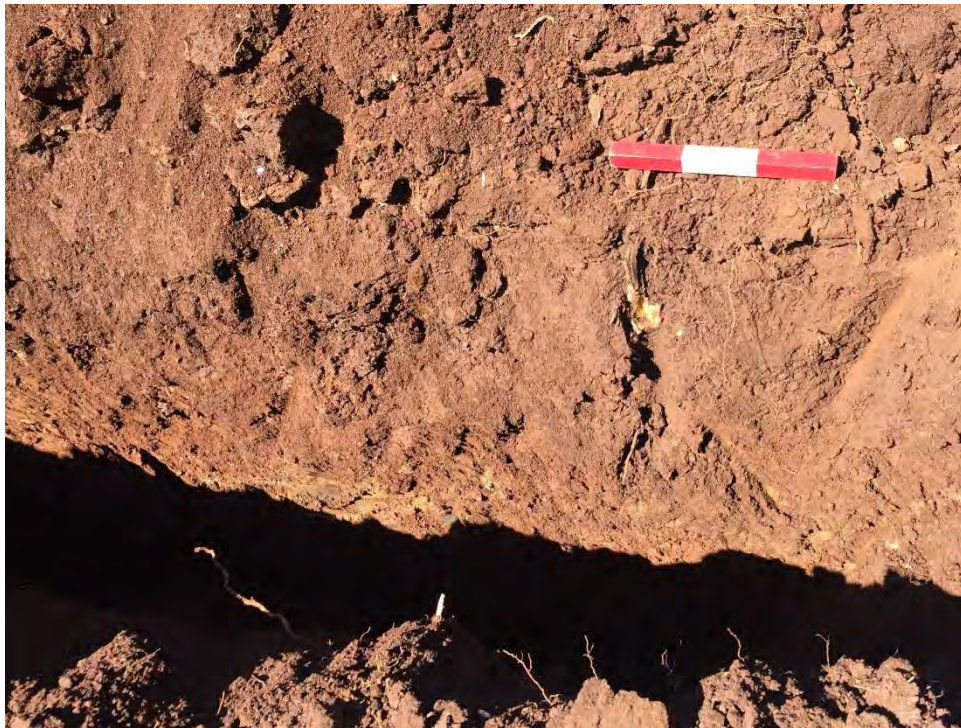


Figure 20. TR 8 north face photo.

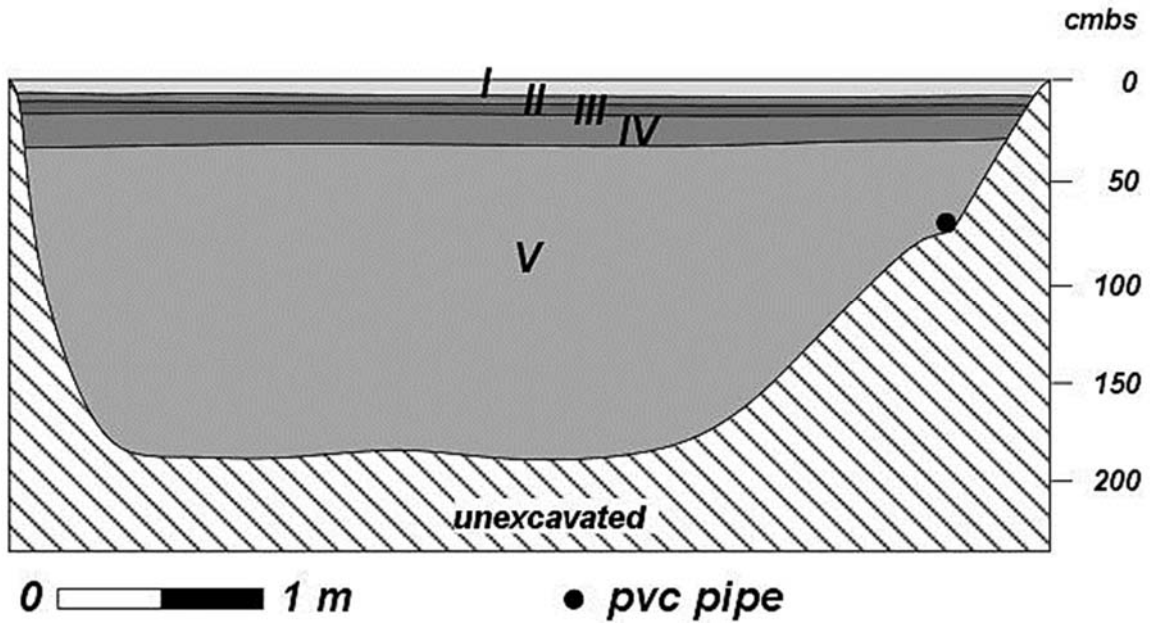


Figure 21. TR 1 east face profile drawing.



Figure 22. TR 1 east face photo, north end of the trench.

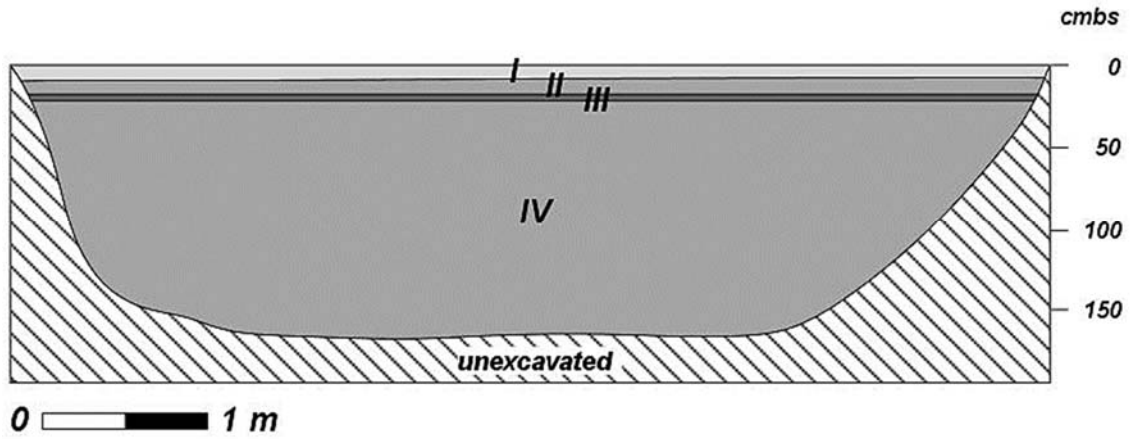


Figure 23. TR 11 west face profile drawing.



Figure 24. TR 11 west face photo.

SUMMARY AND RECOMMENDATIONS

An archaeological inventory survey was conducted for a proposed commercial development in Pūpūkea Ahupua‘a, Ko‘olaupia District, on the island of O‘ahu on TMK: (1) 5-9-011:068, 069, and 070. The archaeological work included pedestrian survey that covered 100% of the 1.1 ha (2.72 ac.) project area, as well as test excavations consisting of 11 trenches. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275-5(b)(5)(A).

No surface archaeological remains were found during pedestrian survey of the parcels. The entire area has been disturbed by modern activity, such as bulldozing and paving. Likewise, subsurface testing did not yield any evidence of subsurface archaeological features or deposits. Stratigraphy consisted of a colluvial deposit, sometimes with various fill layers or modern pavements above it.

This survey produced no findings and no Jaucas or beach sand was encountered during subsurface testing, therefore archaeological monitoring is not recommended. Whereas human burials have been found previously in the vicinity (Sites 3955, 4150, and 4285); these were located in coastal deposits (Jaucas or beach sand), while only colluvial deposits were observed within the project area. Although no further work is recommended, it is possible that human remains may be discovered during construction activities, even though no such evidence was found during the survey. Should human burial remains be discovered during construction activities, work in the vicinity of the remains should cease immediately and the SHPD should be contacted.

GLOSSARY

‘āhole	Mature stage of the Hawaiian flagtail fish. The young stage is <i>‘āholehole</i> .
ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
aku	The bonito or skipjack (<i>Katsuwonus pelamis</i>), a prized eating fish.
ali‘i	Chief, chiefess, monarch.
heiau	Place of worship and ritual in traditional Hawai‘i.
‘ili, ‘ili‘āina	Traditional land division, usually a subdivision of an ahupua‘a.
Kahiki	A far away land, sometimes refers to Tahiti.
kahuna	An expert in any profession, often referring to a priest, sorcerer, or magician.
kala	The surgeonfish or unicorn fish, <i>Teuthidae</i> .
kama‘āina	Native-born.
ko‘a	Fishing shrine.
koa haole	The small tree <i>Leucaena glauca</i> , historically-introduced to Hawai‘i.
kukui	The candlenut tree, or <i>Aleurites moluccana</i> , the nuts of which were eaten as a relish and used for lamp fuel in traditional times.
kula	Plain, field, open country, pasture, land with no water rights.
kuleana	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
ku‘ula	A stone god used to attract fish, an altar near the sea, or a hut where fishing gear was kept with ku‘ula images to invoke their power.
luakini	Large heiau of human sacrifice.
Māhele	The 1848 division of land.
makai	Toward the sea.
manini	The surgeonfish <i>Acanthurus triostegus</i> , common in Hawaiian waters.
mauka	Inland, upland, toward the mountain.
mele	Song, chant, or poem.
menehune	Small people of legend who worked at night to build structures such as fishponds, roads, and heiau.
midden	A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.
moku	District, island.
moi	The threadfish <i>Polydactylus sexfilis</i> , a highly prized food item.
mo‘o	Lizard, dragon, water spirit.
mo‘o, mo‘o‘āina	Narrow strip of land, smaller than an ‘ili.
mo‘olelo	A story, myth, history, tradition, legend, or record.

‘ō‘io	Ladyfish, bonefish (<i>Albula vulpes</i>).
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
pōhaku	Rock, stone.
saprolitic rock	Soft, decomposing bedrock.
sugarcane	The Polynesian-introduced <i>Saccharum officinarum</i> , or kō, a large grass traditionally used as a sweetener and for black dye.
‘uala	The sweet potato, or <i>Ipomoea batatas</i> , a Polynesian introduction.
uhu	An adult parrot fish, one of two genera of the <i>Scaridae</i> family known to occur in Hawai‘i.
‘ōpelu	Mackerel scad (<i>Decapterus pinnulatus</i> and <i>D. maruadsi</i>).
wai	Water or liquid other than salt water.

REFERENCES

- Athens, J.S. and C. Magnusen
1998 *Sunset Beach Park Archaeological Inventory Survey, O'ahu, Hawai'i*. International Archaeological Research Institute, Inc., Honolulu.
- Beaglehole, J.C. (ed.)
1967 *The Journals of Captain James Cook, Vol. III, Part One*. Hakluyt Society. Cambridge University Press, Cambridge, United Kingdom.
- Beck, J.A., J.D. McIntosh, and P.L. Cleghorn
2004 *Archaeological Assessment for the Proposed North Shore Center at Pūpūkea (TMK 5-9-11:17) Located in Pūpūkea Ahupua'a, District of Ko'olaupua, Oahu*. Pacific Legacy, Inc., Kailua, Hawai'i.
- Berdy, C., M. Elmore, J.R. Moore, and J. Kennedy
2002 *An Archaeological Inventory Survey Report for a Property Located at TMK: 5-9-23:1 & 5-9-24:1 (Por.) and 6-1-02:22 (Por.) in Pūpūkea and Waimea Ahupua'a, Ko'olaupua and Waiāluā Districts, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Hale'iwa, Hawai'i.
- Carson, M.
2000 *Archaeological Survey at Sunset Beach*. Pacific Legacy, Kailua, Hawai'i.
- Chinen, J.
1961 *The Great Mahele*. University of Hawai'i Press, Honolulu.
- Clark, John
1977 *Beaches of O'ahu*. The University Press of Hawai'i, Honolulu.
2005 *Beaches of O'ahu*. Revised Edition. The University Press of Hawai'i, Honolulu.
- Colin, B.L. and H.H. Hammatt
2000 *A Letter Report on the Disinterment of an Inadvertent Human Burial Find on the Board of Water Supply Sunset Beach Waterline Project on Kenūi Road, Pūpūkea Ahupua'a, Ko'olaupua, O'ahu (TMK 5-9-19:51) (State Site # 50-80-01-5532)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Cordy, D.L., A. Hazlett, and H.H. Hammatt
2008 *Archaeological Monitoring Report for Construction of Parking Lot Improvements at 'Ehukai Beach Park, Pūpūkea Ahupua'a, District of Ko'olaupua, O'ahu TMK: [1]5-9-020:022,023*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Dening, G.
1995 *The Death of William Gooch: A History's Anthropology*. University of Hawai'i Press, Honolulu.
- Denison, D.O.
1979 *Archaeological Reconnaissance of Property Across from Pūpūkea Beach Park*. Windward Community College, Kāne'ohe, Hawai'i.

- Donn, J.M.
1902 *North Coast of Oahu*. Reduced from Reg. Maps in Gov't Survey Office. May 20, 1902.
Reg. No. 2146. Scale 1 in. = 1,000 ft.
- Dunbar, H.
1989 Pu'u o Mahuka National Register Nomination Form. Division of State Parks, DLNR,
Honolulu.
- Elmore, M. and J. Kennedy
1999 *An Archaeological Monitoring Report for the Sunset Beach Support Park Located at
TMK:5-9-15:10 and 11 Paumalu Ahupua'a, Ko'olauloa District, Island of Oahu*.
Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Estioko-Griffin, A.
1986 *A Brief Historical Overview of the Pu'u o Mahuka Heiau Koolauloa, Oahu*. Report on file
at the Hawai'i State Historic Preservation Division, Kapolei, Hawai'i.
- Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*.
U.S. Department of Agriculture, Soil Conservation Service. Published in cooperation with
the University of Hawaii Agricultural Experiment Station, Washington, D.C.
- Fornander, A.
1969 *An Account of the Polynesian Race*. Vol. 2, Tuttle and Co., Rutland, Vermont.
- Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and
D.M. Delparte
2013 Online Rainfall Atlas of Hawai'i. Bull. Amer. Meteor. Soc. 94, 313-316, doi:
10.1175/BAMS-D-11-00228.1.
- Griffin, A.
1991 *Assessment of a Burial Inadvertently found at Ehukai Beach, Pupukea, Waialua, Oahu,
TMKL 5-9-20:22 & 23*. State Historic Preservation Division.
- Handy, E.S., E.G. Handy, and M.K. Pukui
1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised Edition.
Bernice P. Bishop Museum Bulletin 23, Bishop Museum Press, Honolulu.
- Hammatt, H.H.
2014 *Archaeological Monitoring Report for the Sunset Beach Elementary School Electrical
Upgrades Project, Pūpūkea Ahupua'a, Ko'olauloa District, O'ahu TMK: [1] 5-9-005:018*.
Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Haun, A.E. and D. Henry
2001 *Archaeological Inventory Survey Sunset Beach Agricultural Subdivision TMK: 5-9-05:66
Land of Pupukea Ko'olauloa District, Island of Oahu*. Haun & Associates, Kea'au, Hawai'i.
- Jones, C.K. and H.H. Hammatt
2004 *Archaeological Monitoring of Kamehameha Highway, from Pūpūkea to Waiale'e, District
of Ko'olauloa, Island of O'ahu (TMK: 5-8-01, 5-8-03-06, 5-9-01-04, 5-9-07-16)*. Cultural
Surveys Hawai'i, Inc., Kailua, Hawai'i.

- Ka Leo o Ka Lahui*
1893 *Ka Moolelo o Hiiakaikapoliopole*. March 23, 24. Vol. 2, No. 668, page 4.
- Kamakau, S.M.
1992 *Ruling Chiefs of Hawaii, Revised Edition*. The Kamehameha Schools Press, Honolulu.
- Kawachi, C.
1988 *Field Inspection of an Inadvertent Burial on Ke-Iki Road in Pupukea, Ko'olaupua, O'ahu*. TMK 5-9-03:29. State Historic Preservation Division, Honolulu.
- Kawachi, C. and M. Smith
1989 *Field Inspection of an Inadvertent Burial on Ke-Iki Road in Pupukea, Ko'olaupua, O'ahu*. TMK 5-9-03:46. State Historic Preservation Division, Honolulu.
- Kennedy, J.
1991 *Inventory Survey and Subsurface Testing Results for Ehukai Beach Park, TMK: 5-9-20:22&23 Located in the Ahupua'a of Pupukea, Island of Oahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Kennedy, J. and T. Denham
1992 *Archaeological Monitoring Report for 'Ehukai Beach Park Improvements Located at Pupukea Ahupua'a, Ko'olaupua, Island of Oahu. TMK: 5-9-20:22 &23*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Kuykendall, R.S.
1967 *The Hawaiian Kingdom*. U.H. Press, Honolulu.
- Macdonald, G.A., A.T. Abbot, and F.L. Peterson
1983 *Volcanoes in the Sea the Geology of Hawaii*. Second Edition. University of Hawaii Press, Honolulu.
- Mayberry, J.D. and A.E. Haun
1988 *Archaeological Reconnaissance Survey and Limited Subsurface Testing Pupukea-Paumalu Development Project Area*. Paul H. Rosendahl, PhD, Inc., Hilo, Hawai'i.
- McAllister, J.G.
1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104, Honolulu.
- McElroy, W.K. and P.L. Lima
2015 *Burial Site Component of an Archaeological Data Recovery and Preservation Plan for SIHP 50-80-01-7678, Pūpūkea Ahupua'a, Ko'olaupua District, Island of O'ahu, Hawai'i (TMK: (1) 5-9-020:029)*. Keala Pono Archaeological Consulting, Kāne'ohe, Hawai'i.
2016 *Archaeological Monitoring Report for TMK: (1) 5-9-020:029 in Pūpūkea Ahupua'a, Ko'olaupua District, Island of O'ahu, Hawai'i*. Keala Pono Archaeological Consulting, Kāne'ohe, Hawai'i.
- McGerty, L. and R.L. Spear
2011 *An Archaeological Monitoring Report for the Pūpūkea Road Rockfall Mitigation Project, Phase I, Pūpūkea Ahupua'a, Ko'olaupua District, O'ahu Island, Hawai'i TMK (1) 5-9-005 and 011*. Scientific Consultant Services, Inc., Honolulu.

- Moore, J.R. and J. Kennedy
 2006 *An Archaeological Inventory Survey Report for a 14 Acre Parcel Located at TMK: 5-9-23:01 & 5-9-24:01 (Por.) and 6-1-02:22 (Por.) in Pupukea and Waimea Ahupua'a, Ko'olaupoko and Waialua Districts, Island of O'ahu*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Nakuina, M.
 2005 *The Wind Gourd of La'amaomao*. Kalamakū Press, Honolulu.
- Paki, P.
 1972 *Legends of Hawaii: Oahu's Yesterday*. Honolulu.
- Pantaleo, J.
 2000 *Archaeological Assessment for the Sunset Beach Recreation Center (TMK 5-9-07:021)*. Jeffrey Pantaleo Consultants, Honolulu.
- PBR Hawai'i & Associates
 2014 *Camp Pūpūkea Master Draft Environmental Assessment*. Honolulu.
- Pukui, M.K., S.H. Elbert, and E.T. Mookini.
 1976 *Place Names of Hawaii*. University Press of Hawaii, Honolulu.
- Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson (editors)
 2002 *Field Book for Describing and Sampling Soils, Version 2.0*. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.
- Smith, M. and M. Yent
 1991 *Archaeological Investigations at Puu O Mahuka Heiau State Monument (Site 50-80-01-249) and Nearby Sites (50-80-01-2502 and 50-80-001-3951) Pupukea, Koolauloa, Oahu (TMK: 5-9-05:4, 21 and 68)*. Division of State Parks DLNR, Honolulu.
- Soehren, L.J.
 2010 *A Catalog of Hawaiian Place Names*. Lloyd J. Soehren, Honoka'a, Hawai'i.
- Sterling, E. and C. Summers
 1978 *Sites of O'ahu*. Bishop Museum Press, Honolulu
- Thien, S.
 1979 A Flow Diagram for Teaching Texture-By-Feel Analysis. *Journal of Agronomic Education* 8:54-55.
- Tulchin, T. and H.H. Hammatt
 2005 *Archaeological Field Inspection and Literature Review for a Proposed Potential Rockfall Mitigation Project along Pūpūkea Road, Pūpūkea Ahupua'a, Ko'olaupoko District, Island of O'ahu TMK (1) 5-9-11 por. and 5-9-18 por.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2009 *Archaeological Inventory Survey for the Pūpūkea Road Rockfall Mitigation Project, Pūpūkea Ahupua'a, Ko'olaupoko District, O'ahu Island TMK: [1]5-9-018:025-032 por. and 038 por.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Tulchin, T., M. Mann, D.W. Shideler, and H.H. Hammatt
2002 *Archaeological Monitoring Report for 'Ehukai Beach Park Bath House Improvements Work, Pūpūkea Ahupua'a, District of Ko'olauloa Island of O'ahu TMK: 5-9-20-22 & 23.*
Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Wall, W.E.
1904 *Pupukea-Paumalu Homesteads, Koolauloa, Oahu.* Hawaii Territory Survey. HTS Plat 2036. Scale 1 in. = 1,000 ft.

APPENDIX F

TRANSPORTATION IMPACT ANALYSIS REPORT



Pupukea Rural Community Commercial Center

Draft Transportation Impact Analysis Report



Prepared for: G70
July 25, 2017
SD16-0227

DRAFT REPORT

**Transportation Impact Analysis Report
for the Proposed
Pupukea Rural Community Commercial
Center in
Pupukea, HI**

Prepared for:
G70

July 25, 2017

SD16-0227

FEHR  PEERS

Table of Contents

1.0	EXECUTIVE SUMMARY	4
2.0	INTRODUCTION	6
2.1	Project Description	6
2.2	Project Study Area	9
2.3	Study Scenarios.....	9
2.4	Traffic Analysis Methods	10
2.4.1	Signalized Intersections	10
2.4.2	Unsignalized Intersections.....	10
2.4.3	Significant Impact Criteria.....	12
2.5	Report Organization	13
3.0	EXISTING CONDITIONS.....	14
3.1	Existing Transportation Facilities.....	14
3.1.1	Existing Roadway System.....	14
3.1.2	Existing Transit Facilities and Services.....	14
3.1.3	Existing Bicycle Facilities and Activity.....	17
3.1.4	Existing Pedestrian Facilities and Activity	18
3.2	Existing Intersection Volumes/Lane Configurations	19
3.3	Field Observations	21
3.4	Existing Intersection Levels of Service	22
3.5	Existing Foodland Truck Deliveries	23
4.0	NEAR TERM (2021) BASELINE CONDITIONS	24
4.1	Near Term (2021) Traffic Estimates.....	24
4.1.1	Areawide or Ambient Traffic Growth.....	24
4.1.2	Future Transportation Improvements	24
4.2	Near Term (2021) Baseline Levels of Service.....	26
5.0	PROJECT TRAFFIC ESTIMATES.....	27
5.1	Project Trip Generation Estimates.....	27
5.2	Project Trip Distribution and Assignment.....	28



6.0 NEAR TERM (2021) PLUS PROJECT CONDITIONS..... 34

6.1 Proposed Transportation Improvements 34

6.2 Near Term (2021) Plus Project Intersection Level of Service 35

6.3 Potential Traffic Impacts..... 37

7.0 SITE ACCESS AND ON-SITE CIRCULATION 38

7.1 Site Access 38

7.2 On-Site Vehicle Circulation 39

7.3 On-Site pedestrian and bicycle Circulation 39

7.4 Foodland Deliveries Circulation..... 39

8.0 MULTIMODAL ASSESSMENT 41

8.1 Transit facilities and Services..... 41

8.2 Bicycle facilities 41

8.3 Pedestrian facilities..... 42

Appendices

- Appendix A: Traffic Count Data
- Appendix B: Existing LOS Worksheets
- Appendix C: Near Term LOS Worksheets
- Appendix D: Pedestrian Crosswalk Warrant



List of Figures

Figure 1	Project Location	7
Figure 2	Proposed Site Plan.....	8
Figure 3	Transit Facilities.....	16
Figure 4	Peak Hour Traffic Volumes and Lane Configurations – Existing (2016) Conditions	20
Figure 5	Peak Hour Traffic Volumes and Lane Configurations – Near Term (2021) Baseline Conditions	25
Figure 6	Project Trip Distribution.....	30
Figure 7	Midday Project Trip Assignment.....	31
Figure 8	PM Project Trip Assignment.....	32
Figure 9	Saturday Project Trip Assignment	33
Figure 10	Peak Hour Traffic Volumes and Lane Configurations – Near Term (2021) Plus Project Conditions	36
Figure 11	Peak Hour Traffic Volumes and Lane Configurations – Near Term (2021) Plus Project Conditions	44

List of Tables

Table 1:	Signalized Intersection LOS Definitions	11
Table 2:	Unsignalized Intersection Level of Service Definitions.....	11
Table 3:	Existing Transit Services.....	15
Table 4:	Existing (2016) Intersection Levels of Service.....	22
Table 5:	Near Term (2021) Baseline Intersection Levels of Service.....	26
Table 6:	Project Trip Generation Estimates	28
Table 7:	Near Term (2021) Baseline Intersection Levels of Service.....	35

1.0 EXECUTIVE SUMMARY

This report presents the results of the transportation impact analysis report (TIAR) for the proposed Pupukea Rural Community Commercial Center in the community of Pupukea on the North Shore of the island of Oahu. The proposed project is a 30,000 square-foot center located on the mauka side of Kamehameha Highway between the existing Foodland store and Pahoe Road. Access to the proposed project would be provided by a new full-access driveway on Kamehameha Highway approximately 210 feet north of Pupukea Road. To minimize the impact of project traffic on highway throughput, the project also includes the installation of a new center two-way left-turn lane to provide a refuge area for traffic turning left into and out of the site. In addition, the two existing Foodland driveways will be closed to reduce the total number of access points on the highway, and internal connections will be made between the project site and Foodland parcels to allow Foodland traffic to use the new project driveway on the highway.

The impacts of the proposed project to the surrounding transportation system were evaluated following guidelines established by the State of Hawaii Department of Transportation – Highways Division (HDOT) and the City & County of Honolulu Department of Planning & Permitting (DPP) Traffic Review Branch (TRB). The operations of two intersections were evaluated during the weekday midday (MD), weekday evening (PM), and Saturday midday (SAT) peak hours for Existing (2017) and Year 2021 conditions without and with the project.

Project-generated trips were estimated using vehicle trip rates published by the Institute of Transportation Engineers (ITE) for specialty retail centers. The proposed project is estimated to generate a total of 1,322 net new daily vehicle trips, 65 net new peak hour trips (29 inbound/36 outbound) during each of the midday and PM peak hours, and 98 Saturday midday peak hour trips (51 inbound/47 outbound). These are the new trips that are estimated to be added to the highway and Pupukea Road with development of the project site as proposed. The *total* number of project trips turning into and out of the site driveways is 1,322 daily trips, 93 midday/PM peak hour trips, and 140 Saturday midday peak hour trips, after including pass-by trips (i.e., those trips into and out of the site made by vehicles that are already on the highway).

The addition of project trips is not expected to significantly impact the signalized Kamehameha Highway/Pupukea Road intersection, and the proposed new driveway intersection is projected to operate acceptably with the project in place. The provision of the two-way left-turn lane provides additional capacity to minimize the potential increase in delay with the project.

The proposed project is also not expected to substantially increase the walking, biking, or transit demand to a level where it could not be accommodated by existing or planned facilities. However, several multimodal improvements are recommended to enhance facilities and safety for these modes.

Implementation of the project will require relocation of the existing northbound bus stop to either north or south of the new project driveway. To provide a controlled crossing of the highway by bus transit patrons, the location between the new driveway and Pupukea Road is recommended because of the proximity of the existing traffic signal. A new path is recommended for the entire length of the mauka side of the highway along the project site and Foodland frontages, as is installation of new crosswalk across the highway at Pahoe Road with rectangular rapid flashing beacons (RRFBs) to increase driver awareness of pedestrians. In addition, high visibility crosswalks are recommended at select locations within the site to guide pedestrians and increase their presence to drivers.

2.0 INTRODUCTION

This transportation impact analysis report (TIAR) presents the results of the study conducted by Fehr & Peers for the proposed Pupukea Rural Community Commercial Center on the island Oahu. The project site is located on the mauka side of Kamehameha Highway (Hwy 83) south of Pahoe Road on the North Shore of Oahu. This TIAR includes a description of the assumptions and methods used to conduct the study, as well as a discussion of the results. This TIAR was conducted in accordance with the guidelines and standards of the affected government agencies, and it addresses the potential impact of the project on all travel modes.

2.1 PROJECT DESCRIPTION

The proposed project is the development of a commercial center on Kamehameha Highway. The existing site currently includes a real estate office, several food trucks, a clothing boutique, and several food trucks, and is bordered by Pahoe Road on the north side, Foodland on the south side, Kamehameha Highway on the makai side, and a single-family residential unit on the mauka side. The proposed project would remove the existing uses and develop a neighborhood retail center with up to 30,000 square feet of gross leasable area. The specific tenants have not been identified but may include a surf shop clothing store, four to six food trucks, office space for non-profit organizations, a full service restaurant, an urgent care facility, and other small food and retail shops.

Access to the proposed project would be provided by a new full-access driveway on Kamehameha Highway approximately 210 feet north of Pupukea Road. To minimize the impact of project traffic on highway throughput, the project also includes the installation of a new center two-way left-turn lane to provide a refuge area for traffic turning left into and out of the site. In addition, the two existing Foodland driveways will be closed to reduce the total number of access points on the highway, and internal connections will be made between the project site and Foodland parcels to allow Foodland traffic to use the new project driveway on the highway.

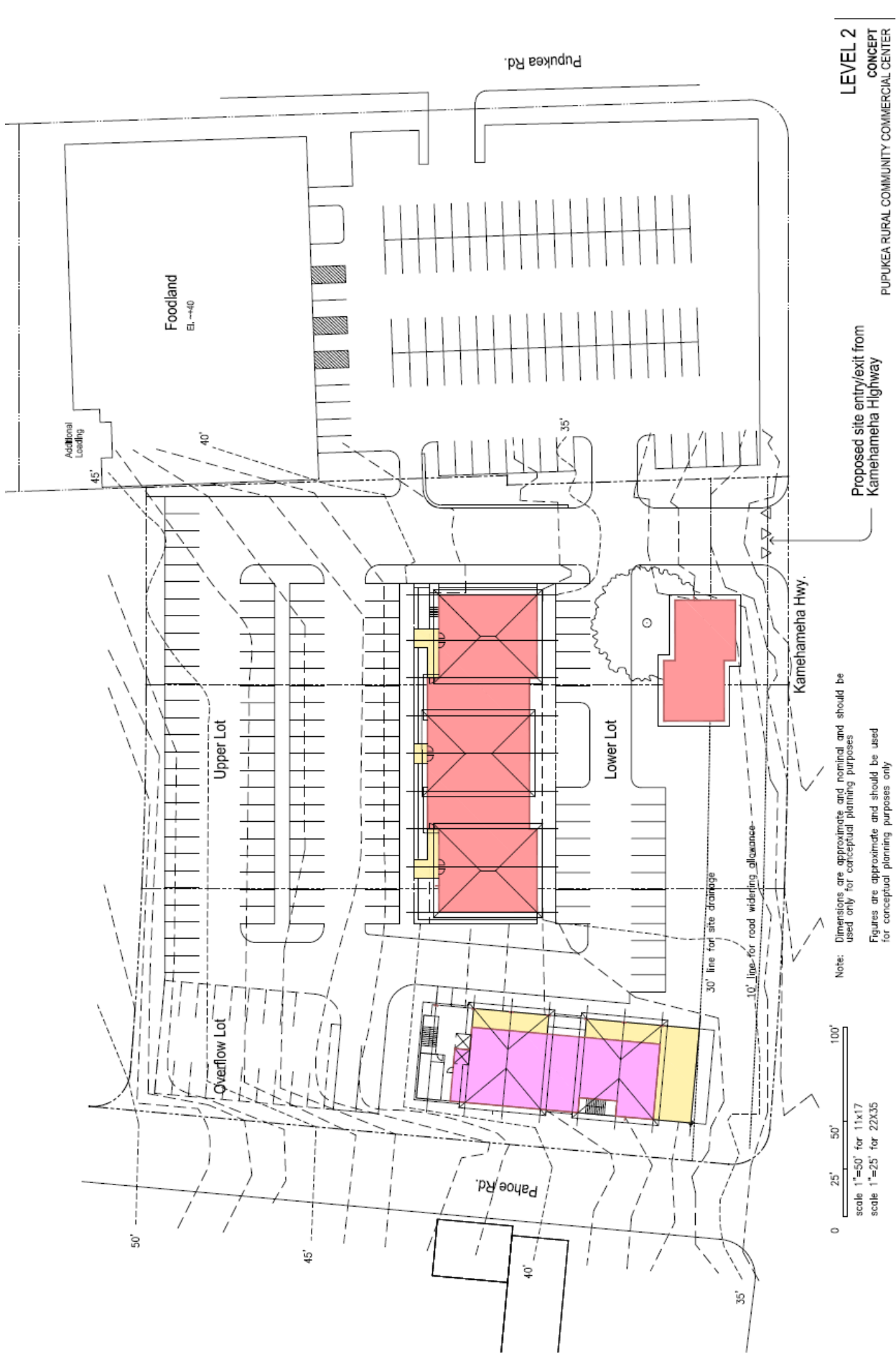
The location of the project site and immediate study area is shown on **Figure 1**, and the proposed site plan showing the building locations and site layout is illustrated on **Figure 2**.



N:\Projects\2016_Projects\10227_Pupukea Commercial Center\GIS\MXD\Fig1_ProjectLocation.mxd



Figure 1
Project Site and Analyzed Intersections



Source: G70, May 31, 2017



Figure 2

Site Plan

2.2 PROJECT STUDY AREA

Regional access to the proposed project will be provided via Kamehameha Highway, and local access will be provided via Pupukea Road (and the existing Foodland Driveway). The transportation analysis evaluated the operations at the two intersections in the vicinity of the proposed project that are listed below and shown on **Figure 1**.

1. Kamehameha Highway / Pupukea Road
2. Kamehameha Highway / Future Project Driveway (only analyzed in Plus Project scenario)

The study analyzed the potential project-related traffic impacts under typical: weekday midday, weekday PM, and Saturday midday peak hour traffic conditions at full build-out in 2021. The peak hour is the highest one-hour total of traffic between 11:00 am and 2:00pm in the midday on a weekday and on a Saturday, and between 3:00 pm and 6:00pm in the late afternoon/evening on a weekday. Similar to most retail centers, a study of AM peak period conditions (i.e. 6 AM to 9 AM) was not conducted because the number of project-generated vehicle trips was expected to be negligible given the potential uses on site.

2.3 STUDY SCENARIOS

The operations of the study intersections were evaluated during the weekday midday and PM peak hours, and midday Saturday peak hour for the following scenarios:

- **Existing Conditions** – The analysis of existing traffic conditions was based on 2016 counts collected for the analyzed peak hours. The existing conditions analysis also includes a description of key area roadways and an assessment of the transit facilities and services near the site.
- **Near Term (2021) Baseline Conditions** – Existing peak-hour volumes increased to account for approved (but not yet occupied) development projects and growth in the area to the year of anticipated project occupancy in 2021. Traffic growth was estimated based on an annual growth factor to account for ambient growth *plus* traffic generated from approved but not yet constructed and pending developments in the study area. This scenario forms the baseline for identifying project impacts.
- **Near Term (2021) Plus Project Conditions** – This traffic scenario provides projected traffic volumes and an assessment of operating conditions under Near Term Baseline Conditions with the addition of project-generated traffic. The near term impacts of the proposed project on future traffic conditions were identified.

2.4 TRAFFIC ANALYSIS METHODS

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual* (HCM), published by the Transportation Research Board in 2010. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents “at-capacity” operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. The methodologies for signalized and unsignalized intersections are described below.

2.4.1 SIGNALIZED INTERSECTIONS

The method described in Chapter 18 of the *Highway Capacity Manual 2010* was used to prepare the LOS calculations for the signalized study intersection of Kamehameha Highway and Pupukea Road. This LOS method analyzes a signalized intersection’s operation based on average control delay per vehicle. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using Synchro 9.0 analysis software and is correlated to a LOS designation as shown in **Table 1**.

2.4.2 UNSIGNALIZED INTERSECTIONS

The operations of the unsignalized intersection of Kamehameha Highway at Pahoe Road were evaluated using the method contained in Chapter 19: Two-Way Stop-Controlled Intersections of the *HCM 2010*. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At all-way stop-controlled intersections the overall intersection delay and LOS is reported, and the LOS is characterized solely on control delay. At two-way or side-street-controlled (TWSC) intersections, the average control delay is calculated for each minor-street stopped movement and the major-street left turns, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For approaches with multiple lanes, the control delay is computed for each movement; the movement with the worst (i.e., longest) delay is presented for TWSC. The average control delay for unsignalized intersections is calculated using Synchro 9.0 analysis software and is correlated to a LOS designation as shown in **Table 2**.

TABLE 1: SIGNALIZED INTERSECTION LOS DEFINITIONS

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

TABLE 2: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delay.	> 10.0 to 15.0
C	Average traffic delays.	> 15.0 to 25.0
D	Long traffic delays.	> 25.0 to 35.0
E	Very long traffic delays.	> 35.0 to 50.0
F	Extreme traffic delays with capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

Notes: ¹ For approach-based and intersection-wide assessments, such as that used for AWSC intersections, LOS is defined solely by control delay.

2.4.3 SIGNIFICANT IMPACT CRITERIA

The analysis of Near Term Conditions compares future baseline operations with conditions when the project is fully built out to determine whether or not project implementation is expected to result in a significant impact on the surrounding roadways. Based on previous studies conducted for the City & County of Honolulu Department of Planning and Permitting (DPP) Traffic Review Branch (TRB), the minimum desired operating standard for a signalized intersection is typically LOS D. Additionally, the Hawaii Department of Transportation (HDOT) strives to maintain LOS D intersection operations for State facilities, such as Kamehameha Highway. Both agencies usually define a significant intersection impact when the operation of an intersection or turning movement changes from LOS D or better to LOS E or F. Impacts are also defined to occur when the addition of project traffic exacerbates locations already operating or projected to operate at LOS E or F. When evaluating intersection operations at any location, other factors are considered in the analysis, such as traffic volumes, volume-to-capacity (V/C) ratios (should ideally be less than 1.00), and potential secondary impacts to pedestrian, bicycle, and transit travel.

Each of the identified significant impacts is categorized as either a project-related or cumulative impact. If the addition of project traffic is expected to degrade LOS D or better operations to LOS E or F at a signalized intersection, then the project is considered to have a project-specific impact. An impact is considered a cumulative impact at a signalized intersection if the addition of project trips exacerbates LOS E or F operations.

For unsignalized intersections, the project is determined to have a significant project-specific impact if the addition of project traffic causes an unsignalized intersection to degrade from LOS D or better to LOS E or F and if the peak hour signal warrant is satisfied. An impact is considered a cumulative impact when it adds traffic to a study location that includes a controlled approach that operates at an undesired level (i.e., LOS E or F) and if the peak hour signal warrant is satisfied. The use of the peak hour signal warrant is one indication that an alternate traffic control device may be needed at a study location.

The City & County of Honolulu does not publish impact criteria for pedestrian, bicycle, and transit impacts. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. The existing amenities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of facilities/services currently in place. The assessments of planned facilities were conducted using information in planning documents, such as the *Oahu Bike Plan (2012)* and the *North Shore Sustainable Communities Plan (2011)*. For these modes, if the proposed project is expected to conflict with existing or planned improvements to pedestrian and bicycle facilities, or if the project is expected to

generate a substantial demand which could warrant additional transit service, then the project would be determined to have a project-specific impact.

2.5 REPORT ORGANIZATION

This report is divided into eight chapters. The existing transportation system serving the project site and the current operating conditions of the key intersections are described in **Chapter 3** Existing Conditions. **Chapter 4** summarizes the methodologies used to forecast future cumulative project traffic volumes and the resultant forecasts, and presents the analysis for Near Term (2021) Baseline Conditions without the project. **Chapter 5** describes the project trip generation, distribution, and assignment used in the impact analysis. **Chapter 6** presents the analysis of the Near Term (2021) Plus Project Conditions, assesses any traffic impacts at study intersections, and identifies mitigation measures to address any project traffic impacts. **Chapter 7** assesses the project's site access, and **Chapter 8** includes an assessment of the potential future effect of the project on existing and future transit, bicycle, and pedestrian facilities.

3.0 EXISTING CONDITIONS

This chapter describes the existing roadway network and includes a discussion of the bicycle, pedestrian, and transit facilities located in the project study area. This chapter also includes a discussion of the existing intersection LOS results.

3.1 EXISTING TRANSPORTATION FACILITIES

A comprehensive data collection effort was undertaken to identify existing transportation conditions in the vicinity of the proposed project. The assessment of existing conditions relevant to this study includes an inventory of the street system, traffic volumes on these facilities, and operating conditions at key intersections. Existing public transit service and bicycle and pedestrian facilities are also described.

3.1.1 EXISTING ROADWAY SYSTEM

The key roadways providing access to or in the vicinity of the site are described below. **Figure 1** illustrates the proposed project location and the surrounding roadway system.

Kamehameha Highway (Highway 83) is operated and maintained by Hawaii Department of Transportation (HDOT) and is a two-lane highway makai of the project site. Kamehameha Highway extends across Oahu beginning at the Nimitz Highway junction near Daniel K. Inouye International Airport, circles the island, and ultimately terminates at Pali/Kalanianaʻole Highway intersection in Kaneohe. The posted speed limit is 35 miles per hour (mph) within the study area.

Pupukea Road is a two-lane, nearly three-mile long, mauka-makai roadway providing access to numerous homes and effectively operating as a long cul-de-sac street. Pupukea Road provides access between Kamehameha Highway and the mauka residential neighborhoods, as well as direct access to the existing Foodland grocery store via an existing driveway. The posted speed limit on this street is 25 mph, and the intersection at Kamehameha Highway is controlled by a traffic signal with separate turn lanes.

3.1.2 EXISTING TRANSIT FACILITIES AND SERVICES

TheBus is the main public transportation service on the Island of Oahu, where it served over 69 million riders in the fiscal year of 2015-2016. A fleet of 542 buses transports over 216,000 riders a week via fixed-route, express, and paratransit service. Route 55 and Route 88A are the two regular service bus routes which pass by the project site along Kamehameha Highway. In the westbound direction, Route 55 starts in Ala Moana,

east of Downtown Honolulu, and travels through Kaneohe, and along Kamehameha Highway where it passes immediately adjacent to the project site and continues south to Haleiwa. Complementary eastbound service is also provided in the reverse direction. Route 88A (North Shore Express) traverses the perimeter of the Island starting in Aiea and travels northwest through the project site, and around the northern and eastern perimeter of Oahu where it terminates in downtown Honolulu. The existing transit schedules are summarized in **Table 3**.

TABLE 3: EXISTING TRANSIT SERVICES

Route	From	To	Weekdays			Weekends	
			Operating Hours ¹	Headway (Minutes) ²		Operating Hours ¹	Headway (Minutes) ²
				Peak	Midday		
55	Ala Moana (Honolulu)	Haleiwa	4:00 AM to 12:30 AM	30	30	4:30 AM to 12:20 AM	45 to 60
88A	Aiea or Wahiawa	Ala Moana Center or Downtown	3:51 AM to 6:47AM and 4:25 PM to 8:15 PM	40	-	No weekend service	

The two bus stops adjacent to the project site are located as follows: the northbound stop is located immediately north of the outbound Foodland driveway, and the southbound stop is located directly across the highway. The southbound stop includes a turnout lane, which allows southbound vehicles to pass the bus while it is stopped to load or unload passengers. Northbound vehicles must stop behind a bus while vehicles on the highway because it does encroach into the travel lane while stopped for passenger loading/unloading. **Figure 3** depicts the existing transit routes and bus stops near the project site.

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Figure 3
Existing Transit Facilities

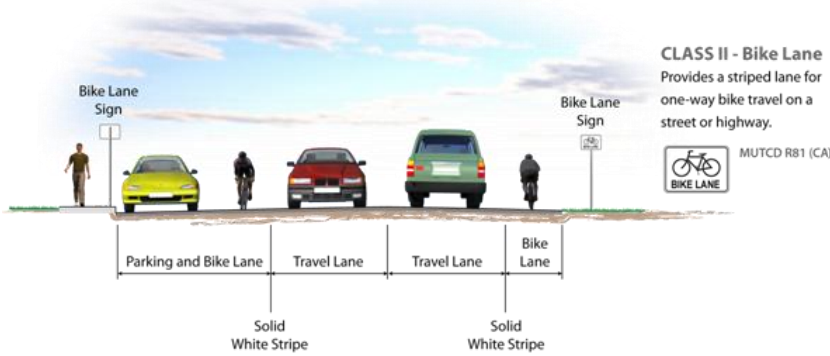
3.1.3 EXISTING BICYCLE FACILITIES AND ACTIVITY

Bicycle facilities generally consist of three types, which are outlined below:

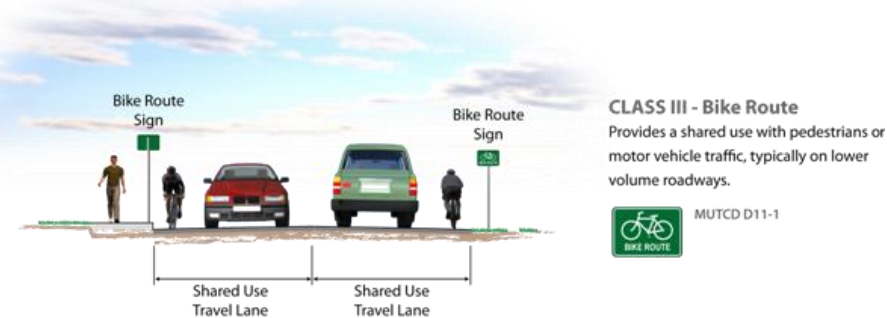
- *Bike or Shared Use Paths* provide a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. Generally, the recommended pavement width for a two-directional shared use path is ten (10) feet.



- *Bike Lanes* provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Bike Route or Signed Shared Roadways* provide for a right-of-way designated by signs or shared lane pavement markings, or "sharrows," for shared use with pedestrians or motor vehicles.



No separate bicycle paths or lanes are provided within the immediate vicinity of the project site. However, southbound bicyclists can use the parking lane located on the mauka side of the highway located north of the Sunset Beach Fire Station. This lane serves as a defacto extension of the Ke Ala Pupukea Bike Path that ends just north of Puula Road, and it allows cyclists to travel separately from vehicles on the highway. Northbound cyclists along this section of highway technically have to share the roadway, although some northbound cyclists were observed traveling the opposite direction of traffic in the parking lane during the field review. In addition, cyclists can use the parking lot and path through Pupukea Beach Park south of Pupukea Road to travel parallel to the highway until the path terminates at the south end of Three Tables Beach south of Kapuhi Street.

Based on peak period counts conducted during at the same time as traffic counts, the number of cyclists at the Pupukea Road/Kamehameha Highway intersection ranged from two to 14 during the weekday midday and PM peak hours, respectively, while the Saturday midday count was 12 cyclists.

3.1.4 EXISTING PEDESTRIAN FACILITIES AND ACTIVITY

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. No existing pedestrian sidewalks are provided on Kamehameha Highway, in the immediate vicinity of the project site. Crosswalks are provided across three of the four legs of the signalized intersection of Kamehameha Highway and Pupukea Road, with no crosswalk provided across the south leg of the highway. The intent of this is presumably to minimize conflicts between pedestrians and westbound vehicles turning left from Pupukea Road onto southbound Kamehameha Highway. However, the lack of a fourth crosswalk will inadvertently encourage pedestrians, who would normally be on the southwest and southeast corners of the intersection, to cross the highway at other locations to get to and from the beach park instead of traversing the three other signalized crossings.

Pedestrian counts during the peak periods showed that the highest volumes occurred during the Saturday midday peak hour with 48 people crossing at the Pupukea Road/Kamehameha Highway intersection. Counts were lower on the weekday with nine (9) and 12 pedestrians crossing at this location during the weekday midday and PM peak hours, respectively. The existing pedestrian LOS for pedestrians crossing Kamehameha Highway is LOS F during the midday and PM peak hours.

Though parking is currently provided on site, some travelers to the site park on the highway despite the “No Parking” signs, and cross between the Pahoe Road and Pupukea Road intersections to visit the existing uses. While pedestrians only have to cross two travel lanes and vehicle speeds are moderate along this section, this pattern is not desirable from a safety perspective. While formal counts were not conducted at



the Pahoe Road intersection or along the segment south of this street, the number of pedestrians crossing the highway during the Saturday peak hour was estimated to be in excess of 60.

3.2 EXISTING INTERSECTION VOLUMES/LANE CONFIGURATIONS

The operations of the two existing study intersections were evaluated during weekday peak periods (11:00 AM – 2:00 PM and 3:00 PM – 6:00 PM) and Saturday peak period (11:00 AM – 2:00 PM) conditions. Traffic counts were collected during the weekday midday and PM peak periods at the study intersections in November 2016 during the Haleiwa Surf Competition and when local schools were in session. The weekday midday peak hour of traffic for the study area generally occurred between the hours of 1:00 PM to 2:00 PM. During the weekday evening, the PM peak hour of traffic generally occurred between the hours of 4:00 PM to 5:00 PM. The Saturday peak period generally occurred between 12:00 PM to 1:00 PM.

Existing lane configurations and signal controls were obtained through field observations. **Figure 4** presents the existing Midday, PM peak-hour, and Saturday turning movement volumes, corresponding lane configurations, and traffic control devices. Raw traffic count data sheets are provided in **Appendix A**.



-  Study Intersection
-  Project Site

Legend
 1 (1) [1] = MID (PM) [SAT]

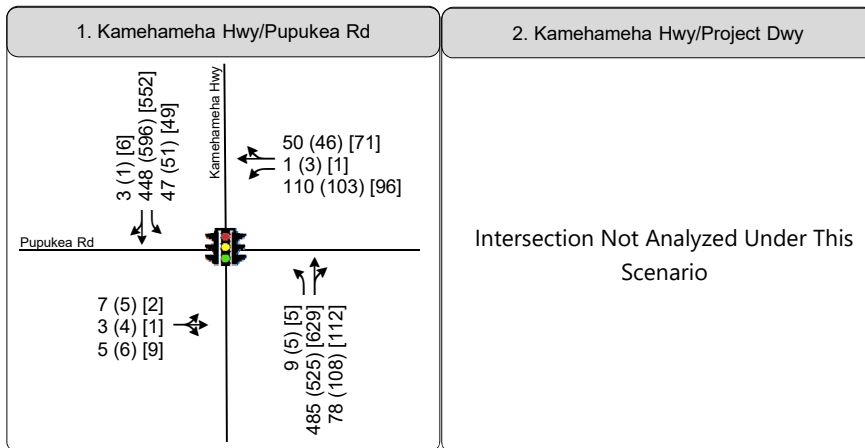


Figure 4
 Peak Hour Traffic Volumes & Lane Configurations
 Existing Conditions

3.3 FIELD OBSERVATIONS

Field observations were conducted to identify existing traffic operational deficiencies and to confirm the accuracy of calculated LOS. The purpose of this effort was to (1) to identify any existing traffic problems that may not be directly related to intersection level of service and (2) to identify any locations where the LOS calculation does not accurately reflect level of service in the field. Field observations were conducted on a Friday and Saturday in mid-November 2016, as well as on a week midday in August 2016. During the time of the November observations, the Haleiwa Surf Competition occurred, so those observations reflect the higher traffic volumes that can occur on select days during winter months with surf competitions and larger surf.

Vehicle queues, pedestrian activity, and parking on Kamehameha Highway were observed from south of Pupukea Road to north of Pahoe Road, as well as on Pupukea Road from Kamehameha Highway to the Foodland driveway. During all peak hours, slow moving northbound queues were observed on Kamehameha Highway south of Pupukea Road. This queue extended approximately 900 feet south of Pupukea Road; however, the queue would still be served within one signal cycle at Pupukea Road, and the actual vehicle delay experienced by drivers stopping was not excessive.

Pedestrian activity was observed on Kamehameha Highway where pedestrians would cross the highway at several locations including at Pahoe Road to travel between the beach and shoulder parking areas and existing uses on the site. This pedestrian activity, combined with vehicles parallel parking on the makai side of the highway, periodically resulted in some temporary slowing of vehicle travel along the project's frontage. It is important to note that during the highest-peak times of the peak hour (i.e. surf competitions high surf), vehicle queues on Kamehameha Highway in Pupukea have been observed to extend past the roadway curve on Kamehameha Highway (near Saints Peter and Paul Mission) and vehicle's experience an increase in delay by a couple of minutes along the highway. This occurred a few times within the peak hours; however, during the majority of the peak hour, traffic flowed freely on Kamehameha Highway and minimal vehicle delay was experienced along the corridor.

The traffic on Pupukea Road was generally free-flowing during all peak hours. Minor makai-bound vehicle queues (i.e., fewer than five cars) were observed at the signalized Kamehameha Highway, but these queues were served within one signal cycle.

3.4 EXISTING INTERSECTION LEVELS OF SERVICE

Peak hour intersection capacity analysis was performed for the study intersections using the methodology described above and the recently collected traffic count data. **Table 4** below shows the results of the intersection operations analysis for Existing Conditions, and the detailed LOS Worksheet can be found in **Appendix B**.

TABLE 4: EXISTING (2016) INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay (sec/veh) ¹	LOS ¹
1. Kamehameha Hwy/Pupukea Rd	Signal	MID	7.3	A ²
		PM	6.9	A ²
		SAT	8.4	A ²

Source: Fehr & Peers, 2017

Notes:

¹ Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled intersections.

² During select peak times during the year, drivers do experience temporary delays approaching and traveling through this intersection. However, the overall operations during typical conditions meet or exceed the State of Hawaii DOT and City & County of Honolulu’s minimum desirable operating level of LOS D.

Table 4 shows the Kamehameha Highway/Pupukea Road intersection currently operates at the minimum desirable operating level of LOS D during the Midday, PM, and Saturday peak hours. As noted under field observations, drivers do experience temporary delays at this intersection during some periods of the peak summer and surf seasons. However, the typical operations at this location during the study time periods include limited delays and meet or exceed the desirable operating level of LOS D.

3.5 EXISTING FOODLAND TRUCK DELIVERIES

Foodland truck deliverers are provided access to the mauka side of the building from a driveway off Pupukea Road. There are approximately 40 to 60 daily deliveries occurring six (6) days of the week (i.e. Monday thru Saturday). The trucks include large vendor trucks and small two-axle trucks. The busiest delivery days are Monday, Wednesday, and Friday, with the peak delivery period occurring between 10 AM to 12 PM. Due to the length of some of the delivery trucks, it requires multiple maneuvers to reverse in or out of the driveway, which results in intermittent delays for Pupukea residents from the truck blocking traffic in both directions on Pupukea Road.

4.0 NEAR TERM (2021) BASELINE CONDITIONS

To evaluate the potential impacts of traffic generated by the proposed project on the surrounding street system, it was necessary to first develop estimates of future traffic conditions in the area without the project. Future traffic conditions without the project reflect traffic increases due to regional growth and development, as well as traffic increases generated by other specific developments near the project site. This scenarios referred to as baseline or “no project” conditions. The forecasted future traffic volumes were then used as a baseline to identify impacts on the roadway system from the project. Development of this future traffic scenario is described in this chapter.

4.1 NEAR TERM (2021) TRAFFIC ESTIMATES

The following section summarizes the growth assumptions used to estimate the amount of traffic that would be adding to existing intersection volumes to develop volume estimates for Near Term (2021) Conditions.

4.1.1 AREAWIDE OR AMBIENT TRAFFIC GROWTH



A growth factor was individually applied to the traffic of each intersections approach to account for future regional growth. Initially, historic HDOT traffic counts of the roadway system in the study area from 2013, 2014, 2015, and 2016 were compared to identify the amount of growth for this area in the near term. However, the review of these volumes did not reveal a clear trend in the roadway system’s growth as some of the annual fluctuations in volumes were negative from one year to the next , positive during subsequent years, then negative again up to the latest year, 2016. Accordingly, a one percent (1%) annual growth factor was applied to the existing intersection traffic volumes collected in mid-November 2016 to assume some level of regional growth and to provide a more conservative analysis. This growth rate is considered and reasonable given the built out nature of the Pupukea neighborhood and the limited planned development in the greater North Shore area. This growth rate was compounded over the five-year timeframe (2016 to 2021) when full development of the proposed project is anticipated.

4.1.2 FUTURE TRANSPORTATION IMPROVEMENTS

No transportation infrastructure improvements are planned in the immediate study area. Therefore, the intersection lane configurations and traffic control devices are expected to remain the same as under Existing Conditions.

Figure 5 shows the peak hour traffic volumes for the Near Term (2021) Baseline Conditions.



-  Study Intersection
-  Project Site

Legend
 1 (1) [1] = MID (PM) [SAT]

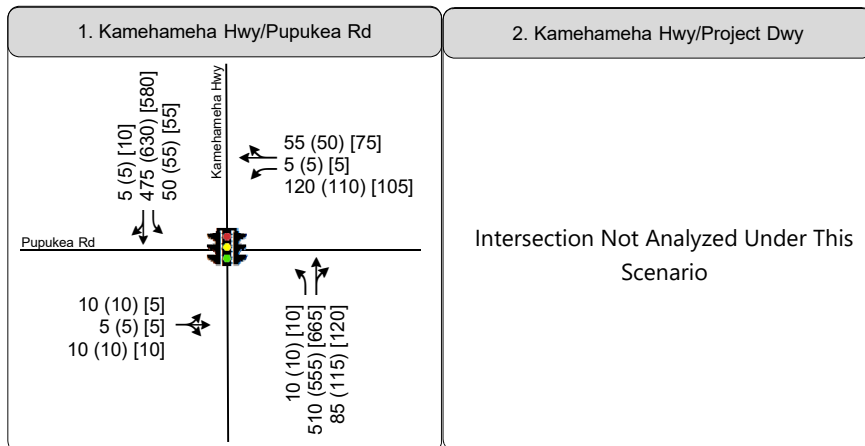


Figure 5
 Peak Hour Traffic Volumes & Lane Configurations
 Near Term (Year 2021) Baseline



4.2 NEAR TERM (2021) BASELINE LEVELS OF SERVICE

Levels of service calculations were conducted to evaluate the operating levels of the study intersections under Near Term (2021) Baseline Conditions based on the anticipated growth in traffic. The results of the LOS analysis are presented in **Table 5**. The corresponding LOS calculation sheets are included in **Appendix C**.

TABLE 5: NEAR TERM (2021) BASELINE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control ¹	Peak Hour	Delay (sec/veh) ¹	LOS ²
1. Kamehameha Hwy/Pupukea Rd	Signal	MID	8.1	A
		PM	7.6	A
		SAT	9.2	A

Source: Fehr & Peers, 2017

Notes:

¹ Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled intersections.

The analysis results indicate that the Kamehameha Highway/Pupukea Road intersection is forecasted to operate at desirable levels (i.e. LOS D or better) under Near Term (2021) Baseline Conditions. The changes in operations from Existing Conditions are the result of the addition of ambient traffic growth.

5.0 PROJECT TRAFFIC ESTIMATES

This section describes the anticipated number of vehicle trips and directionality of those trips that would result from implementation of the proposed project. Future traffic added to the roadway system by the project is estimated using a three-step process: (1) project trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic that would be added to the roadway network. The second step estimates the direction of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. This process is described in more details in the following sections.

5.1 PROJECT TRIP GENERATION ESTIMATES

Vehicle trip rates presented in *Trip Generation 9th Edition* (Institute of Transportation Engineers, 2012) were used to estimate the number of trips to and from the proposed project site. “Specialty Retail Center” rates were used to develop the project’s trip generation. This land use type was determined to be applicable to the type of tenants and character of the proposed project. Since specialty retail does not provide rates for weekday midday or Saturday rates, the weekday PM peak hour rates were used for the weekday midday time period, and the Saturday rates were developed by applying the “Shopping Center’s” PM to Saturday peak hour ratio to the Specialty Retail Center PM peak hour rate.

A pass-by reduction of 30 percent was also applied to the gross vehicle trip estimate. Pass-by trips will be made by those vehicles already passing by the site on Kamehameha Highway, where those vehicles will simply turn into and out of the site during the course of a trip that is already being made. In this case, these trips are not new trips generated by the site or new to the roadway network, but still comprise a portion of site-generated traffic at the project driveway. To provide a conservative estimate of project-generated traffic, the trips generated by the existing uses (i.e. food trucks, real estate office, and clothing store) were not credited or removed from the project trip estimate. The final trip generation estimate for the proposed project are shown in **Table 6**.

As shown in **Table 6**, the project is estimated to generate a total of 926 net new daily vehicle trips, 65 net new peak hour trips (29 inbound/36 outbound) during each of the midday and PM peak hours, and 98 Saturday midday peak hour trips (51 inbound/47 outbound). These are the new trips that are estimated to be added to the highway and Pupukea Road with development of the project site as proposed. The *total* number of project trips turning into and out of the site driveways is 1,322 daily trips, 93 midday/PM peak hour trips, and 140 Saturday midday peak hour trips.

TABLE 6: PROJECT TRIP GENERATION ESTIMATES

Land Use	Quantity	Units ¹	Daily ²	MIDDAY/PM Peak Hour			Saturday Peak Hour ³			
				In	Out	Total	In	Out	Total	
Specialty Retail	30	ksf	1,322	41	52	93	73	67	140	
			<i>Retail Pass-By (30%)</i>	-396	-12	-16	-28	-22	-20	-42
NET NEW VEHICLE TRIPS			926	29	36	65	51	47	98	

Source: Fehr & Peers, 2017

Notes:

¹ ksf = 1,000 square feet

² Based on best fit equation rates from *ITE Trip Generation* (9th Edition)

Daily: $T = 81.02(x) - 150.75$

MID/PM: $T = 2.4(x) + 21.48$

³ Based on Shopping Center's PM to SAT ratio, which is 1.5. Applied this ratio to the PM specialty retail trips to yield Saturday estimates.

5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of traffic generated by the project onto the roadway system was based on the locations of complimentary uses and existing traffic volumes including those at the Foodland driveways. Based on these factors, the vehicle trip distribution of the project-generated traffic is estimated to be:

- 50% to/from the North on Kamehameha Highway
- 35% to/from the South on Kamehameha Highway
- 15% to/from the East on Pupukea Road

Figure 6 illustrates the project trip distribution pattern described above.

As described in the *Project Description* section (2.1), access to the proposed project would be provided at one consolidated full-access driveway with the project and Foodland on Kamehameha Highway, approximately 210 feet north of Pupukea Road. The two existing Foodland driveways would be closed to reduce the total number of access points on the highway, and internal connections will be made between the project site and Foodland parcels to allow Foodland traffic to use the new project driveway on the highway or the existing Pupukea Road driveway. It is assumed that with the driveway consolidation, some of the Foodland trips (specifically the trips that originated/destined from south Kamehameha Highway) that

originally entered/exited the site from Kamehameha Highway would shift to the Pupukea Road driveway. This travel pattern is reasonable to assume for Foodland trips since the Pupukea Road driveway would serve less vehicle volume than the new Kamehameha Highway driveway and it would provide vehicles trying to access Kamehameha Highway a controlled movement at the Pupukea Road signal, instead of waiting for gaps in traffic on the Highway from the side-street-stop-controlled project driveway.

Using the estimated trip generation and the distribution patterns discussed, the traffic generated by the proposed project was assigned to the study intersections and the individual turning movements. **Figure 7, 8, and 9** shows the assignment of trips generated by the project for Midday, PM peak hour, and Saturday conditions, respectively.





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Figure 6
Trip Distribution



-  Study Intersection
-  Project Site

Legend

Project Trip Assignment + Existing Foodland Trip Reassignment = Project w/ Net New Trips

**Pupukea Rd/Foodland Dwy is not a study intersection

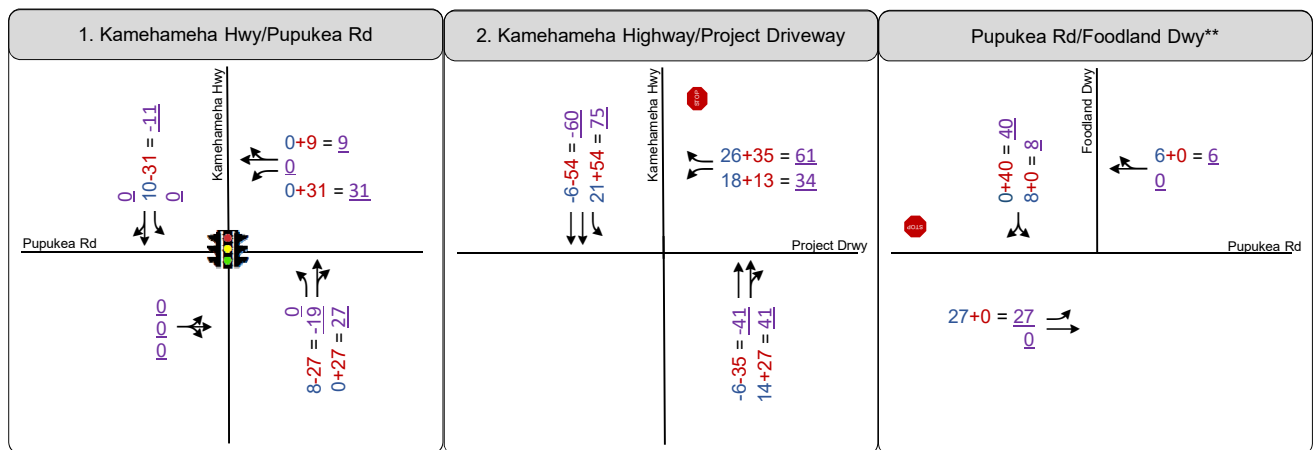
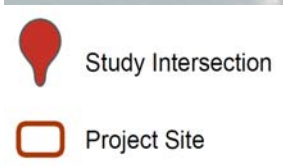


Figure 7
 Peak Hour Traffic Volumes & Lane Configurations
 Weekday Midday Project Trip Assignment



Legend

Project Trip Assignment + Existing Foodland Trip Reassignment = Project w/ Net New Trips

**Pupukea Rd/Foodland Dwy is not a study intersection

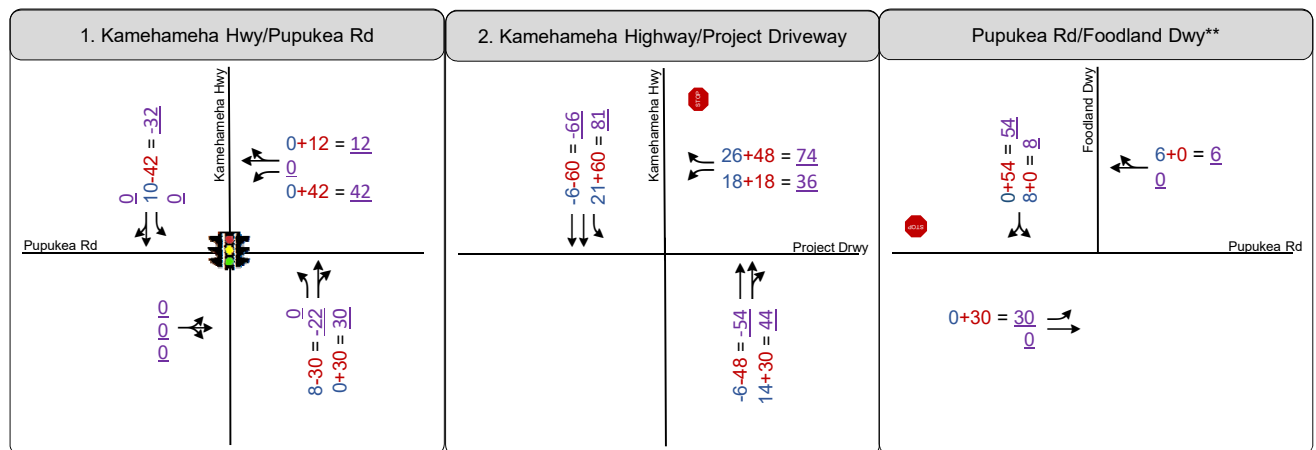


Figure 8
Peak Hour Traffic Volumes & Lane Configurations
Weekday PM Project Trip Assignment



Legend

Project Trip Assignment + Existing Foodland Trip Reassignment = Project w/ Net New Trips

**Pupukea Rd/Foodland Dwy is not a study intersection

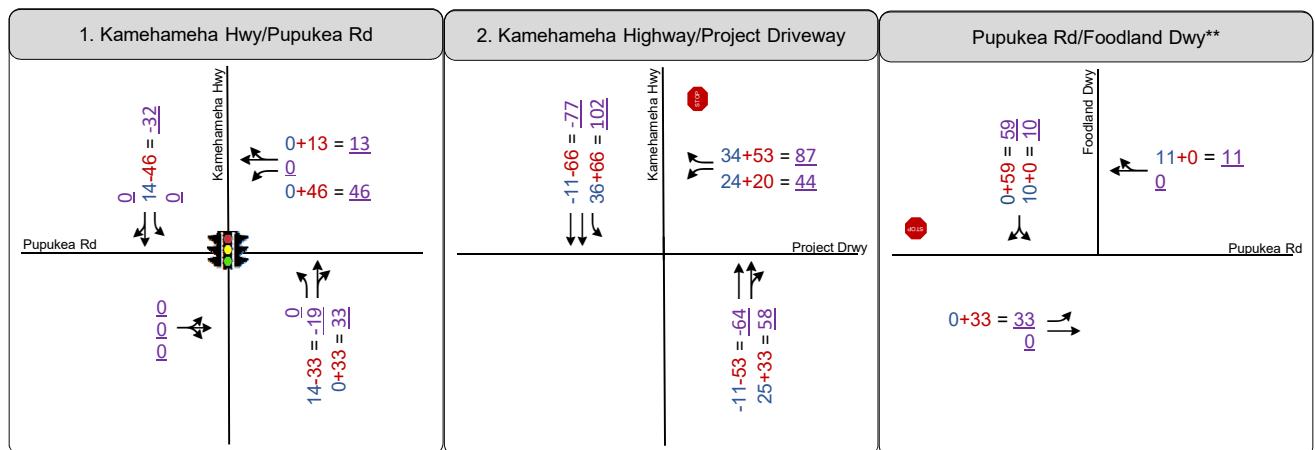


Figure 9
Peak Hour Traffic Volumes & Lane Configurations
Saturday Project Trip Assignment

6.0 NEAR TERM (2021) PLUS PROJECT CONDITIONS

This section summarizes and presents an analysis of the potential impacts on the roadway system due to projected increases in traffic, including traffic generated by the project in 2021. The Near Term (2021) roadway network is the same network assumed under the baseline scenario. The analysis compares the project levels of service at each study intersection under future baseline conditions against the “Plus Project” scenario to determine potential Near Term impacts.

6.1 PROPOSED TRANSPORTATION IMPROVEMENTS

As noted under Section 2.1: Project Description, the project will construct a new two-way driveway on Kamehameha Highway approximately 215 feet north of Pupukea Road. With construction and opening of the new site driveway, the project will close the two existing driveways serving the Foodland parcel located immediately south of and adjacent to the site. This will reduce the number of existing “conflict points” on the highway from two to one and will focus site traffic and a portion of Foodland traffic at this new, single location. To allow Foodland patrons to use the new driveway, the project will create two new internal drive aisle connections.

With reconfiguration of the driveways and access, Foodland-generated traffic volumes at the Kamehameha Highway driveway would change slightly. Specifically, most of the vehicles traveling to and from the south would shift to the Pupukea Road intersection. However, some vehicles would use the site new driveway including those driven by visitors that see the building from the roadway and decide to patronize the store.

As part of the project, the section of Kamehameha Highway between Pupukea Road and Pahoe Road will be widened and re-striped to add a center two-way left-turn lane. This lane will be approximately 270 feet long and will lead into the southbound left-turn lane at Pupukea Road. With this new lane and added capacity, vehicles turning left into or out of the new project driveway will have an area to wait for a gap in traffic allowing them to cross or merge into traffic (depending on their direction of travel). This will also help to enhance safety by moving some of these existing movements out of the southbound left-turn pocket at Pupukea Road, which should not be used for merging maneuvers for southbound traffic. It should be noted that widening the pavement section would reduce the roadway shoulder widths to regulated standards and would discourage on-street parking.

6.2 NEAR TERM (2021) PLUS PROJECT INTERSECTION LEVEL OF SERVICE

With implementation of the proposed project, the two study locations under this scenario included both the Pupukea Road and the project driveway intersections on Kamehameha Highway.

To forecast the peak hour operating conditions at each study intersection, the project trip assignment and Foodland trip re-assignment was superimposed on Near Term (2021) Baseline traffic volumes to yield Near Term (2021) Plus Project volumes. **Figure 10** presents the anticipated Near Term (2021) Plus Project Midday, PM, and Saturday peak hour volumes. The volumes on **Figure 10** were used to analyze operations using the aforementioned LOS methodology. The results of the LOS analysis for the study intersections are presented in **Table 7**, and detailed LOS results for intersection movements and corresponding LOS calculation sheets are included in **Appendix C**.

TABLE 7: NEAR TERM (2021) BASELINE INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control ¹	Peak Hour	Near Term Baseline		Near Term Plus Project		Delay Change
			Delay (sec/veh) ¹	LOS ²	Delay (sec/veh) ¹	LOS ²	
1. Kamehameha Hwy/Pupukea Rd	Signal	MID	8.1	A	9.6	A	1.5
		PM	7.6	A	9.2	A	1.6
		SAT	9.2	A	10.9	B	1.7
2. Kamehameha Hwy/Project Dwy/Foodland Dwy	Side Street Stop Control	MID	Driveway Does Not Exist Under This Scenario		24.1	C	24.1
		PM			23.5	C	23.5
		SAT			30.1	D	30.1

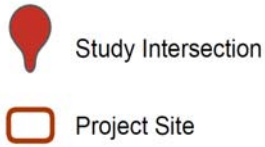
Source: Fehr & Peers, 2017.

Notes:

¹ Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. The vehicular delay for the worst movement is reported for side-street stop-controlled intersections.

² LOS calculations performed using the *Highway Capacity Manual (HCM) 2010* method. LOS for side street stop-controlled (SSSC) intersections is worst-case movement.

The results presented in **Table 7** indicate that under Near Term (2021) Plus Project conditions, all study intersections are anticipated to operate acceptably at LOS D or better under both peak hours.



Legend
 1 (1) [1] = MID (PM) [SAT]

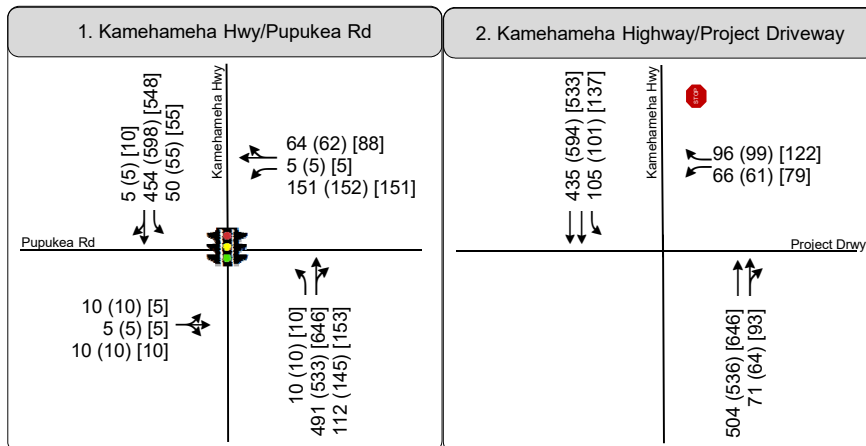


Figure 10
 Peak Hour Traffic Volumes & Lane Configurations
 Near Term (Year 2021) Plus Project

6.3 POTENTIAL TRAFFIC IMPACTS

Based upon HDOT and TRB significance criteria and the results of the operations analysis, the proposed project is not expected to result in a significant traffic impact to the surrounding roadway network. While the proposed project will add traffic to the highway and to Pupukea Road, the existing and new roadway capacity will allow the addition of vehicle trips to these roadways without substantially increasing travel times and delays for existing users on Kamehameha Highway. The provision of additional capacity on the highway will help to move existing (Foodland) and future turning vehicles out of the through lanes and expedite throughput in the area under typical traffic conditions. The existing traffic signal will help to provide gaps in traffic on the highway for vehicles turning into and out of the new site driveway and will continue to provide a controlled location of Pupukea Road neighborhood traffic.

During the peak surf and summer seasons, the intermittent congestion is expected to continue to occur regardless of project implementation. The additional turning capacity on the highway will help to minimize congestion and delays in the area. See Chapter 7 for a discussion of recommended pedestrian enhancements to enhance safety for people walking across the highway.

7.0 SITE ACCESS AND ON-SITE CIRCULATION

This chapter includes a review of the site access and on-site circulation for vehicles, bicyclists and pedestrians. An evaluation of off-site active and transit travel modes is presented in Chapter 8.

7.1 SITE ACCESS

Primary vehicle access to the site will be provided by the new driveway on Kamehameha Highway. The new site driveway on the highway is planned to include one inbound lane and two outbound lanes (i.e., one left-turn and one right-turn). Secondary access to the site will be available via the existing Foodland driveway on Pupukea Road, but a minimal amount of project traffic is expected to use the Foodland driveway and the two access connections between the adjacent parcels.

One potential site access issue was identified as part of this review. An on-site drive aisle parallel to the highway frontage is proposed to be located approximately 70 feet from the edge of the highway. Opposite the on-site drive aisle, a connection to the Foodland parking lot is also proposed. This intersection is assumed to be controlled by stop signs on the drive aisles and the main driveway approaches would not be controlled.

While this configuration is expected to generally operate acceptably at all times, it is possible that an inbound vehicle in the driveway trying to turn left into the first on-site drive aisle could be temporarily delayed by: 1) temporary outbound vehicle queues extending past the drive aisle, or 2) waiting for a vehicle to exit a parking space near the driveway/drive aisle intersection. The potential concern is that this blockage could cause an inbound queue in the driveway and impede turns from the highway.

To eliminate the potential for this occurrence, the project proposes to install “No Left Turn” signage for inbound vehicles in the driveway at the first on-site drive aisle. Signs will be prominent and installed on both sides of the driveway to clearly delineate the prohibited movement to drivers.

Overall, the number of driveway and access connections will provide adequate capacity to serve project traffic, and no modifications to site access issues other than the “No Left Turn” signage are recommended.

7.2 ON-SITE VEHICLE CIRCULATION

The site plan includes two-way parking and drive aisles with no “dead-end” aisles, and the shorter aisle lengths are anticipated to reduce on-site vehicle speeds. All of the parking spaces can be readily accessed and are not expected to cause vehicle circulation problems. As such, no recommendations to on-site vehicle circulation are recommended.

7.3 ON-SITE PEDESTRIAN AND BICYCLE CIRCULATION

The site plan shows four distinct building areas including the Foodland store on the adjacent parcel. To highlight the presence of pedestrians and to guide people walking from building to building, high visibility crosswalks are recommended at several locations across the site. The location of these crosswalks and other off-site pedestrian enhancements are show on **Figure 11** in Chapter 8.

People on bicycles are also expected to access the project site from the adjacent neighborhoods, as well as riders on the highway and the paths located north and south of the site. While no separate paths need to be incorporated to the site, secure bike parking should be provided. At a minimum, this would include bike racks at several key locations to encourage the use of non-automobile travel. The final locations for bike racks will be determined by the project team in consultation with DPP staff.

7.4 FOODLAND DELIVERIES CIRCULATION

The Foodland deliveries would still occur on the mauka side of the building with the proposed project. As described in the *Existing Conditions* chapter (3), the truck deliveries currently cause intermittent vehicle delays on Pupukea Road due to trucks reversing in and out of the driveway.

Average daily traffic volumes were conducted on Pupukea Road in November 2016 for a period of 48-hours. The highest peak travel period occurred during the typical commute AM peak hour (7 AM – 8 AM) when residents from Pupukea traveled to work. The traffic on Pupukea Road generally remained high in the morning (before noon), and during the PM peak period (4 PM to 6 PM) when residents returned home from work.

Traffic on Pupukea Road is generally lower in the early afternoon (12 PM – 3 PM) compared to the AM and PM peak periods. Consequently, Foodland truck deliveries should be scheduled during the off-peak times in the early afternoon such that delays to vehicles traveling on Pupukea Road is minimized. Ideally, truck



deliveries would occur during the early morning (before the AM peak period) and late evening (after the PM peak period) when the traffic volumes on Pupukea Road are the lowest; however, that time period is usually outside of the truck delivery operations.

8.0 MULTIMODAL ASSESSMENT

The potential impact of the proposed project on the off-site pedestrian, bicycle and transit facilities and services is addressed in this chapter.

8.1 TRANSIT FACILITIES AND SERVICES

The existing northbound bus stop adjacent to the site will need to be relocated with construction of the new site driveway. One possible new location is the shoulder immediately north of Pupukea Road where the Foodland driveways will be closed. The benefits of this location include the proximity of the existing traffic signal that provides a controlled crossing of the highway and its consistency with the installation of far side intersection stops for bus operations. An alternate location is the shoulder length between the new site driveway and Pahoe Road. The advantage of this other location are that it provides more space between the adjacent street and driveway, and that the downstream right-turn volume at Pahoe Road is expected to be substantially less than the downstream volume into the new driveway (which would be affected by buses stopping closer to Pupukea Road). Also, the area along the project site will be graded and will likely better accommodate a new shelter and waiting area for transit patrons.

While both locations would function well from a bus operations and patron access perspective, the location adjacent to Pupukea Road is generally preferred primarily because of its location next to the existing signal. For residents and visitors crossing the highway to get to the beach, this controlled crossing will provide adequate gaps in traffic and will clearly delineate rights-of-way for all users. It is possible that the existing curbs along the highway adjacent to Foodland will need to be modified to provide a turnout similar to those depending on the requirements of the City & County of Honolulu (DTS) Public Transit Division. A turnout would be beneficial so as to not impede northbound traffic during passenger loading/unloading activities. PTD staff will make the final determination on the ideal location for the relocated stop and for the need for a turnout.

8.2 BICYCLE FACILITIES

Bike Plan Hawaii (2003), a State master plan for bikeways, is intended to serve as one basis for future bikeway planning and development decisions on the North Shore. In addition, the Oahu Bike Plan (2012) provides guidance on desired bike facilities across the island of Oahu.

Within the project study area, Bike Plan Hawaii indicates Implementation of the proposed project is not expected to conflict with any existing or planned bicycle facility. Bicyclists will be able to access the site via the new site driveway or from the Ke Ala Pupukea Bike Path or adjacent pedestrian sidewalks along Kamehameha Highway leading to the site.

Ideally, the existing Ke Ala Pupukea Bike Path would be extended past or behind the Sunset Beach Fire Station and link with the parking area to the south to provide a more continuous off-street bike facility. Extension of the Ke Ala Pupukea Beach Path is included in the DOT Bike Plan, although Project 55 (Waimea Bay to Haleiwa Beach Park) does not appear to include this segment and is considered a long-term (priority III) project.

8.3 PEDESTRIAN FACILITIES

The project site is located on Kamehameha Highway on the North Shore of Oahu where the highway is bounded by unimproved shoulders and separate pedestrian facilities are not consistently provided along the length of the highway. For this project, a new pedestrian or shared-use path should be constructed along the entire length of the mauka side of the highway between Pupukea Road and Pahoe Road. This will provide visitors and local residents a separate facility to walk along this side of the highway to more readily access the new project uses, the Foodland store and the bus stop. In keeping with the rural nature of the North Shore, a separated, meandering, all-weather path (vs an attached concrete sidewalk) is recommended to designate a walking area and reduce the potential for crossing the highway between intersections (see sample in adjacent photo). The path should include a high visibility crosswalk across the new project site driveway.



With implementation of the project, the new uses are expected to attract some pedestrian traffic from the makai side of the freeway. To enhance safety at the Pahoe Road/Kamehameha highway intersection, DOT should consider approval of traffic control devices to provide gaps in traffic for pedestrian crossings without installing a typical traffic signal that may exacerbate delays for vehicle traffic. Additional parking for the Shark's Cove area is provided immediately adjacent to the Pahoe Road intersection and encouraging walking from this area would reduce the need for the project and Foodland patrons from having to get in their vehicles to access these uses.

Our XWalk+ tool was applied to aid in the identification of potential pedestrian improvements for this location, Fehr & Peers' XWalk+ tool was developed to guide the selection of candidate crosswalk treatments, and has a solid foundation in published research from the National Cooperative Highway Research Program (NCHRP) and Federal Highway Administration (FHWA), and it has been peer-reviewed by the ITE Pedestrian/Bicycle Council. Using simple inputs from a field survey, such as number of lanes, posted speed, and average daily traffic volumes, XWalk+ allows the user to identify candidate crosswalk treatments for mid-block and uncontrolled locations, and to understand the pros and cons of each treatment.

The results of this tool (as shown in **Appendix D**) identified overhead beacons or in-pavement lighting as the candidate improvements for this location based on the data inputs. The hourly pedestrian volume was varied from 40 to 80 persons and the results were the same: the pedestrian LOS would be F based on Year 2021 traffic volumes with the project, and other treatments for consideration included rectangular rapid flashing beacons (RRFBs). While the pedestrian LOS would remain the same as Existing Conditions, LOS F, due to the high peak hour traffic volumes on the two-lane highway; the pedestrian safety would be enhanced due to the increase in pedestrian visibility and driver awareness.

Given DOT's more recent use of RRFBs in multiple other locations on Oahu, this improvement paired with a high visibility crosswalk would enhance pedestrian safety and increase the awareness of the crossing to approaching drivers. The project sponsor would be responsible for the design and installation of the RRFBs and crosswalk upon review and approval of DOT Highways Division staff.

Ultimately, implementation of these multi-modal recommendations are dependent on the appropriate State and County agency. **Figure 11** shows the recommended multimodal enhancements on and off the project site.

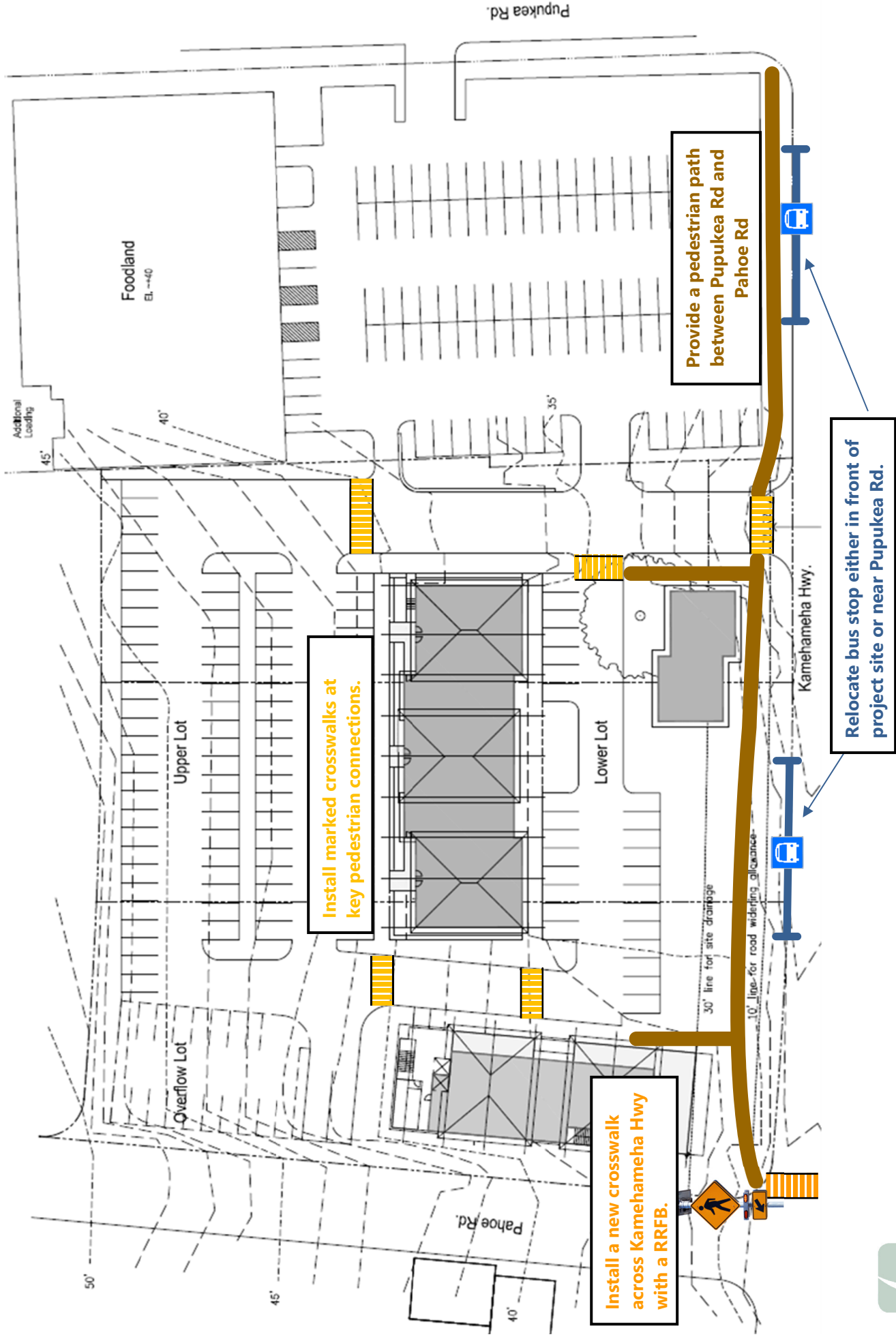


Figure 11

Recommended On and Off Site Multimodal Enhancements

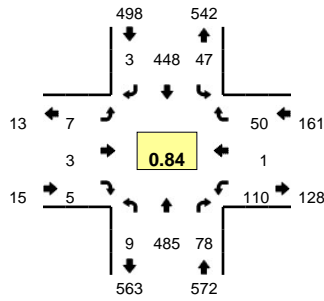


APPENDIX A: TRAFFIC COUNT DATA

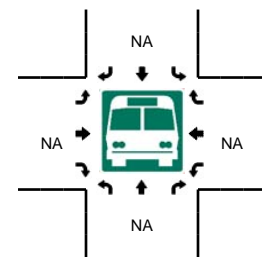
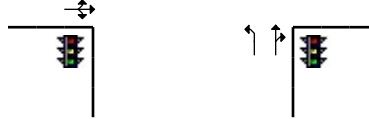
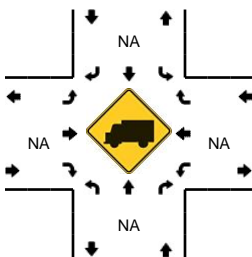
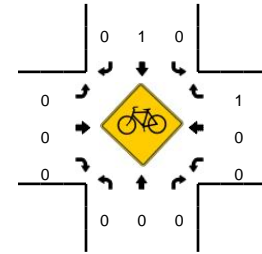
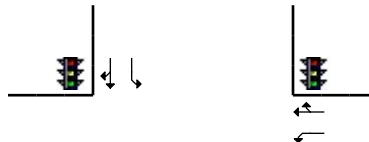
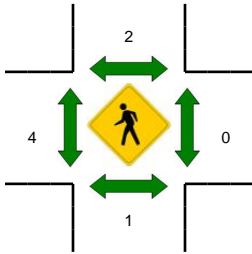
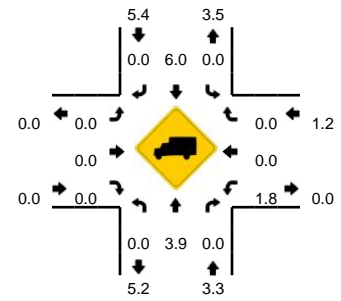


LOCATION: Kamehameha Hwy -- Pupukeya Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956401
DATE: Thu, Nov 17 2016



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Peak 15-Min: 1:35 PM -- 1:50 PM

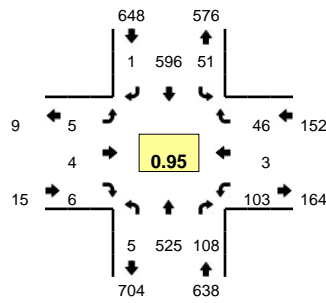


5-Min Count Period Beginning At	Kamehameha Hwy (Northbound)				Kamehameha Hwy (Southbound)				Pupukeya Rd (Eastbound)				Pupukeya Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	1	41	6	0	3	26	1	0	0	0	0	0	8	0	7	0	93	1127
12:05 PM	0	36	7	0	1	51	0	0	0	0	0	0	10	1	6	0	112	1153
12:10 PM	0	36	8	0	5	39	1	0	1	0	0	0	9	0	4	0	103	1135
12:15 PM	0	35	9	0	3	37	0	0	0	0	0	0	7	0	1	0	92	1152
12:20 PM	0	34	8	0	3	53	0	0	0	0	0	0	11	0	2	0	111	1153
12:25 PM	0	32	7	0	3	23	1	0	0	0	0	0	9	1	6	0	82	1163
12:30 PM	0	47	9	0	3	41	0	0	1	0	0	0	6	0	4	0	111	1165
12:35 PM	3	27	5	0	4	43	0	0	2	0	0	0	9	0	2	0	95	1163
12:40 PM	0	57	3	0	1	28	0	0	1	0	0	0	4	0	3	0	97	1182
12:45 PM	2	34	9	0	4	32	0	0	0	0	1	0	7	0	4	0	93	1158
12:50 PM	1	41	2	0	6	38	1	0	0	1	1	0	17	0	1	0	109	1171
12:55 PM	0	46	6	0	4	37	0	0	0	0	1	0	10	0	2	0	106	1204
1:00 PM	1	39	8	0	4	27	1	0	0	0	1	0	8	0	4	0	93	1204
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1:55 PM	1	33	10	0	0	27	0	0	0	0	1	0	2	1	7	0	82	1209
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	500	76	0	48	652	0	0	12	4	4	0	100	0	80	0	1488	
Heavy Trucks	0	8	0		0	52	0		0	0	0		0	0	0		60	
Pedestrians		4				4				8				0			16	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

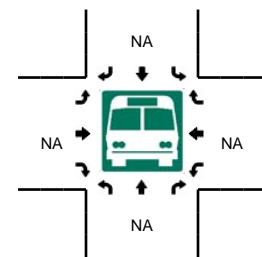
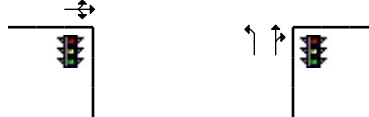
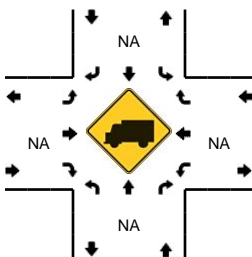
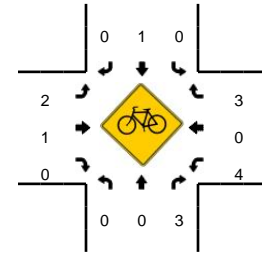
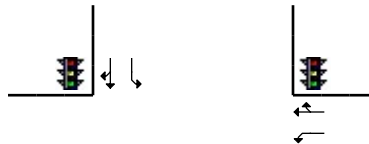
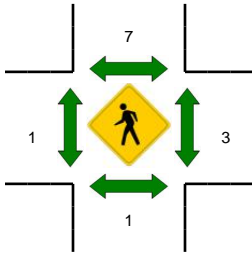
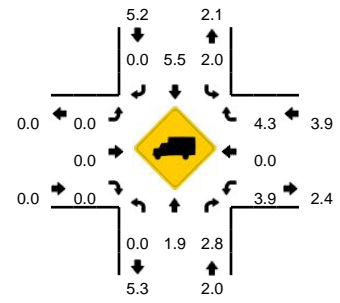
Comments:

LOCATION: Kamehameha Hwy -- Pupukeya Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956402
DATE: Thu, Nov 17 2016



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:00 PM -- 3:15 PM

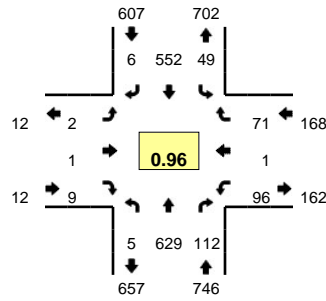


5-Min Count Period Beginning At	Kamehameha Hwy (Northbound)				Kamehameha Hwy (Southbound)				Pupukeya Rd (Eastbound)				Pupukeya Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	51	7	0	3	61	1	0	1	0	1	0	10	0	5	0	140	
3:05 PM	2	49	6	0	8	58	0	0	1	0	0	0	7	0	4	0	135	
3:10 PM	0	33	6	0	6	48	0	0	1	0	1	0	8	0	3	0	106	
3:15 PM	1	49	9	0	6	54	0	0	0	0	0	0	8	0	3	0	130	
3:20 PM	0	42	4	0	5	46	0	0	0	2	0	0	9	0	7	0	115	
3:25 PM	0	40	11	0	2	42	0	0	0	0	1	0	9	0	1	0	106	
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4:05 PM	0	34	13	0	6	36	0	0	0	0	1	0	13	0	9	0	112	1412
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4:15 PM	0	47	13	0	2	47	0	0	0	0	0	0	7	1	8	0	125	1415
4:20 PM	0	41	15	0	4	42	0	0	1	0	0	0	11	0	3	0	117	1417
4:25 PM	0	52	6	0	6	45	0	0	0	0	0	0	6	0	4	0	119	1430
4:30 PM	0	34	10	0	7	39	0	0	0	0	0	0	5	1	11	0	107	1411
4:35 PM	0	46	10	0	5	54	0	0	0	0	0	0	13	0	3	0	131	1430
4:40 PM	1	42	13	0	1	44	0	0	0	1	0	0	12	0	4	0	118	1431
4:45 PM	2	37	16	0	12	38	0	0	0	0	0	0	6	1	7	0	119	1420
4:50 PM	0	44	16	0	5	30	0	0	1	0	0	0	9	0	2	0	107	1410
4:55 PM	1	39	18	0	8	32	0	0	1	0	0	0	12	0	2	0	113	1404
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	532	76	0	68	668	4	0	12	0	8	0	100	0	48	0	1524	
Heavy Trucks	0	8	4		4	36	0		0	0	0		4	0	8		64	
Pedestrians		0				12				4				4			20	
Bicycles	0	0	2		0	0	0		0	0	0		0	0	0		2	
Railroad																		
Stopped Buses																		

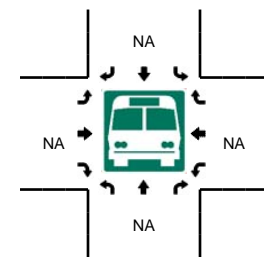
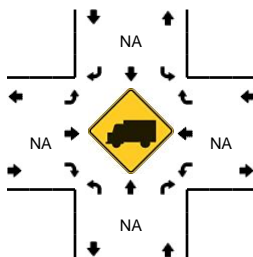
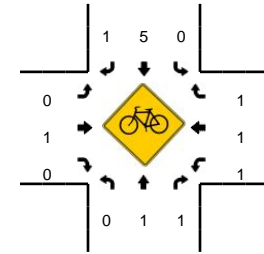
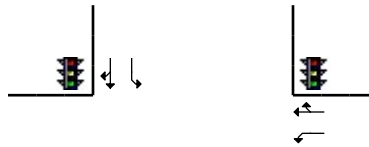
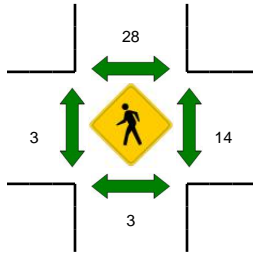
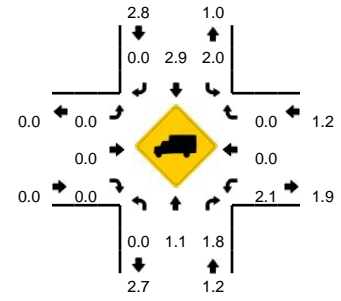
Comments:

LOCATION: Kamehameha Hwy -- Pupukea Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956403
DATE: Sat, Jan 07 2017



Peak-Hour: 12:30 PM -- 1:30 PM
Peak 15-Min: 12:30 PM -- 12:45 PM



5-Min Count Period Beginning At	Kamehameha Hwy (Northbound)				Kamehameha Hwy (Southbound)				Pupukea Rd (Eastbound)				Pupukea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	1	55	7	0	4	42	0	0	0	0	1	0	11	0	8	0	129	1438
12:05 PM	2	50	3	0	4	39	0	0	0	0	0	0	6	1	3	0	108	1428
12:10 PM	0	55	11	0	5	44	0	0	0	0	0	0	9	0	7	0	131	1440
12:15 PM	0	54	9	0	2	52	0	0	0	0	0	0	8	0	3	0	128	1442
12:20 PM	2	46	12	0	4	37	0	0	1	0	0	0	6	0	7	0	115	1445
12:25 PM	2	47	9	0	2	41	0	0	0	0	1	0	11	0	4	0	117	1437
12:30 PM	1	51	8	0	4	58	2	0	0	0	0	0	8	0	10	0	142	1478
12:35 PM	0	59	10	0	4	53	1	0	0	0	0	0	3	0	2	0	132	1477
12:40 PM	0	54	10	0	4	45	0	0	1	0	0	0	7	0	5	0	126	1468
12:45 PM	1	52	6	0	3	39	0	0	0	0	0	0	8	0	7	0	116	1482
12:50 PM	0	57	8	0	5	40	0	0	0	0	1	0	10	0	6	0	127	1498
12:55 PM	1	49	11	0	8	42	2	0	0	0	1	0	2	0	6	0	122	1493
1:00 PM	1	47	5	0	4	37	1	0	0	0	0	0	11	0	8	0	114	1478
1:05 PM	1	51	15	0	2	55	0	0	0	0	0	0	10	0	6	0	140	1510
1:10 PM	0	51	11	0	5	42	0	0	0	1	2	0	10	0	6	0	128	1507
1:15 PM	0	53	7	0	2	50	0	0	0	0	1	0	9	0	3	0	125	1504
1:20 PM	0	57	11	0	4	43	0	0	1	0	3	0	8	1	6	0	134	1523
1:25 PM	0	48	10	0	4	48	0	0	0	0	1	0	10	0	6	0	127	1533
1:30 PM	0	47	11	0	3	52	0	0	0	0	0	0	9	0	5	0	127	1518
1:35 PM	0	41	10	0	7	44	1	0	0	0	0	0	3	0	5	0	111	1497
1:40 PM	1	50	7	0	5	54	1	0	0	0	0	0	9	1	3	0	131	1502
1:45 PM	0	52	11	0	8	59	1	0	0	0	0	0	8	1	3	0	143	1529
1:50 PM	0	35	4	0	6	54	1	0	0	0	0	0	12	0	2	0	114	1516
1:55 PM	0	38	6	0	3	40	0	0	1	0	1	0	18	0	3	0	110	1504
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	656	112	0	48	624	12	0	4	0	0	0	72	0	68	0	1600	
Heavy Trucks	0	8	0	0	0	20	0	0	0	0	0	0	0	0	0	0	28	
Pedestrians		0				28								20			48	
Bicycles	0	0	1		0	0	0		0	0	0		0	1	0		2	
Railroad																		
Stopped Buses																		

Comments:

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM						33	69		45	
1:00 AM						19	41		26	
2:00 AM						9	32		17	
3:00 AM						22	20		21	
4:00 AM						43	37		41	
5:00 AM						122	76		107	
6:00 AM						256	194		235	
7:00 AM						475	323		424	
8:00 AM						384	376		381	
9:00 AM						397	421		405	
10:00 AM						439	504		460	
11:00 AM						513	618		548	
12:00 PM						558	621		579	
1:00 PM						587	659		611	
2:00 PM						585	675		615	
3:00 PM						629	627		628	
4:00 PM						658	593		636	
5:00 PM						618	495		577	
6:00 PM						449	377		425	
7:00 PM						335	265		311	
8:00 PM						273	188		244	
9:00 PM						196	185		192	
10:00 PM						142	566		283	
11:00 PM						73	891		345	
Day Total						7815	8853		8156	
% Weekday Average						95.9%	103.9%			
% Week Average						91.9%	99.6%		108.5%	
AM Peak						11:00 AM	11:00 AM		11:00 AM	
Volume						489	537		548	
PM Peak						3:00 PM	4:00 PM		4:00 PM	
Volume						609	707		636	
<i>Comments:</i>										

		QC JOB #: 13956407 DIRECTION: NB/SB DATE: Nov 17 2016 - Nov 19 2016								
		LOCATION: Kamehameha Highway north of Pahoe Rd SPECIFIC LOCATION: Kamehameha Highway north of Pahoe Rd CITY/STATE: Haleiwa, HI								
Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	18-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	18-Nov-16		19-Nov-16			
12:00 AM				51	63	57	122		79	
1:00 AM				31	38	35	73		47	
2:00 AM				19	19	19	83		40	
3:00 AM				45	45	45	42		44	
4:00 AM				102	92	97	71		88	
5:00 AM				280	299	290	150		243	
6:00 AM				468	524	496	348		447	
7:00 AM				929	956	943	633		839	
8:00 AM				877	853	865	816		849	
9:00 AM				812	881	847	924		872	
10:00 AM				926	895	911	1044		955	
11:00 AM				972	1035	1004	1161		1056	
12:00 PM				1051	1130	1091	1175		1119	
1:00 PM				1047	1108	1078	1227		1127	
2:00 PM				1251	1245	1248	1232		1243	
3:00 PM				1268	1293	1281	1272		1278	
4:00 PM				1186	1269	1228	1215		1223	
5:00 PM				1067	1205	1136	1047		1106	
6:00 PM				961	1069	1015	806		945	
7:00 PM				581	625	603	488		565	
8:00 PM				431	495	463	310		412	
9:00 PM				313	383	348	502		399	
10:00 PM				197	279	238	902		459	
11:00 PM				133	169	151	1016		439	
Day Total				14998	15970	15489	16659		15874	
% Weekday Average				96.8%	103.1%					
% Week Average				94.5%	100.6%	97.6%	104.9%			
AM Peak				11:00 AM	11:00 AM	11:00 AM	11:00 AM		11:00 AM	
Volume				972	1035	1004	1161		1056	
PM Peak				3:00 PM	3:00 PM	3:00 PM	3:00 PM		3:00 PM	
Volume				1268	1293	1281	1272		1278	
<i>Comments:</i>										

LOCATION: Kamehameha Highway north of Pahoe Rd
SPECIFIC LOCATION: Kamehameha Highway north of Pahoe Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956407
DIRECTION: SB
DATE: Nov 17 2016 - Nov 19 2016

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	18-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	18-Nov-16		19-Nov-16			
12:00 AM				20	28	24	53		34	
1:00 AM				16	15	16	32		21	
2:00 AM				10	10	10	51		24	
3:00 AM				26	21	24	22		23	
4:00 AM				54	55	55	34		48	
5:00 AM				158	177	168	74		136	
6:00 AM				213	268	241	154		212	
7:00 AM				441	495	468	310		415	
8:00 AM				463	499	481	440		467	
9:00 AM				433	467	450	503		468	
10:00 AM				481	463	472	540		495	
11:00 AM				483	498	491	543		508	
12:00 PM				526	539	533	554		540	
1:00 PM				472	510	491	568		517	
2:00 PM				700	626	663	557		628	
3:00 PM				659	645	652	645		650	
4:00 PM				577	562	570	622		587	
5:00 PM				503	534	519	552		530	
6:00 PM				536	596	566	429		520	
7:00 PM				252	285	269	223		253	
8:00 PM				182	199	191	122		168	
9:00 PM				141	163	152	317		207	
10:00 PM				83	109	96	336		176	
11:00 PM				71	86	79	125		94	
Day Total				7500	7850	7681	7806		7721	
% Weekday Average				97.6%	102.2%					
% Week Average				97.1%	101.7%	99.5%	101.1%			
AM Peak				11:00 AM	8:00 AM	11:00 AM	11:00 AM		11:00 AM	
Volume				483	499	491	543		508	
PM Peak				2:00 PM	3:00 PM	2:00 PM	3:00 PM		3:00 PM	
Volume				700	645	663	645		650	
<i>Comments:</i>										

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM						16	21		17	
1:00 AM						7	14		9	
2:00 AM						3	15		7	
3:00 AM						5	9		6	
4:00 AM						5	6		5	
5:00 AM						10	4		8	
6:00 AM						25	22		24	
7:00 AM						106	62		91	
8:00 AM						129	99		119	
9:00 AM						106	104		105	
10:00 AM						121	125		122	
11:00 AM						149	108		135	
12:00 PM						145	142		144	
1:00 PM						143	143		143	
2:00 PM						179	157		172	
3:00 PM						177	166		173	
4:00 PM						209	157		191	
5:00 PM						228	179		212	
6:00 PM						230	147		202	
7:00 PM						150	93		131	
8:00 PM						108	82		99	
9:00 PM						105	67		92	
10:00 PM						55	75		61	
11:00 PM						38	45		40	
Day Total	2427	2463	2449	2042	2308					
% Weekday Average	99.1%	100.6%								
% Week Average	105.2%	106.7%	106.1%	88.5%						
AM Peak	11:00 AM	8:00 AM	11:00 AM	10:00 AM	11:00 AM					
Volume	164	136	149	125	135					
PM Peak	5:00 PM	6:00 PM	6:00 PM	5:00 PM	5:00 PM					
Volume	236	227	230	179	212					
<i>Comments:</i>										

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM						21	36		26	
1:00 AM	18			24		11	24		15	
2:00 AM	8			13		7	22		12	
3:00 AM	6			8		9	12		10	
4:00 AM	11			6		32	17		27	
5:00 AM	32			32		102	35		80	
6:00 AM	92			112		169	95		144	
7:00 AM	163			174		384	200		323	
8:00 AM	372			396		312	268		297	
9:00 AM	312			311		295	285		291	
10:00 AM	295			294		299	300		299	
11:00 AM	313			285		296	282		291	
12:00 PM	308			284		289	263		280	
1:00 PM	289			298		302	263		289	
2:00 PM	273			315		308	275		297	
3:00 PM	332			342		329	299		319	
4:00 PM	404			326		380	306		355	
5:00 PM	391			347		369	309		349	
6:00 PM	366			348		357	267		327	
7:00 PM	210			231		221	156		199	
8:00 PM	152			153		153	132		146	
9:00 PM	119			164		142	110		131	
10:00 PM	61			89		75	112		87	
11:00 PM	46			57		52	55		53	
Day Total	4853			4964		4914	4123		4647	
% Weekday Average	98.8%			101.0%						
% Week Average	104.4%			106.8%		105.7%	88.7%			
AM Peak	7:00 AM			7:00 AM		7:00 AM	10:00 AM		7:00 AM	
Volume	372			396		384	300		323	
PM Peak	4:00 PM			4:00 PM		4:00 PM	5:00 PM		4:00 PM	
Volume	404			355		380	309		355	
<i>Comments:</i>										

LOCATION: Pupukea Road east of Kam Hwy
SPECIFIC LOCATION: Pupukea Road east of Kam Hwy
CITY/STATE: Haleiwa, HI

QC JOB #: 13956408
DIRECTION: WB
DATE: Nov 17 2016 - Nov 19 2016

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	17-Nov-16	18-Nov-16	19-Nov-16							
12:00 AM				4	7	6	15		9	
1:00 AM				2	5	4	10		6	
2:00 AM				5	3	4	7		5	
3:00 AM				3	5	4	3		4	
4:00 AM				27	27	27	11		22	
5:00 AM				84	101	93	31		72	
6:00 AM				136	151	144	73		120	
7:00 AM				273	283	278	138		231	
8:00 AM				190	175	183	169		178	
9:00 AM				188	189	189	181		186	
10:00 AM				178	178	178	175		177	
11:00 AM				144	150	147	174		156	
12:00 PM				146	143	145	121		137	
1:00 PM				155	163	159	120		146	
2:00 PM				119	138	129	118		125	
3:00 PM				156	149	153	133		146	
4:00 PM				171	171	171	149		164	
5:00 PM				155	127	141	130		137	
6:00 PM				133	121	127	120		125	
7:00 PM				69	72	71	63		68	
8:00 PM				40	49	45	50		46	
9:00 PM				23	51	37	43		39	
10:00 PM				11	30	21	37		26	
11:00 PM				14	13	14	10		12	
Day Total				2426	2501	2470	2081		2337	

% Weekday Average	98.2%	101.3%				2470	2081		2337	
% Week Average	103.8%	107.0%	105.7%	89.0%						
AM Peak Volume	7:00 AM	7:00 AM	7:00 AM	9:00 AM						
	273	283	278	181						
PM Peak Volume	4:00 PM	4:00 PM	4:00 PM	4:00 PM						
	171	171	171	149						

Comments:

LOCATION: Kamehameha Highway south of Pupukea Rd
SPECIFIC LOCATION: Kamehameha Highway south of Pupukea Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956409
DIRECTION: NB
DATE: Nov 17 2016 - Nov 19 2016

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	17-Nov-16	18-Nov-16	19-Nov-16							
12:00 AM	39	45	42	75	53					
1:00 AM	19	26	23	39	28					
2:00 AM	11	15	13	35	20					
3:00 AM	21	24	23	28	24					
4:00 AM	53	42	48	44	46					
5:00 AM	136	132	134	81	116					
6:00 AM	243	238	241	189	223					
7:00 AM	374	350	362	301	342					
8:00 AM	382	331	357	343	352					
9:00 AM	368	403	386	413	395					
10:00 AM	493	464	479	497	485					
11:00 AM	522	588	555	604	571					
12:00 PM	557	614	586	633	601					
1:00 PM	580	654	617	658	631					
2:00 PM	579	652	616	692	641					
3:00 PM	638	698	668	664	667					
4:00 PM	669	752	711	599	673					
5:00 PM	609	703	656	515	609					
6:00 PM	463	500	482	367	443					
7:00 PM	348	354	351	242	315					
8:00 PM	237	285	261	197	240					
9:00 PM	209	232	221	197	213					
10:00 PM	131	173	152	611	305					
11:00 PM	66	100	83	920	362					
Day Total	7747	8375	8067	8944	8355					
% Weekday Average	96.0%	103.8%								
% Week Average	92.7%	100.2%	96.6%	107.0%						
AM Peak	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM					
Volume	522	588	555	604	571					
PM Peak	4:00 PM	4:00 PM	4:00 PM	11:00 PM	4:00 PM					
Volume	669	752	711	920	673					
Comments:										

LOCATION: Kamehameha Highway south of Pupukea Rd
SPECIFIC LOCATION: Kamehameha Highway south of Pupukea Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956409
DIRECTION: NB/SB
DATE: Nov 17 2016 - Nov 19 2016

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	18-Nov-16	17-Nov-16	17-Nov-16	18-Nov-16	18-Nov-16		19-Nov-16			
12:00 AM				59	77	68	123		86	
1:00 AM				37	40	39	68		48	
2:00 AM				24	26	25	83		44	
3:00 AM				45	51	48	50		49	
4:00 AM				140	123	132	84		116	
5:00 AM				365	384	375	172		307	
6:00 AM				545	598	572	376		506	
7:00 AM				858	894	876	632		795	
8:00 AM				881	884	883	818		861	
9:00 AM				883	954	919	988		942	
10:00 AM				1052	1019	1036	1082		1051	
11:00 AM				1039	1108	1074	1186		1111	
12:00 PM				1107	1160	1134	1196		1154	
1:00 PM				1113	1211	1162	1220		1181	
2:00 PM				1253	1274	1264	1282		1270	
3:00 PM				1310	1314	1312	1314		1313	
4:00 PM				1253	1328	1291	1258		1280	
5:00 PM				1079	1182	1131	1043		1101	
6:00 PM				931	1023	977	776		910	
7:00 PM				566	580	573	453		533	
8:00 PM				382	462	422	317		387	
9:00 PM				328	385	357	509		407	
10:00 PM				202	261	232	934		466	
11:00 PM				127	176	152	1037		447	
Day Total				15579	16514	16054	17001		16365	
% Weekday Average				97.0%	102.9%					
% Week Average				95.2%	100.9%	98.1%	103.9%			
AM Peak				10:00 AM	11:00 AM	11:00 AM	11:00 AM		11:00 AM	
Volume				1052	1108	1074	1186		1111	
PM Peak				3:00 PM	4:00 PM	3:00 PM	3:00 PM		3:00 PM	
Volume				1310	1328	1312	1314		1313	
<i>Comments:</i>										

LOCATION: Kamehameha Highway south of Pupukea Rd
SPECIFIC LOCATION: Kamehameha Highway south of Pupukea Rd
CITY/STATE: Haleiwa, HI

QC JOB #: 13956409
DIRECTION: SB
DATE: Nov 17 2016 - Nov 19 2016




















Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
	18-Nov-16	17-Nov-16	17-Nov-16	17-Nov-16	18-Nov-16		19-Nov-16			
12:00 AM				20	32	26	48		33	
1:00 AM				18	14	16	29		20	
2:00 AM				13	11	12	48		24	
3:00 AM				24	27	26	22		24	
4:00 AM				87	81	84	40		69	
5:00 AM				229	252	241	91		191	
6:00 AM				302	360	331	187		283	
7:00 AM				484	544	514	331		453	
8:00 AM				499	553	526	475		509	
9:00 AM				515	551	533	575		547	
10:00 AM				559	555	557	585		566	
11:00 AM				517	520	519	582		540	
12:00 PM				550	546	548	563		553	
1:00 PM				533	557	545	562		551	
2:00 PM				674	622	648	590		629	
3:00 PM				672	616	644	650		646	
4:00 PM				584	576	580	659		606	
5:00 PM				470	479	475	528		492	
6:00 PM				468	523	496	409		467	
7:00 PM				218	226	222	211		218	
8:00 PM				145	177	161	120		147	
9:00 PM				119	153	136	312		195	
10:00 PM				71	88	80	323		161	
11:00 PM				61	76	69	117		85	
Day Total				7832	8139	7989	8057		8009	
% Weekday Average				98.0%	101.9%					
% Week Average				97.8%	101.6%	99.8%	100.6%			
AM Peak				10:00 AM	10:00 AM	10:00 AM	10:00 AM		10:00 AM	
Volume				559	555	557	585		566	
PM Peak				2:00 PM	2:00 PM	2:00 PM	4:00 PM		3:00 PM	
Volume				674	622	648	659		646	
<i>Comments:</i>										

APPENDIX B: EXISTING LOS WORKSHEETS



HCM 2010 Signalized Intersection Summary
 1: Kamehameha Hwy & Pupukea Rd

Existing
 Weekday MD Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	3	5	110	1	50	9	485	78	47	448	3
Future Volume (veh/h)	7	3	5	110	1	50	9	485	78	47	448	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1832	1900	1863	1793	1900
Adj Flow Rate, veh/h	8	4	1	131	1	18	11	577	72	56	533	3
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	4	4	2	6	6
Cap, veh/h	188	81	15	287	10	188	650	1178	147	568	1314	7
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	793	648	120	1395	83	1500	865	1597	199	779	1781	10
Grp Volume(v), veh/h	13	0	0	131	0	19	11	0	649	56	0	536
Grp Sat Flow(s),veh/h/ln	1561	0	0	1395	0	1584	865	0	1796	779	0	1791
Q Serve(g_s), s	0.0	0.0	0.0	5.4	0.0	0.7	0.3	0.0	9.8	2.1	0.0	7.4
Cycle Q Clear(g_c), s	0.4	0.0	0.0	5.8	0.0	0.7	7.7	0.0	9.8	11.9	0.0	7.4
Prop In Lane	0.62		0.08	1.00		0.95	1.00		0.11	1.00		0.01
Lane Grp Cap(c), veh/h	284	0	0	287	0	199	650	0	1325	568	0	1321
V/C Ratio(X)	0.05	0.00	0.00	0.46	0.00	0.10	0.02	0.00	0.49	0.10	0.00	0.41
Avail Cap(c_a), veh/h	612	0	0	589	0	542	650	0	1325	568	0	1321
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	0.0	27.6	0.0	25.4	4.7	0.0	3.5	6.0	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.1	0.0	0.2	0.0	0.0	1.3	0.3	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	2.4	0.0	0.3	0.1	0.0	5.2	0.5	0.0	3.9
LnGrp Delay(d),s/veh	25.4	0.0	0.0	28.8	0.0	25.7	4.7	0.0	4.8	6.3	0.0	4.2
LnGrp LOS	C			C		C	A		A	A		A
Approach Vol, veh/h		13			150			660			592	
Approach Delay, s/veh		25.4			28.4			4.8			4.4	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		12.8		53.0		12.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		11.8		2.4		13.9		7.8				
Green Ext Time (p_c), s		10.6		0.5		10.4		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				7.3								
HCM 2010 LOS				A								

HCM Signalized Intersection Capacity Analysis

1: Kamehameha Hwy & Pupukea Rd

Existing
Weekday PM Peak






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	5	4	6	103	3	46	5	525	108	51	596	1
Future Volume (vph)	5	4	6	103	3	46	5	525	108	51	596	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.86		1.00	0.97		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1708		1732	1522		1768	1804		1766	1792	
Flt Permitted		0.92		0.75	1.00		0.38	1.00		0.36	1.00	
Satd. Flow (perm)		1594		1363	1522		710	1804		669	1792	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	4	6	108	3	48	5	553	114	54	627	1
RTOR Reduction (vph)	0	5	0	0	41	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	10	0	108	10	0	5	661	0	54	628	0
Confl. Peds. (#/hr)	7		1	1		7	1		3	3		1
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	3%	2%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.2		10.2	10.2		54.5	54.5		54.5	54.5	
Effective Green, g (s)		10.2		10.2	10.2		54.5	54.5		54.5	54.5	
Actuated g/C Ratio		0.14		0.14	0.14		0.74	0.74		0.74	0.74	
Clearance Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		220		188	210		525	1334		494	1325	
v/s Ratio Prot					0.01			c0.37				0.35
v/s Ratio Perm		0.01		c0.08			0.01			0.08		
v/c Ratio		0.04		0.57	0.05		0.01	0.50		0.11	0.47	
Uniform Delay, d1		27.5		29.7	27.5		2.5	3.9		2.7	3.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		4.2	0.1		0.0	1.3		0.4	1.2	
Delay (s)		27.6		33.9	27.6		2.6	5.3		3.2	5.1	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s)		27.6			31.9			5.2			4.9	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	73.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary
 1: Kamehameha Hwy & Pupukea Rd

Existing
 Saturday MD Peak




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1	9	96	1	71	5	629	112	49	552	6
Future Volume (veh/h)	2	1	9	96	1	71	5	629	112	49	552	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		1.00	0.92		0.90	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1900	1863	1845	1900
Adj Flow Rate, veh/h	2	1	0	100	1	22	5	655	96	51	575	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	3	3
Cap, veh/h	235	101	0	325	11	234	570	1107	162	449	1278	11
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.17	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	870	593	0	1295	62	1373	829	1582	232	708	1826	16
Grp Volume(v), veh/h	3	0	0	100	0	23	5	0	751	51	0	580
Grp Sat Flow(s),veh/h/ln	1463	0	0	1295	0	1436	829	0	1813	708	0	1841
Q Serve(g_s), s	0.0	0.0	0.0	4.7	0.0	0.9	0.2	0.0	14.7	2.8	0.0	9.6
Cycle Q Clear(g_c), s	0.1	0.0	0.0	4.8	0.0	0.9	9.7	0.0	14.7	17.5	0.0	9.6
Prop In Lane	0.67		0.00	1.00		0.96	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	336	0	0	325	0	244	570	0	1269	449	0	1289
V/C Ratio(X)	0.01	0.00	0.00	0.31	0.00	0.09	0.01	0.00	0.59	0.11	0.00	0.45
Avail Cap(c_a), veh/h	556	0	0	525	0	466	570	0	1269	449	0	1289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	0.0	25.8	0.0	24.2	6.7	0.0	5.3	9.8	0.0	4.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	2.0	0.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	1.8	0.0	0.4	0.0	0.0	7.8	0.6	0.0	5.1
LnGrp Delay(d),s/veh	23.9	0.0	0.0	26.4	0.0	24.4	6.7	0.0	7.4	10.3	0.0	5.7
LnGrp LOS	C			C		C	A		A	B		A
Approach Vol, veh/h		3			123			756			631	
Approach Delay, s/veh		23.9			26.0			7.4			6.1	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		16.3		53.0		16.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		16.7		2.1		19.5		6.8				
Green Ext Time (p_c), s		12.0		0.4		11.6		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			8.4									
HCM 2010 LOS			A									

APPENDIX C: NEAR TERM LOS WORKSHEETS






















HCM 2010 Signalized Intersection Summary
1: Kamehameha Hwy & Pupukea Rd

Year 2021
Weekday MIDDAY

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	120	5	55	10	510	85	50	475	5
Future Volume (veh/h)	10	5	10	120	5	55	10	510	85	50	475	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1832	1900	1863	1793	1900
Adj Flow Rate, veh/h	12	6	7	143	6	23	12	607	80	60	565	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	4	4	2	6	6
Cap, veh/h	157	78	60	302	46	176	612	1155	152	529	1292	11
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.73	0.73	0.73	0.73	0.73	0.73
Sat Flow, veh/h	564	571	441	1386	336	1288	838	1585	209	752	1774	16
Grp Volume(v), veh/h	25	0	0	143	0	29	12	0	687	60	0	570
Grp Sat Flow(s),veh/h/ln	1576	0	0	1386	0	1624	838	0	1794	752	0	1790
Q Serve(g_s), s	0.0	0.0	0.0	5.5	0.0	1.0	0.4	0.0	11.2	2.5	0.0	8.5
Cycle Q Clear(g_c), s	0.8	0.0	0.0	6.4	0.0	1.0	8.8	0.0	11.2	13.8	0.0	8.5
Prop In Lane	0.48		0.28	1.00		0.79	1.00		0.12	1.00		0.01
Lane Grp Cap(c), veh/h	295	0	0	302	0	222	612	0	1307	529	0	1304
V/C Ratio(X)	0.08	0.00	0.00	0.47	0.00	0.13	0.02	0.00	0.53	0.11	0.00	0.44
Avail Cap(c_a), veh/h	601	0	0	581	0	549	612	0	1307	529	0	1304
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	0.0	27.5	0.0	25.3	5.4	0.0	4.0	7.0	0.0	3.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.2	0.0	0.3	0.1	0.0	1.5	0.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	2.6	0.0	0.5	0.1	0.0	5.9	0.6	0.0	4.5
LnGrp Delay(d),s/veh	25.3	0.0	0.0	28.6	0.0	25.5	5.4	0.0	5.5	7.4	0.0	4.7
LnGrp LOS	C			C		C	A		A	A		A
Approach Vol, veh/h		25			172			699			630	
Approach Delay, s/veh		25.3			28.1			5.5			4.9	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		13.6		53.0		13.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		13.2		2.8		15.8		8.4				
Green Ext Time (p_c), s		11.5		0.7		11.2		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									





















HCM 2010 Signalized Intersection Summary
 1: Kamehameha Hwy & Pupukea Rd

Year 2021
 Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	110	5	50	10	555	115	55	630	5
Future Volume (veh/h)	10	5	10	110	5	50	10	555	115	55	630	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.97		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1827	1830	1900	1863	1860	1900	1863	1793	1900
Adj Flow Rate, veh/h	11	5	5	116	5	19	11	584	96	58	663	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	4	2	2	2	2	2	2	6	6
Cap, veh/h	165	73	48	289	43	165	547	1140	187	541	1300	10
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.73	0.73	0.73	0.73	0.73	0.73
Sat Flow, veh/h	622	550	366	1338	327	1244	765	1558	256	757	1777	13
Grp Volume(v), veh/h	21	0	0	116	0	24	11	0	680	58	0	668
Grp Sat Flow(s),veh/h/ln	1539	0	0	1338	0	1571	765	0	1814	757	0	1790
Q Serve(g_s), s	0.0	0.0	0.0	4.6	0.0	0.9	0.4	0.0	10.7	2.4	0.0	10.6
Cycle Q Clear(g_c), s	0.7	0.0	0.0	5.3	0.0	0.9	11.0	0.0	10.7	13.0	0.0	10.6
Prop In Lane	0.52		0.24	1.00		0.79	1.00		0.14	1.00		0.01
Lane Grp Cap(c), veh/h	286	0	0	289	0	208	547	0	1327	541	0	1310
V/C Ratio(X)	0.07	0.00	0.00	0.40	0.00	0.12	0.02	0.00	0.51	0.11	0.00	0.51
Avail Cap(c_a), veh/h	594	0	0	567	0	533	547	0	1327	541	0	1310
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	0.0	27.2	0.0	25.3	6.2	0.0	3.8	6.6	0.0	3.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.9	0.0	0.2	0.1	0.0	1.4	0.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	2.1	0.0	0.4	0.1	0.0	5.6	0.5	0.0	5.5
LnGrp Delay(d),s/veh	25.4	0.0	0.0	28.0	0.0	25.6	6.2	0.0	5.2	7.0	0.0	5.2
LnGrp LOS	C			C		C	A		A	A		A
Approach Vol, veh/h		21			140			691			726	
Approach Delay, s/veh		25.4			27.6			5.2			5.4	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		13.3		53.0		13.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		13.0		2.7		15.0		7.3				
Green Ext Time (p_c), s		12.7		0.5		12.5		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				7.6								
HCM 2010 LOS				A								




















HCM 2010 Signalized Intersection Summary
1: Kamehameha Hwy & Pupukea Rd

Year 2021
Saturday MIDDAY

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	10	105	5	75	10	665	120	55	580	10
Future Volume (veh/h)	5	5	10	105	5	75	10	665	120	55	580	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.93		0.90	0.92		0.90	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1900	1863	1845	1900
Adj Flow Rate, veh/h	5	5	1	109	5	26	10	693	104	57	604	9
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	3	3
Cap, veh/h	172	152	25	332	42	218	540	1096	164	413	1260	19
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	553	868	142	1295	239	1242	804	1576	236	679	1812	27
Grp Volume(v), veh/h	11	0	0	109	0	31	10	0	797	57	0	613
Grp Sat Flow(s),veh/h/ln	1563	0	0	1295	0	1481	804	0	1812	679	0	1839
Q Serve(g_s), s	0.0	0.0	0.0	4.8	0.0	1.2	0.4	0.0	16.7	3.5	0.0	10.6
Cycle Q Clear(g_c), s	0.4	0.0	0.0	5.2	0.0	1.2	11.0	0.0	16.7	20.1	0.0	10.6
Prop In Lane	0.45		0.09	1.00		0.84	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	349	0	0	332	0	260	540	0	1260	413	0	1279
V/C Ratio(X)	0.03	0.00	0.00	0.33	0.00	0.12	0.02	0.00	0.63	0.14	0.00	0.48
Avail Cap(c_a), veh/h	571	0	0	523	0	478	540	0	1260	413	0	1279
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	0.0	25.8	0.0	24.2	7.4	0.0	5.8	11.2	0.0	4.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.2	0.1	0.0	2.4	0.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	1.9	0.0	0.5	0.1	0.0	9.0	0.7	0.0	5.7
LnGrp Delay(d),s/veh	23.9	0.0	0.0	26.4	0.0	24.4	7.4	0.0	8.2	11.9	0.0	6.1
LnGrp LOS	C			C		C	A		A	B		A
Approach Vol, veh/h		11			140			807			670	
Approach Delay, s/veh		23.9			25.9			8.2			6.6	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		16.7		53.0		16.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		18.7		2.4		22.1		7.2				
Green Ext Time (p_c), s		12.9		0.5		12.2		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				9.2								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary
1: Kamehameha Hwy & Pupukea Rd

Year 2021 + Project
Weekday MIDDAY

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	151	5	64	10	491	112	50	454	5
Future Volume (veh/h)	10	5	10	151	5	64	10	491	112	50	454	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1833	1900	1863	1793	1900
Adj Flow Rate, veh/h	12	6	7	180	6	34	12	585	112	60	540	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	4	4	2	6	6
Cap, veh/h	174	87	71	336	39	224	600	1056	202	490	1252	12
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	589	535	437	1387	242	1369	857	1496	286	745	1773	16
Grp Volume(v), veh/h	25	0	0	180	0	40	12	0	697	60	0	545
Grp Sat Flow(s),veh/h/ln	1561	0	0	1387	0	1611	857	0	1782	745	0	1790
Q Serve(g_s), s	0.0	0.0	0.0	7.5	0.0	1.5	0.4	0.0	13.0	2.9	0.0	8.9
Cycle Q Clear(g_c), s	0.8	0.0	0.0	8.3	0.0	1.5	9.3	0.0	13.0	15.9	0.0	8.9
Prop In Lane	0.48		0.28	1.00		0.85	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	332	0	0	336	0	263	600	0	1258	490	0	1263
V/C Ratio(X)	0.08	0.00	0.00	0.54	0.00	0.15	0.02	0.00	0.55	0.12	0.00	0.43
Avail Cap(c_a), veh/h	581	0	0	563	0	528	600	0	1258	490	0	1263
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	0.0	27.4	0.0	24.7	6.2	0.0	4.9	8.7	0.0	4.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	0.0	0.3	0.1	0.0	1.8	0.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	3.4	0.0	0.7	0.1	0.0	6.8	0.7	0.0	4.6
LnGrp Delay(d),s/veh	24.5	0.0	0.0	28.8	0.0	24.9	6.3	0.0	6.6	9.2	0.0	5.4
LnGrp LOS	C			C		C	A		A	A		A
Approach Vol, veh/h		25			220			709			605	
Approach Delay, s/veh		24.5			28.1			6.6			5.7	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		15.7		53.0		15.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		15.0		2.8		17.9		10.3				
Green Ext Time (p_c), s		11.2		0.8		10.9		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			9.6									
HCM 2010 LOS			A									

Intersection

Int Delay, s/veh 3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↔		↖	↗
Traffic Vol, veh/h	66	96	504	71	105	435
Future Vol, veh/h	66	96	504	71	105	435
Conflicting Peds, #/hr	0	70	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	4	2	2	6
Mvmt Flow	79	114	600	85	125	518




















Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1425	727	0	0	700	0
Stage 1	657	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Critical Hdwy	7.12	6.22	-	-	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	113	424	-	-	897	-
Stage 1	454	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	99	390	-	-	837	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	335	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	23		0		2
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	220	390	837	-
HCM Lane V/C Ratio	-	-	0.357	0.293	0.149	-
HCM Control Delay (s)	-	-	30.2	18	10.1	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	1.5	1.2	0.5	-

HCM 2010 Signalized Intersection Summary
 1: Kamehameha Hwy & Pupukea Rd

Year 2021 + Project
 Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	152	5	62	10	533	145	55	598	5
Future Volume (veh/h)	10	5	10	152	5	62	10	533	145	55	598	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1827	1829	1900	1863	1859	1900	1863	1793	1900
Adj Flow Rate, veh/h	11	5	5	160	5	31	11	561	128	58	629	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	4	2	2	2	2	2	2	6	6
Cap, veh/h	186	83	59	327	35	218	535	1034	236	498	1254	10
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	651	511	363	1344	216	1342	790	1465	334	751	1776	14
Grp Volume(v), veh/h	21	0	0	160	0	36	11	0	689	58	0	634
Grp Sat Flow(s),veh/h/ln	1526	0	0	1344	0	1558	790	0	1799	751	0	1790
Q Serve(g_s), s	0.0	0.0	0.0	6.9	0.0	1.4	0.4	0.0	12.5	2.7	0.0	11.1
Cycle Q Clear(g_c), s	0.7	0.0	0.0	7.6	0.0	1.4	11.5	0.0	12.5	15.3	0.0	11.1
Prop In Lane	0.52		0.24	1.00		0.86	1.00		0.19	1.00		0.01
Lane Grp Cap(c), veh/h	328	0	0	327	0	254	535	0	1271	498	0	1264
V/C Ratio(X)	0.06	0.00	0.00	0.49	0.00	0.14	0.02	0.00	0.54	0.12	0.00	0.50
Avail Cap(c_a), veh/h	572	0	0	549	0	510	535	0	1271	498	0	1264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	0.0	27.2	0.0	24.6	7.2	0.0	4.8	8.4	0.0	4.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.1	0.0	0.3	0.1	0.0	1.7	0.5	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	3.0	0.0	0.6	0.1	0.0	6.7	0.6	0.0	5.8
LnGrp Delay(d),s/veh	24.4	0.0	0.0	28.3	0.0	24.9	7.3	0.0	6.5	8.9	0.0	6.0
LnGrp LOS	C			C		C	A		A	A		A
Approach Vol, veh/h		21			196			700			692	
Approach Delay, s/veh		24.4			27.7			6.5			6.3	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		15.7		53.0		15.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		14.5		2.7		17.3		9.6				
Green Ext Time (p_c), s		12.3		0.8		11.9		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				9.2								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	61	99	536	64	101	594
Future Vol, veh/h	61	99	536	64	101	594
Conflicting Peds, #/hr	0	35	0	7	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	6
Mvmt Flow	64	104	564	67	106	625




















Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1443	640	0	0	639	0
Stage 1	605	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	146	475	-	-	945	-
Stage 1	545	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	128	456	-	-	914	-
Mov Cap-2 Maneuver	258	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	375	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	18.4		0		1.4
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	258	456	914	-
HCM Lane V/C Ratio	-	-	0.249	0.229	0.116	-
HCM Control Delay (s)	-	-	23.5	15.2	9.5	-
HCM Lane LOS	-	-	C	C	A	-
HCM 95th %tile Q(veh)	-	-	1	0.9	0.4	-

HCM 2010 Signalized Intersection Summary
 1: Kamehameha Hwy & Pupukea Rd

Year 2021 + Project
 Saturday MIDDAY

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	10	151	5	88	10	646	153	55	548	10
Future Volume (veh/h)	5	5	10	151	5	88	10	646	153	55	548	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.93		0.91	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1900	1863	1845	1900
Adj Flow Rate, veh/h	5	5	1	157	5	40	10	673	138	57	571	9
Adj No. of Lanes	0	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	3	3
Cap, veh/h	185	166	28	359	32	257	540	1011	207	378	1227	19
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	568	846	141	1306	164	1312	829	1492	306	670	1810	29
Grp Volume(v), veh/h	11	0	0	157	0	45	10	0	811	57	0	580
Grp Sat Flow(s),veh/h/ln	1556	0	0	1306	0	1476	829	0	1797	670	0	1839
Q Serve(g_s), s	0.0	0.0	0.0	7.4	0.0	1.8	0.4	0.0	18.9	3.9	0.0	10.6
Cycle Q Clear(g_c), s	0.4	0.0	0.0	7.8	0.0	1.8	11.0	0.0	18.9	22.8	0.0	10.6
Prop In Lane	0.45		0.09	1.00		0.89	1.00		0.17	1.00		0.02
Lane Grp Cap(c), veh/h	379	0	0	359	0	290	540	0	1219	378	0	1247
V/C Ratio(X)	0.03	0.00	0.00	0.44	0.00	0.16	0.02	0.00	0.67	0.15	0.00	0.47
Avail Cap(c_a), veh/h	556	0	0	513	0	464	540	0	1219	378	0	1247
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.3	0.0	0.0	26.2	0.0	23.8	8.0	0.0	6.8	13.5	0.0	5.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.2	0.1	0.0	2.9	0.8	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	2.9	0.0	0.8	0.1	0.0	10.2	0.8	0.0	5.7
LnGrp Delay(d),s/veh	23.3	0.0	0.0	27.0	0.0	24.1	8.1	0.0	9.6	14.3	0.0	6.7
LnGrp LOS	C			C		C	A		A	B		A
Approach Vol, veh/h		11			202			821			637	
Approach Delay, s/veh		23.3			26.4			9.6			7.4	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.0		18.5		53.0		18.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		22.5		48.5		22.5				
Max Q Clear Time (g_c+I1), s		20.9		2.4		24.8		9.8				
Green Ext Time (p_c), s		12.4		0.8		11.5		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				10.9								
HCM 2010 LOS				B								

Intersection

Int Delay, s/veh 4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖	↖		↖	↖
Traffic Vol, veh/h	79	122	646	93	137	533
Future Vol, veh/h	79	122	646	93	137	533
Conflicting Peds, #/hr	0	70	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	3
Mvmt Flow	82	127	673	97	143	555

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1577	806	0	0	785	0
Stage 1	736	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	121	382	-	-	834	-
Stage 1	474	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	97	351	-	-	778	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	345	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	24.6		0		2.2
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	224	351	778	-
HCM Lane V/C Ratio	-	-	0.367	0.362	0.183	-
HCM Control Delay (s)	-	-	30.1	21	10.7	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	1.6	1.6	0.7	-

APPENDIX D: PEDESTRIAN CROSSWALK WARRANT



Input instructions (refer to Field Visit Checklist for data collection guidelines):

- 1 Enter the name of the intersection above the Inputs Table
- 2 An input value is required for every category except Fields 4, 5, 10, and 11 (which are required only if a median refuge island is present), and Field 26
- 3 Refer to the Documentation tab for more detailed descriptions of inputs and calculations.
- 4 There are available defaults for Fields 6, 7, 8, and 13, as listed in the "description" section
- 5 Select inputs for Fields 14-25 from the drop-down menus
- 6 Refer to the User's Guide for pedestrian crossing treatment descriptions and additional guidelines

Intersection: Kam Hwy/Pahoe Rd

required input
optional/default input (update if location-specific data is available)
required only when a median refuge island is present

INPUTS

FIELD	CATEGORY	INPUT	UNITS	DESCRIPTION/ NOTES
1	Speed Limit	35	mph	Posted or statutory speed limit or the 85th percentile speed on the major street
2	Peak Hour Pedestrian Volume	80	ped/h	Number of pedestrians crossing the major roadway in a peak hour
3	Major Road Peak Hour Volume (Total)	1438	veh/h	Total number of vehicles and bicyclists on both approaches during the peak hour
4	Major Road Peak Hour Volume Direction 1	0	veh/h	Include only if a painted or raised median is present (min of 6 feet wide)
5	Major Road Peak Hour Volume Direction 2	0	veh/h	Include only if a painted or raised median is present (min of 6 feet wide)
6	Average Pedestrian Walking Speed	3.5	ft/s	Average pedestrian walking speed, default speed = 3.5 feet/second
7	15th Percentile Crossing Speed	3	ft/s	Speed for the slowest 15% of pedestrians; default speed = 3 feet/second
8	Pedestrian start-up time and end clearance time	3	s	The <i>Highway Capacity Manual</i> suggests 3 seconds
9	Pedestrian Crossing Distance (curb to curb)	30	ft	Distance between the near and far curbs
10	First Half Crossing Distance	15	ft	Distance between the near curb and a painted or raised median refuge island
11	Second Half Crossing Distance	15	ft	Distance between a painted or raised median refuge island and the far curb
12	Number of Lanes (total both directions)	2	Lanes	Number of lanes on major roadway
13	Expected Motorist Compliance	Moderate		Typical motorist compliance, default = Low
14	Is frequent at-grade transit present?	Yes		Does frequent surface transit run along major or minor road at the intersection?
15	Are bicycle lanes present?	No		
16	Is there heavy bicycle traffic?	No		
17	Is there a clear major and minor road?	Yes		Is there a clear differentiation in the traffic volume between the two roads?
18	Is this a midblock location or off-set intersection?	No		
19	Is there heavy truck traffic?	No		
20	Does existing infrastructure limit potential treatments?	No		Are there storm drains, poles, or other permanent structures at any corner of the intersection?
21	Is there on-street parking at the location?	No		
22	Is the location in a downtown area?	No		
23	Is it located within the built-up area of an isolated community?	Yes		Does the community have a population of less than 10,000?
24	Is a median refuge island present?	No		Does the refuge island have a width of at least 6 feet to accommodate pedestrian queues?
25	Is there sufficient width to accommodate a median?	No		At least 4 feet (with lane widths reduced to 10 or 11 feet)
26	Actual Total Pedestrian Delay		s	Optional (if calculated at the site)

OUTPUTS

Signalized Crossing or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	Overhead Flashing Beacon or In-Pavement Flashers
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	LEVEL 3 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	LEVEL 2 Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	LEVEL 1 High Visibility Crosswalk Markings, Advance Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 HAWK*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	LEVEL 3 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	LEVEL 2 Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1



* Treatment has provisional approval under the CaMUTCD
 ** Note that not all treatments are appropriate for multi-lane roads; refer to suitability notes in treatment fact sheets. Check local codes for each treatment.
 *** Note that curb extensions should not be used in instances where bicycle lanes are present and no on-street parking is available.

NOTE: This worksheet should be used in conjunction with the User's Guide and Treatment Descriptions. This worksheet provides general recommendations; in all cases, engineering judgment and site review should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings.

APPENDIX G
NOISE STUDY FOR PROPOSED
PŪPŪKEA RURAL COMMUNITY COMMERCIAL CENTER,
PŪPŪKEA, OAHU

Y. Ebisu & Associates

Acoustical and Electronic Engineers

1126 12th Ave., Room 305
Honolulu, Hawaii 96816
Ph. (808) 735-1634 – Fax (808) 732-0409
e-mail: ebisuyassoc@aol.com

YEA Job #54.045

July 26, 2017

G70
925 Bethel Street, Fifth Floor
Honolulu, HI 96813

Attention: Mr. Jeffrey H. Overton, ACIP, LEED-AP

Subject: Noise Study for Hanapohaku Commercial Center; Pupukea, Oahu

Dear Mr. Overton:

We have completed our traffic noise measurements at the subject project site and have reviewed the project's draft Traffic Impact Analysis Report (Reference 1). This letter report presents the results of our evaluations of the potential noise impacts associated with the subject project, and provides possible noise mitigation measures as appropriate.

Figure 1 is a project location map which indicates the three traffic noise measurement locations used on July 7, 2017 (Friday) and on July 8, 2017 (Saturday). Table 1 summarizes the results of the traffic noise measurements at Locations A1, A2, and B, and provides a comparison of the measured noise levels and the predicted noise levels using the U.S. Federal Highway Administration Traffic Noise Model (FHWA TNM), Version 2.5 (Reference 2). As indicated in Table 1, measured traffic noise levels compared favorably with predicted noise levels using the FHWA TNM. For this reason, the FHWA TNM was used to model both existing and future traffic noise levels along Kamehameha Highway and Pupukea Road.

Table 2 presents the Base Year and future traffic volumes on Kamehameha Highway and Pupukea Road obtained from Reference 1. Using these traffic volumes, traffic noise levels at 50, 75, and 100 feet from the centerlines of Kamehameha Highway and Pupukea Road were calculated using the FHWA TNM as shown in Tables 3 and 4 for the Base Year and Future Year (Build Alternative), respectively. In the tables, the Equivalent (or Average) Hourly Sound Level [Leq(h)] noise descriptor was used to calculate the Base Year and CY 2021 traffic noise levels as required by Reference 3. By Reference 3, the applicable noise mitigation thresholds for traffic noise are 66 Leq(h) and 71 Leq(h) for residential and commercial receptors,

respectively.

As shown in Table 5, the applicable distances to the 66 Leq(h) noise contour for unobstructed line-of sight conditions ranged from 36 to 44 feet from the centerline of Kamehameha Highway during the Base Year to a range from 36 to 45 feet from the centerline of Kamehameha Highway during 2021 under the Build Alternative. Along Pupukea Road in the vicinity of Kamehameha Highway, the Base Year 66 Leq(h) noise contour did not extend beyond 19 feet from the centerline of Pupukea Road. Also shown in Table 5, the applicable distances to the 71 Leq(h) noise contour for unobstructed line-of sight conditions ranged from 20 to 24 feet from the centerline of Kamehameha Highway during the Base Year and will range from 20 to 25 feet from the centerline of Kamehameha Highway during 2021 under the Build Alternative. Based on the results shown in Table 5, the 66 Leq(h) noise mitigation threshold was exceeded during the Base Year at one residence located on the mauka side of Kamehameha Highway and within 950 feet south of the Pupukea Road intersection. By 2021, with or without the project, the total number of residences exposed to traffic noise levels at or above the 66 Leq(h) will increase from one to three residences. No commercial establishments were or are anticipated to be located within the existing 71 Leq(h) traffic noise contours.

By 2021, without the project, traffic noise levels are predicted to increase by 0.2 to 0.3 Leq(h) along Kamehameha Highway and by 0.3 to 0.4 Leq(h) along Pupukea Road. These increases will not be perceptible, and are well within the accuracy limits of the noise level predictions. By 2021, with the Project, a maximum additional increase in traffic noise levels along Kamehameha Highway of 0.2 Leq(h) is predicted to occur due to project traffic. These predictions are shown in Table 6, for both Non-Project and Project traffic noise contributions. Along Pupukea Road, larger increases of 0.3 to 0.4 Leq(h) are anticipated from Non-Project traffic, and even larger increases of 0.9 to 1.1 Leq(h) are anticipated from Project traffic. By 2021 with or without the project, the total number of existing residences along Kamehameha Highway within the 66 Leq(h) will increase from one to three. No existing residences along Pupukea Road should be within the 66 Leq(h) traffic noise contour by 2021, with or without the Project.

Traffic noise mitigation measures should not be required for this project. However, to minimize risks of potential noise complaints from delivery truck noise, such as from back-up alarms, deliveries to the commercial establishments during the nighttime or early morning hours should be avoided if possible.

Adherence to the State Department of Health (DOH) property line noise limits of 60 dBA and 50 dBA from fixed machinery (such as air conditioning, kitchen fans and ecology units, and refrigeration equipment) during the daytime and nighttime periods,

respectively, will be required by Reference 4. Adherence to these limits by inclusion of acoustical design features of the buildings on the project site should minimize risks of adverse noise impacts at nearby residences from these fixed machinery. During Project construction activities, adherence to the State DOH permit procedures and curfew periods should also minimize risks of adverse noise impacts at nearby residences. Excessive noise from construction equipment are normally permitted during weekdays from 7:00 am to 6:00 pm (excluding holidays), and from 9:00 am to 6:00 pm on Saturdays.

Other potential noise impacts at existing residences across Pahoe Road are possible due to noise from the planned restaurant at the north end of the project site. The amount of sound emanating from the restaurant would typically be highest when amplified voice and/or music venues occur at the restaurant, and particularly if closure and air conditioning are not included within the construction features of the restaurant building. If amplified voice or music venues are not expected to occur at the restaurant (say, similar to a Zippy's restaurant), risks of potential noise impacts from future operations at the restaurant should be low. If amplified voice or music venues may occur at the restaurant, and if a liquor license is obtained by the operator of the restaurant, the local Liquor Commission could enforce any noise exceedances under its rules, which are similar to the daytime and nighttime noise limits of the State DOH. If no liquor license is obtained by the operator of the restaurant, both the DOH and Liquor Commission noise limits would not be applicable to the noise exceedances from amplified voice or music at the restaurant. For this reason, closure and air conditioning of the sections of the restaurant where interior noise levels above 80 dBA are possible is the recommended noise mitigation measure for the restaurant. The construction of the exterior envelope of the restaurant should also be acoustically designed to reduce exterior noise levels to 45 dBA or less at the closest noise sensitive residence.

Noise levels may increase at the neighboring residence across the northeast corner of the project site due to activities in the project's the parking lot. The noise from parking lots adjacent to residences can cause complaints, particularly if the noise is associated with boisterous activities in the parking lot, and particularly if it occurs during the late night or early morning hours. If the boisterous activities in the parking lot are associated with operation of the establishment with a liquor license, the Liquor Commission may be able use its regulatory powers to control the boisterous activities. The responsible tenant or manager of the Commercial Center will probably be required to implement administrative controls to resolve any noise complaint. To reduce the risks of potential noise impacts from boisterous activities in the parking lot, the use of a solid (without see-through openings or cracks) wall along the project property line adjacent to residence(s) is recommended.

Let me know if you have any questions regarding this report, or if you need any additional information.

Sincerely,

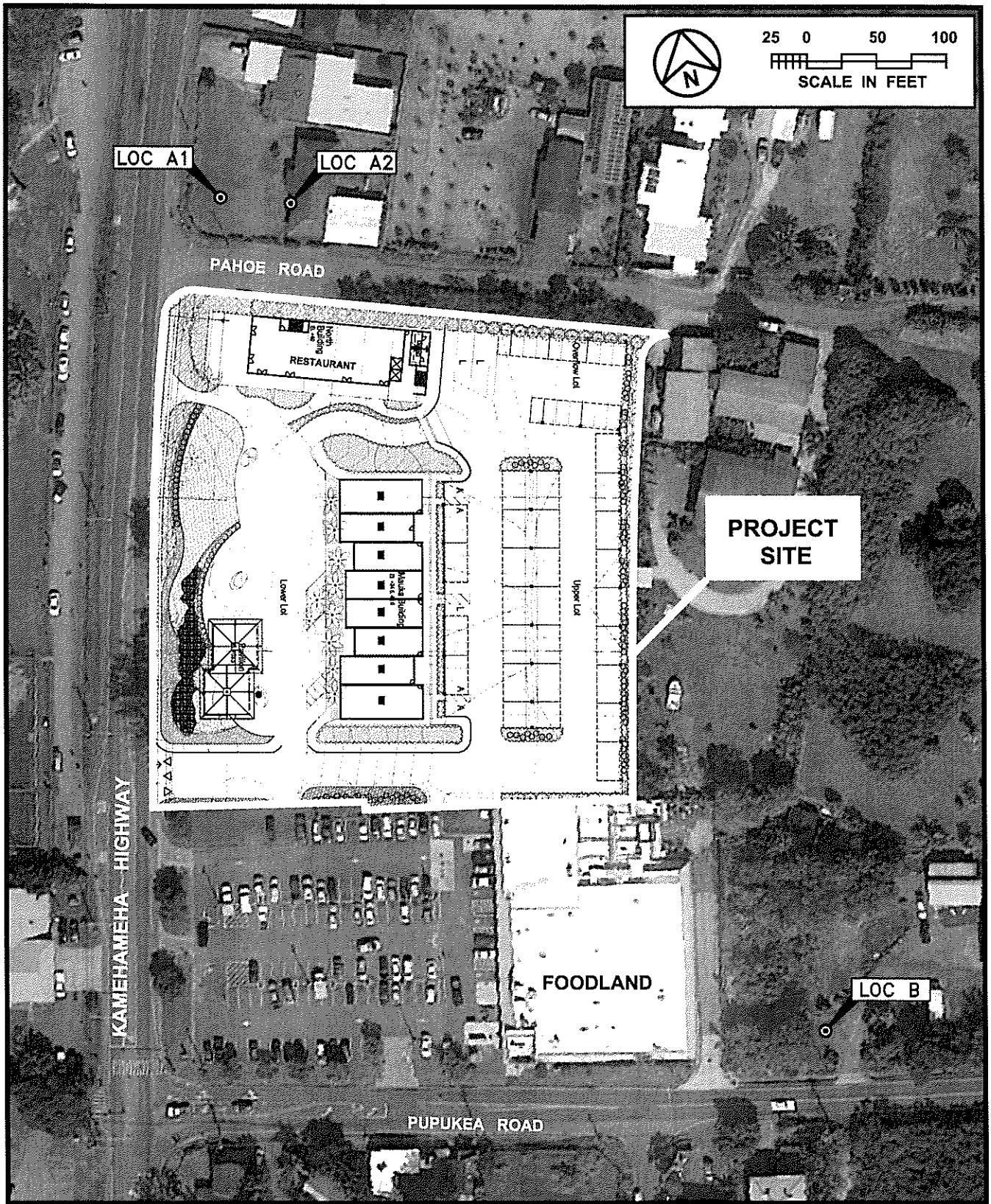


Yoichi Ebisu, P.E.

encl.

References.

1. Fehr & Peers; Draft Transportation Impact Analysis Report, Hanapohaku Commercial Center; June 23, 2017.
2. "FHWA Highway Traffic Noise Model User's Guide;" FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).
3. "Highway Noise Policy and Abatement Guidelines;" State of Hawaii, Department of Transportation, Highways Division and U.S. Department of Transportation, Federal Highway Administration; April 18, 2016.
4. "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.



PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATIONS

FIGURE 1
1

**TABLE 1
TRAFFIC NOISE MEASUREMENT RESULTS**

<u>LOCATION</u>	Time of Day <u>(HRS)</u>	Ave. Speed <u>(MPH)</u>	Hourly Traffic Volume -----			Measured Leq (dB)	Predicted Leq (dB)
			<u>AUTO</u>	<u>M.TRUCK</u>	<u>H.TRUCK</u>		
A1 50 FT from Centerline of Kamehameha Highway (7/7/17)	1130	20	1,001	36	45	62.2	63.1
	TO 1230						
A2 100 FT from Centerline of Kamehameha Highway (7/7/17)	1130	20	1,001	36	45	58.1	58.2
	TO 1230						
A1 50 FT from Centerline of Kamehameha Highway (7/7/17)	1600	27	1,166	16	26	62.8	63.0
	TO 1700						
A2 100 FT from Centerline of Kamehameha Highway (7/7/17)	1600	27	1,166	16	26	57.9	57.5
	TO 1700						
A1 50 FT from Centerline of Kamehameha Highway (7/8/17)	1130	30	1,178	26	29	64.4	64.2
	TO 1230						
A2 100 FT from Centerline of Kamehameha Highway (7/8/17) Saturday	1130	30	1,178	26	29	58.5	58.6
	TO 1230						

**TABLE 1 (CONTINUED)
TRAFFIC NOISE MEASUREMENT RESULTS**

	<u>LOCATION</u>	Time of Day <u>(HRS)</u>	Ave. Speed <u>(MPH)</u>	Hourly Traffic Volume -----			Measured Leq (dB)	Predicted Leq (dB)
				<u>AUTO</u>	<u>M.TRUCK</u>	<u>H.TRUCK</u>		
B	50 FT from Centerline of Pupukea Road (7/7/17)	1330	30	282	8	8	58.3	58.1
		TO 1430						
B	50 FT from Centerline of Pupukea Road (7/8/17) Saturday	1330	33	260	5	2	57.2	57.2
		TO 1430						

TABLE 2

SUMMARY OF CY 2016 AND FUTURE YEAR (CY 2021)
TRAFFIC VOLUMES

ROADWAY LANES	***** CY 2016 *****			***** CY 2021 (NO BUILD) *****			***** CY 2021 (BUILD) *****		
	MID VPH	PM VPH	SAT VPH	MID VPH	PM VPH	SAT VPH	MID VPH	PM VPH	SAT VPH
Kamehameha Hwy. North of Project Driveway (NB)	542	576	702	575	615	745	600	635	768
Kamehameha Hwy. North of Project Driveway (SB)	498	648	607	530	690	645	540	695	670
Two-Way	1,040	1,224	1,309	1,105	1,305	1,390	1,140	1,330	1,438
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy. (NB)	542	576	702	575	615	745	570	603	739
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy. (SB)	498	648	607	530	690	645	505	657	613
Two-Way	1,040	1,224	1,309	1,105	1,305	1,390	1,075	1,259	1,352
Kamehameha Hwy. South of Pupukea Rd. (NB)	572	638	746	605	680	795	613	688	809
Kamehameha Hwy. South of Pupukea Rd. (SB)	563	705	657	605	750	695	615	760	709
Two-Way	1,135	1,343	1,403	1,210	1,430	1,490	1,228	1,448	1,518
Pupukea Rd. East of Kamehameha Hwy. (EB)	128	163	162	140	175	180	167	205	213
Pupukea Rd. East of Kamehameha Hwy. (WB)	161	152	168	180	165	185	220	219	244
Two-Way	289	315	330	320	340	365	387	424	457

TABLE 3

EXISTING (CY 2016) TRAFFIC VOLUMES AND NOISE LEVELS
ALONG VARIOUS ROADWAYS IN PROJECT ENVIRONS
(PM AND SAT PEAK HOUR)

LOCATION	SPEED (MPH)	TOTAL VPH	***** VOLUMES (VPH) *****				50' Leg	75' Leg	100' Leg
			AUTOS	M TRUCKS	H TRUCKS	H TRUCKS			
WEEKDAY PM PEAK HOUR:									
Kamehameha Hwy. North of Project Driveway	27	1,224	1,181	16	27	63.1	59.6	57.4	
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	27	1,224	1,181	16	27	63.1	59.6	57.4	
Kamehameha Hwy. South of Pupukea Rd.	27	1,343	1,296	17	30	63.5	60.0	57.8	
Pupukea Rd. East of Kamehameha Hwy.	30	315	303	5	7	57.9	54.5	52.7	
SAT PEAK HOUR:									
Kamehameha Hwy. North of Project Driveway	30	1,309	1,251	27	31	64.5	61.0	58.7	
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	30	1,309	1,251	27	31	64.5	61.0	58.7	
Kamehameha Hwy. South of Pupukea Rd.	30	1,403	1,340	29	34	64.8	61.3	59.0	
Pupukea Rd. East of Kamehameha Hwy.	30	330	316	6	8	58.2	54.9	53.1	

TABLE 4

FUTURE (CY 2021) TRAFFIC VOLUMES AND NOISE LEVELS
ALONG VARIOUS ROADWAYS IN PROJECT ENVIRONS
(PM AND SAT PEAK HOUR, BUILD)

<u>LOCATION</u>	<u>SPEED</u> (MPH)	<u>TOTAL</u> <u>VPH</u>	***** VOLUMES (VPH) *****				<u>50' Leg</u>	<u>75' Leg</u>	<u>100' Leg</u>
			<u>AUTOS</u>	<u>M.TRUCKS</u>	<u>H.TRUCKS</u>	<u>H.TRUCKS</u>			
<u>WEEKDAY PM PEAK HOUR:</u>									
Kamehameha Hwy. North of Project Driveway	27	1,330	1,284	17	29	63.4	60.0	57.7	
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	27	1,259	1,215	16	28	63.2	59.8	57.5	
Kamehameha Hwy. South of Pupukea Rd.	27	1,448	1,397	19	32	63.8	60.4	58.1	
Pupukea Rd. East of Kamehameha Hwy.	30	424	407	7	10	59.2	55.9	54.1	
<u>SAT PEAK HOUR:</u>									
Kamehameha Hwy. North of Project Driveway	30	1,438	1,373	30	35	64.9	61.4	59.1	
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	30	1,352	1,292	28	32	64.6	61.1	58.8	
Kamehameha Hwy. South of Pupukea Rd.	30	1,518	1,450	32	36	65.1	61.6	59.3	
Pupukea Rd. East of Kamehameha Hwy.	30	457	438	8	11	59.6	56.3	54.5	

TABLE 5
YEAR 2016 AND 2021 DISTANCES TO 66 AND 71 LEQ
CONTOURS (WEEKDAY PM AND SATURDAY PEAK HOUR, BUILD)

<u>STREET SECTION</u>	<u>66 Leq SETBACK (FT)</u>		<u>71 Leq SETBACK (FT)</u>	
	<u>CY 2016</u>	<u>CY 2021</u>	<u>CY 2016</u>	<u>CY 2021</u>
<u>WEEKDAY PM PEAK HOUR:</u>				
Kamehameha Hwy. North of Project Driveway	36	37	20	20
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	36	36	20	20
Kamehameha Hwy. South of Pupukea Rd.	37	38	21	21
Pupukea Rd. East of Kamehameha Hwy.	19	22	10	12
<u>SAT PEAK HOUR:</u>				
Kamehameha Hwy. North of Project Driveway	42	44	24	25
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy.	42	43	24	24
Kamehameha Hwy. South of Pupukea Rd.	44	45	24	25
Pupukea Rd. East of Kamehameha Hwy.	19	23	10	12

Notes:

- (1) All setback distances are from the roadways' centerlines.
- (2) See Tables 3 and 4 for traffic volume, speed, and mix assumptions.
- (3) Setback distances are for unobstructed line-of-sight conditions.
- (4) "Loose Soil" ground cover conditions assumed along all roadways.

TABLE 6

**CALCULATIONS OF PROJECT AND NON-PROJECT
TRAFFIC NOISE CONTRIBUTIONS (CY 2021)
(WEEKDAY PM AND SATURDAY PEAK HOUR)**

<u>STREET SECTION</u>	<u>NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC</u>	<u>PROJECT TRAFFIC</u>
<u>WEEKDAY PM PEAK HOUR:</u>		
Kamehameha Hwy. North of Project Driveway	0.30	0.00
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy	0.30	-0.20
Kamehameha Hwy. South of Pupukea Rd.	0.20	0.10
Pupukea Rd. East of Kamehameha Hwy.	0.40	0.90
<u>SAT PEAK HOUR:</u>		
Kamehameha Hwy. North of Project Driveway	0.20	0.20
Kamehameha Hwy. Between Pupukea Rd. and Project Drwy	0.20	-0.10
Kamehameha Hwy. South of Pupukea Rd.	0.20	0.10
Pupukea Rd. East of Kamehameha Hwy.	0.30	1.10

APPENDIX H
PRELIMINARY ENGINEERING REPORT

Pūpūkea Rural Community Commercial Center

Pūpūkea, Hale'iwa, Oahu
Tax Map Key: (1) 5-9-011:068, 069, 070

Preliminary Engineering Report

Prepared for:
Hanapohaku, LLC
59-716 Kamehameha Highway
Hale'iwa, Hawai'i 96712

Prepared by:
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dba G70
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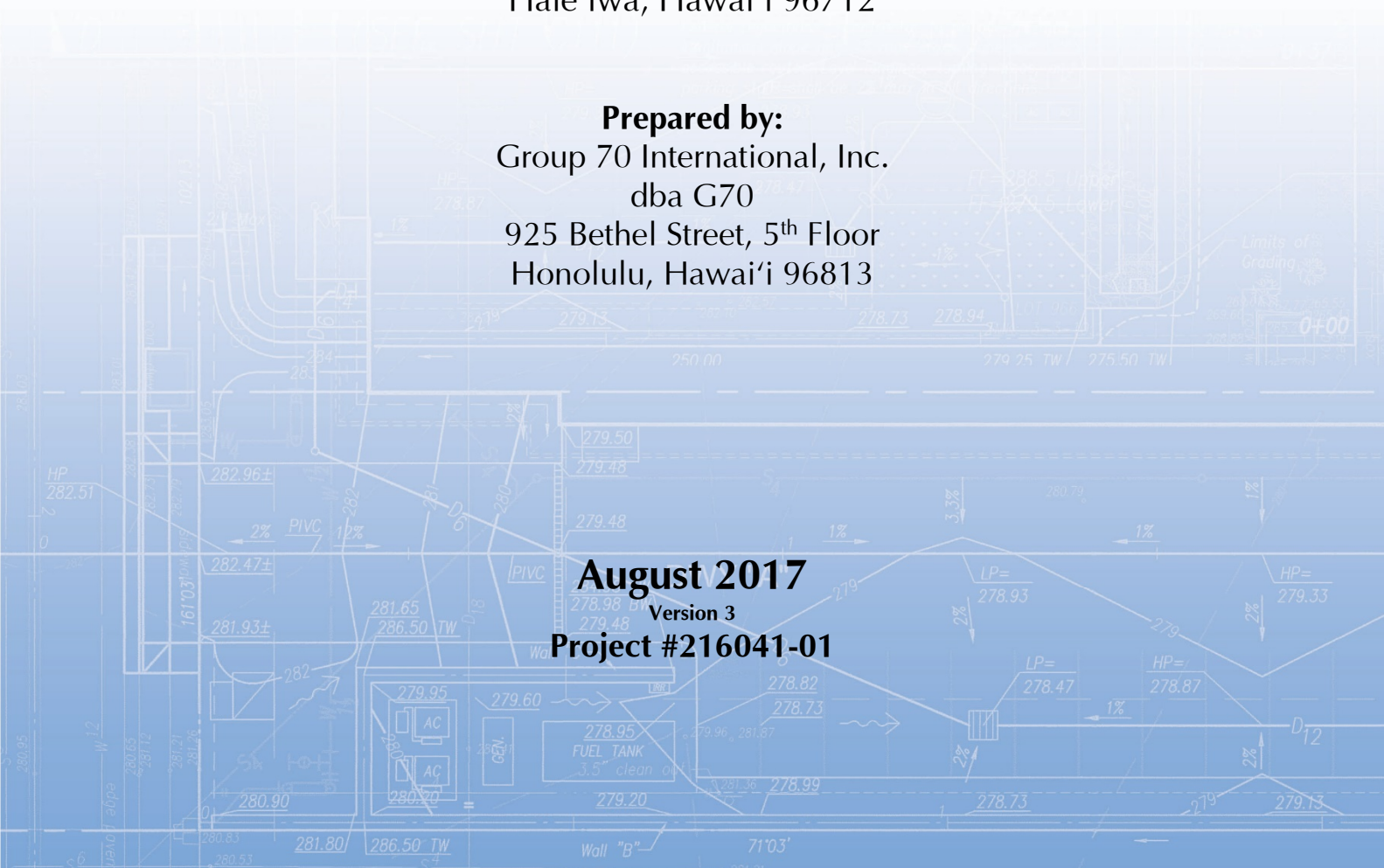


TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF TABLES.....	iii
LIST OF FIGURES	iii
LIST OF APPENDICIES.....	iii
1 Introduction.....	1
1.1 Project Background and Description	1
1.2 Purpose	1
1.3 Site Location.....	1
2 Roads and Access	1
2.1 Existing Conditions	1
2.1.1 Existing Vehicular Access.....	1
2.1.2 Existing Pedestrian Access.....	2
2.1.3 Existing Parking	2
2.2 Proposed Roads, Access and Parking.....	2
3 Water Infrastructure	2
3.1 Existing Conditions	2
3.1.1 Existing Water System.....	2
3.1.2 Existing Pressure and Flow Data.....	3
3.2 Proposed Water.....	3
3.2.1 Projected Water Demand.....	3
3.2.2 Proposed Water System	4
3.2.3 Proposed Fire Protection.....	4
4 Wastewater Infrastructure.....	4
4.1 Existing Wastewater Infrastructure	4
4.2 Proposed Wastewater Infrastructure	4
4.2.1 Design Parameters.....	4
4.2.2 Wastewater Flow Projection.....	5
4.3 Wastewater Pre-Treatment	6
4.3.1 Grease Interceptors.....	7

4.3.2 Pre-Loader (Septic Tank) 7

4.4 Wastewater Treatment 7

4.4.1 Single Basin Reactor – Cyclic Biological Treatment (CBT) 8

4.5 Wastewater Effluent Disposal 9

4.5.1 Absorption Bed..... 9

5 Drainage Infrastructure..... 9

5.1 Existing Conditions 9

5.1.1 Existing Soil Conditions..... 9

5.1.2 Existing Topography and Drainage Patterns10

5.1.3 Existing Flood Hazards.....11

5.2 Proposed Conditions.....11

5.2.1 Proposed Grading and Erosion Control.....11

5.2.2 Proposed Drainage Patterns11

5.2.3 Proposed Low Impact Development Improvements12

5.2.4 Offsite Drainage Improvements.....12

6 Electrical and Telecommunications13

6.1 Existing Services13

6.2 Proposed Services.....13

LIST OF TABLES

- Table 1: Fire Flow and Pressure Data
- Table 2: BWS Water Demands by Zoning
- Table 3: Estimated Wastewater Flow
- Table 4: Soil Properties
- Table 5: Existing Conditions Hydrology
- Table 6: Proposed Conditions Hydrology
- Table 7: Solid Waste Generation

LIST OF FIGURES

- Figure 1: Preliminary Site Plan
- Figure 2: Vicinity Map
- Figure 3: Location Map
- Figure 4: Existing Conditions
- Figure 5: DOH UIC Line and BWS Pass/No-Pass Line
- Figure 6: Concept Site & Utility Plan
- Figure 7: Soils Map
- Figure 8: Flood Zones Map
- Figure 9: Concept Grading & Drainage Plan

LIST OF APPENDICIES

- Appendix A – BWS Letter
- Appendix B – Wastewater Treatment and Disposal Alternatives – Fact Sheets, March 2008.
- Appendix C – CBT Design Parameters

1 Introduction

1.1 Project Background and Description

There are three (3) parcels that make up the project site (TMK 5-9-011: 068, 069 & 070) and are all owned by Hanapohaku, LLC. Current tenant uses include a real estate office, a former dentist office, a surf shop, a boutique retail store, and five (5) outdoor food trucks.

The proposed Pūpūkea Rural Community Commercial Center Project (herein referred to as the “Project”) is a planned commercial redevelopment consisting of two (2) 2-story commercial buildings and a 1-story pavilion building with ancillary support facilities (e.g. parking and loading spaces, walkways, and open recreational area). The total building area is approximately 27,000 square feet (SF). **See Figure 1: Preliminary Site Plan.**

1.2 Purpose

The purpose of this Preliminary Engineering Report is to assess the existing and proposed civil infrastructure at the property. This report will evaluate the adequacy of the existing roadway, water, sewer and drainage conditions to accommodate the proposed rural community commercial development.

1.3 Site Location

The project site is located in the Pūpūkea ahupua’a of the island of O’ahu. It is confined by Pahoe Road to the north, makai by Kamehameha Highway, mauka by a residential property, and Foodland to the South. The parcels are currently zoned Neighborhood Business District (B-1) and is within the Urban State Land Use District. The parcel is within the Special Management Area (SMA) and has a Special Use Permit (Minor) for current activities (2017/SMA-21). The proposed project will require a Special Use Permit (Major). **See Figure 2: Vicinity Map and Figure 3: Location Map.**

2 Roads and Access

2.1 Existing Conditions

2.1.1 Existing Vehicular Access

Primary access to the property is provided via Kamehameha Highway, located along the western edge of the property. The portion of Kamehameha Highway adjacent to the property consists of a 50-foot right-of-way and a posted speed limit of 35 miles per hour (mph). The right-of-way is owned and maintained by the State of Hawaii and contains two delineated vehicular travel lanes without sidewalks. Left-turn lanes are provided on Kamehameha Highway at its intersection with Pūpūkea Road.

Although parcel 070 has rights to access Pahoe Road, there is no permitted vehicular access along Pahoe Road by recorded agreement of the land owners fronting the roadway. **See Figure 4: Existing Conditions.**

2.1.2 Existing Pedestrian Access

There are no existing sidewalks or designated walkways along Kamehameha Highway fronting the property. There are pedestrian crosswalks at the intersection of Kamehameha Highway and Pūpūkea Road at the southwestern corner of the rural community commercial center including Foodland, near the vicinity of the property.

2.1.3 Existing Parking

Delineated parking stalls are provided onsite. While no street parking is allowed along Kamehameha Highway or Pahoe Road, vehicles are regularly observed parking along the portions of Kamehameha Highway opposite the project site.

2.2 Proposed Roads, Access and Parking

Vehicular access to the site will continue to be from Kamehameha Highway. A joint development agreement with Foodland identifies the desire to include ingress and egress between properties to achieve the mutual benefits of an integrated neighborhood shopping center without obstructing walls or fences between properties. Foodland's existing ingress/egress driveways off of Kamehameha Highway will be removed and consolidated into a single driveway. The existing ingress/egress from Pūpūkea Road to the Foodland Parking lot will be maintained.

Based on Fehr & Peers' Transportation Impact Analysis Report (TIAR), vehicular and pedestrian traffic is expected to increase. However, the addition of project trips is not expected to significantly impact the Kamehameha Highway/Pūpūkea Road intersection. Improvements will be provided along the Kamehameha Highway to accommodate vehicular and pedestrian access to the site. Kamehameha Highway will be restriped with a shared center-turn lane for vehicles entering the property from the North and exiting the property to the South.

Onsite parking will meet Land Use Ordinance requirements and consist of a total of 126 stalls located along the front of the mauka building and at the back of the property.

3 Water Infrastructure

3.1 Existing Conditions

3.1.1 Existing Water System

Potable water in the general area is provided by the Honolulu Board of Water Supply (BWS). Per record drawings there is an existing 16-inch water main along Kamehameha Highway and another existing 8-inch water line along Pahoe Road. The existing 16-inch water main on Kamehameha

Highway currently only provides water service to parcel 068 via an existing water lateral and 1-inch water meter. The existing meter, number 02403605, is still in use per BWS information.

3.1.2 Existing Pressure and Flow Data

There are a total of four (4) fire hydrants located along Pahoe Road, Kamehameha Highway, and Pūpūkea Road. BWS has provided information for two (2) existing BWS fire hydrants (C-00036 & C-02048), which are located along Kamehameha Highway and on Pahoe Road. Although BWS has suspended fire flow tests on fire hydrants as a water conservation measure, BWS provided the following calculated flow data for both fire hydrants:

Table 1: Fire Flow and Pressure Data		
Location	Kamehameha Hwy	Pahoe Road
Fire Hydrant No.	C-00036	C-02048
Static Pressure	82 psi	72 psi
Residual Pressure	56 psi	43 psi
Flow	1,000 gpm	1,000 gpm

The residual pressure represents the theoretical pressure at the point of calculation based on BWS hydraulic model at the specified flow rate. The static pressure is not indicative of the actual pressure in the field.

3.2 Proposed Water

3.2.1 Projected Water Demand

Based on high level planning guidelines for commercial zoning, the BWS’s Water System Standards (2002) indicates an average daily demand consumption of 3,000 gallons per acre for commercial developments. BWS recommends a factor of 1.5 be applied to the average daily demand to obtain the maximum daily demand. The breakdown of water demand for full development of the proposed zoning can be seen in Table 2 below.

Table 2: BWS Water Demands by Zoning				
Zoning	Acres	Daily Demand (gallons/acre)	Average Daily Demand (gallons)	Maximum Daily Demand (gallons)
Commercial	2.72	3,000	8,160	12,240

The current layout of the proposed development limits the Maximum Daily Demand below what will be allotted for new developments in this area. The site will be fully developed. However, there is no concern for water availability.

A submittal was made to BWS Project Review Section in June 2017 to verify water availability and a letter was received, dated July 21, 2017, confirming the system could accommodate the changes that the project entails. The letter is attached for reference in Appendix A.

3.2.2 Proposed Water System

The proposed development will probably install one (1) water meter per building, if allowed by BWS' meter requirements, to provide domestic water service to the development. The meter size and placement will be determined during design and will be dependent on the actual tenant mix and design.

3.2.3 Proposed Fire Protection

Per BWS, the fire flow requirement for commercial developments is 2,000 gpm for two (2) hours. BWS stated that offsite fire protection is adequate to accommodate the proposed development. As such, onsite fire protection improvements are not needed. In addition, all the buildings are anticipated to have a fire sprinkler system, and all buildings will have adequate vehicular access. Therefore, the development will have adequate fire protection for access and fire flow. The requirements will be coordinated during design.

4 Wastewater Infrastructure

4.1 Existing Wastewater Infrastructure

Except for a development in Waialua, there is no municipal wastewater collection system on the North Shore. The City and County of Honolulu (City) does not have plans to construct a new regional system for the North Shore area within the proposed development schedule. An on-site wastewater treatment system suitable for the rural community commercial center uses will be installed, with approval from the State Department of Health.

According to the Department of Health (DOH) records, there is an Individual Wastewater System (IWS) located on TMK 5-9-011:068. In April of 2016, the owner voluntarily upgraded the IWS to an aerobic treatment unit (previous IWS #54311).

4.2 Proposed Wastewater Infrastructure

4.2.1 Design Parameters

Since the project site will not be served by a municipal sewer collection system, an onsite wastewater treatment and disposal system must be constructed as part of the proposed development. Wastewater effluent disposal is anticipated to be permissible because the site is situated makai of the Board of Water Supply's "No-Pass Zone." In addition, the proposed site is located mauka of the State Department of Health's "Underground Injection Control (UIC) Line," a boundary line that delineates between non-drinking water aquifers and underground sources of drinking water. Based on §11-23-05 (c), "*In areas where the UIC line is defined by a roadway, a setback of one lot or one hundred fifty feet, whichever is less, from the mauka property line of that roadway may be considered to be within the exempted area.*" Therefore, injection wells may be used for disposal of treated wastewater effluent. **See Figure 5: DOH UIC Line and BWS Pass/No-Pass Line.**

The project is looking at using absorption beds for wastewater disposal. The treatment and disposal of wastewater is regulated by the State of Hawaii Department of Health, under the Hawaii Administrative Rules (HAR) Title 11, Chapter 62 (§11-62). HAR §11-62 allows two options of onsite wastewater treatment for the project site:

1. A centralized wastewater treatment plant (WWTP); or
2. Multiple IWS at a maximum design flow of 1,000 gallons per day (gpd) per IWS.

In order to qualify an IWS, developments involving buildings other than dwellings must also meet the following criteria from HAR §11-62-31.1:

1. Minimum 10,000 square feet (sf) of usable land area for each IWS, exclusive of the area under the building;
2. Total wastewater flow shall be equal to or less than 15,000 gpd; and,
3. Area of the lot shall not be less than 10,000 sf except for lots created and recorded before August 30, 1991. For lots less than 10,000 sf which were created and recorded before August 30, 1991, only one IWS shall be allowed.

In either case, centralized WWTP or multiple IWS installations, the various parcels at the project site must be developed under joint agreement. Depending on the design, either a WWTP or multiple IWS may be allowed for wastewater disposal.

4.2.2 Wastewater Flow Projection

A preliminary wastewater report was completed by Enviniti, LLC. Hanapohaku, LLC provided anticipated building uses, floor areas, seat counts, and patron counts to Enviniti to estimate wastewater flow. The assumptions regarding density of employees and seats in each establishment are based on anticipated tenant mix and Gross Leasable Area (GLA).

The estimated density of employees will be 1 employee per 400 SF of GLA, which is slightly higher than the minimum numbers listed for the Building Code occupancy. The estimated density of seats will be 30 SF/seat in the restaurant. The Urgent Care density was estimated at 16 patients per hour for 10 hours of operation. Customer density was estimated at 1 customer per 30 SF. Additionally, a transient load was included to address the customers that will patronize the Pūpūkea Rural Community Commercial Center.

Wastewater flow rates from Table 1 of HAR §11-62, Appendix D were used to calculate the projected wastewater flow. Relevant unit flows included:

- 20 GPD/employee in all establishments;
- 50 GPD/seat in restaurants;

- 5 GPD/person for customers; and,
- 2 GPD/parking stall for transient usage

Based on the values above, the average daily wastewater flow was projected to be 10,533 GPD. Projected wastewater flow assumptions and calculations are summarized below in Table 3, Estimated Wastewater Flow.

Table 3: Estimated Wastewater Flow							
Unit Type	Interior Area	Occupancy Factor	Units/day	Toilet Use Factor	gpd/unit	Flow (gpd)	
Restaurant (Sit-Down)	3,860 sf	1:400	10 employees	100%	20	200	6,650
		1:30	129 seats	100%	5	6,450	
Food & Beverage Subtotal	3,860 sf					6,650	
Urgent Care (16 patients/hour)	2,500 sf	1:400	6 employees	100%	20	120	920
		10 hours	160 patients	100%	5	800	
Health Food Store	4,000 sf	1:400	10 employees	100%	20	200	535
		1:30	133 customers	50%	5	335	
Retail (North Building)	4,939 sf	1:400	12 employees	100%	20	240	655
		1:30	165 customers	50%	5	415	
Retail (Mauka Building)	6,113 sf	1:400	15 employees	100%	20	300	810
		1:30	204 customers	50%	5	510	
Offices	5,660 sf	1:400	14 employees	100%	20	280	755
		1:30	189 customers	50%	5	475	
Transient Usage	N/A	N/A	104 parking stalls	N/A	2	208	
Non-F&B Subtotal	23,212 sf					3,883	
Total	27,072 sf					10,533 gpd	

4.3 Wastewater Pre-Treatment

The proposed facility will have pre-treatment, as required by the City and most treatment system manufacturers. Additional information on pretreatment alternatives is summarized on DOH fact sheets in Appendix B, “Wastewater Treatment and Disposal Alternatives – Fact Sheets,” March 2008.

4.3.1 Grease Interceptors

The introduction of Fats, Oils and Greases (FOG) into a sewer system can cause detrimental effects on the environment due to higher Biochemical Oxygen Demand (BOD) levels in wastewater effluent, increased odor complaints due to grease build-up, and sewage spills due to clogged pipes, pumps or disposal fields. These problems can be avoided by installing grease interceptors that utilize settling chambers and baffled pipe connections to separate FOG from wastewater before it enters the sewer system.

The Uniform Plumbing Code (UPC) and the City require grease interceptors at establishments where grease may be introduced into the drainage or sewage system. The restaurant at the proposed site will operate and maintain its own grease interceptor.

4.3.2 Pre-Loader (Septic Tank)

Similar to the primary treatment process in large wastewater plants, the septic tank removes substances and objects that can harm pumps and advanced treatment equipment while improving BOD and other effluent quality levels before secondary treatment.

Solid removal occurs when the pre-loader decreases wastewater velocity and turbulence, allowing Total Suspended Solids (TSS) to separate from the waste stream. These solids migrate to the bottom or top of the tank to form sludge and scum layers. A baffle on the effluent end of the pre-loader allows clarified water to proceed to secondary treatment without disturbing the sludge and scum layers. Although anaerobic bacteria break down solids in the tank, buildup of solids may require periodic removal by a septic pumper. Due to differing conditions, some tanks accumulate solids faster than others and should be initially pumped and monitored quarterly until a frequency pattern is established.

Given the high benefit to cost ratio provided by pre-loaders, wastewater at the proposed facility will be treated at specified locations in pre-loaders before being pumped to additional treatment units.

4.4 Wastewater Treatment

Due to the close proximity to Sharks Cove, additional wastewater treatment (i.e. secondary treatment and disinfection) may be required by DOH. An aerobic treatment unit (ATU) system that utilize secondary treatment processes to obtain the desired effluent quality and achieve an added level of protection.

ATU's are typically used when effluent quality must be higher than that provided by septic tanks. There are different types of ATU, but all use mechanical components to oxidize organic material, decrease TSS and reduce pathogens.

Similar to the secondary treatment process in large wastewater plants, the ATU's discussed in this report break down biological content in the waste stream with the following processes:

- Aeration – Aerobic bacteria digest biological waste in wastewater through suspended growth, attached growth or a combination of both.

- Settling – Sludge and undigested solids settle out of the wastewater. A small portion of activated sludge is kept in the aerobic unit to seed influent wastewater while the remaining sludge is stored until the tank is pumped.
- Disinfection – This optional stage consists of killing or inactivating microorganisms in the waste stream and is required to achieve R-2 water. Typical disinfection methods consist of chlorination or application of ultraviolet light (UV). Many ATU manufacturers incorporate chlorine disinfection in the treatment unit or in a unit immediately downstream from the ATU.

4.4.1 Single Basin Reactor – Cyclic Biological Treatment (CBT)

A SBR is an ATU that consists of a single basin in which all phases of treatment occur. Although the SBR considered for this project is a CBT system, designed by International Wastewater Technologies, Inc, similar systems can be considered during the design phase.

The defining feature of CBT is that it can receive continuous inflow of wastewater without disruption of treatment in the single basin, unlike the traditional SBR design that required multiple tank installations.

The aerobic treatment process occurs within the SBR as follows:

- Fill – Continuous inflow of wastewater is allowed into the SBR.
- Aeration – CBT utilizes a suspended growth process where mechanical blowers pump air into the aerobic unit to create aerobic conditions. The blowers support growth of aerobic bacteria and create conditions to keep bacteria suspended in the wastewater.
- Settling – After the aeration phase, blowers shut off and wastewater velocity and turbulence decreases. In this phase, scum forms at the water surface, sludge settles at the bottom of the tank and clarified supernatant forms between the two. During this phase of CBT, anoxic conditions are created and denitrification occurs.
- Decant – Clarified supernatant is pumped out of the tank for disposal. Sludge wasting will follow removal of supernatant on an as-needed basis.
- Disinfection – An optional tablet chlorine feeder can be installed between the SBR and the disposal field to kill or inactivate remaining microorganisms and achieve R-2 quality water.

The treatment process is automated by a clock/microprocessor on 4-hour cycles. The same controller automatically coordinates all equipment and phases of the cycle, minimizing labor associated with system operation.

Design parameters are included in Appendix C, CBT Design Parameters.

4.5 Wastewater Effluent Disposal

4.5.1 Absorption Bed

The general public typically uses the term absorption bed synonymously with absorption trenches, regardless of the differences between the two. In this report, absorption bed is defined as a single, subsurface bed containing coarse aggregate and multiple rows of an effluent distribution system. Traditionally, the distribution method was through perforated pipe, but recurring clogs in perforated pipe led to the use of leaching chambers for distribution.

A geotechnical engineering exploration study was done by Geolabs on April 24, 2017. Field percolation tests were performed to evaluate the percolation characteristics of the subsurface soils for wastewater disposal. Based on the percolation tests conducted, the percolation rates at the site generally ranged between 31 and 60 minutes per inch. To ensure more permeable clayey soils are exposed at the bottom of the absorption fields, the planned bottom of the absorption fields will be over-excavated a minimum depth of about 3-feet and backfilled with approved granular materials. The geotechnical engineer believes a percolation rate of about 30 minutes per inch may be used for the 3-foot layer of granular materials placed over the in-situ clayey soils.

Based on the average daily wastewater flow of 10,533 gpd and a soil absorption ratio of 257 sf per 200 gallons (HAR §11-62 Appendix D, Table III), the minimum required absorption area is 13,535 sf. However, because the onsite wastewater system is considered a WWTP, full redundancy of the effluent disposal capacity must be provided. Therefore, a minimum effluent disposal area of 27,070 sf of absorption area is required.

The absorption beds will be located under the proposed parking lot to maintain accessibility by maintenance vehicles. The absorption bed disposal system (inclusive of 100% backup) will consist of six equally sized absorption beds at approximately 56'-8" wide and 81'-3" long. This equates to 27,625 sf of absorption area, satisfying the 27,070 sf minimum area as calculated from HAR §11-62. The dosing pumps will be controlled such that flow will be equally distributed to each absorption bed. **See Figure 6: Concept Site & Utility Plan.**

5 Drainage Infrastructure

5.1 Existing Conditions

5.1.1 Existing Soil Conditions

Based on USDA Web Soil Survey, the project area consists of soil type Waialua silty clay (WkB) with 3% to 8% slopes. Soils at the property exhibit properties presented in Table 4, below. **See Figure 7: Soils Map.**

Table 4: Soil Properties	
Soil Type	Waialua (3% to 8% Slopes)
Drainage Class	Moderately well drained
Runoff Class	Low
Permeability	Low to very low (0.20 to 0.60 in/hr)
Depth to Restrictive Layer	More than 80 inches

The geotechnical engineering exploration study found the project site to be underlain with very stiff to hard silty clays and clays extending from the ground surface to depths of 13 to 22 feet below the existing ground surface. The geotechnical study performed percolation tests, which validate the USDA’s general survey of the soil type. Percolation rates ranged between 0.12 in/hr to 0.42 in/hr.

5.1.2 Existing Topography and Drainage Patterns

The project site has a relatively moderate slope from the mauka side of the property towards Kamehameha Highway at an average slope of 5 percent. A topographic survey indicates elevations at the site range from 29 to 51 feet above Mean Sea Level.

Generally, storm runoff from the site flows overland across undisturbed vegetation, asphalt concrete pavement, and grass swales towards a rain garden. Existing runoff flows are identified in Table 5. Storm runoff either infiltrates on the property or travels offsite to the nearest drain inlet located south of the project along Kamehameha Highway. The drain connects to a 24-inch pipe and outlets into the Pacific Ocean. The drainage system along Kamehameha Highway is owned and maintained by the State of Hawaii, Department of Transportation, Highways Division (HDOT). In addition, there are a series of catch basins at the Pūpūkea Road-Kamehameha Highway intersection, which outlets further south by Three Tables Beach. The drainage facilities at the intersection are owned and maintained by the City and County of Honolulu.

Table 5: Existing Conditions Hydrology					
Tributary Area	Discharge Point	C	I(10), (in/hr)	Area (ac)	Flow, Q (cfs)
E-1	NE to SW direction, surface flow into Vegetated Swale	0.60	5.10	0.62	1.90
E-2	SW direction, surface flow into Vegetated Swale	0.77	5.10	0.61	2.39
E-3	SW direction, surface run-off to Kamehameha Highway	0.64	5.25	0.47	1.60
E-4	NE to SE direction, surface flow into Rain Garden	0.66	5.25	1.02	3.53
					9.42 cfs

5.1.3 Existing Flood Hazards

The project site is located within Flood Zone X of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM). This indicates areas outside of FEMA's designated 500-year flood zone. There is a minimal to no threat of serious riverine or coastal flooding for the project. **See Figure 8: Flood Zones Map.**

5.2 Proposed Conditions

5.2.1 Proposed Grading and Erosion Control

The existing topography will be altered, to the extent necessary, for construction of the proposed improvements. Due to the high shrink/swell properties of the existing soils found onsite, additional non-expansive select granular material is recommended for the slabs-on-grade construction. A grading permit, approved by the City and County of Honolulu, Department of Planning and Permitting (DPP) and the State of Hawaii, Department of Land and Natural Resources, Historic Preservation Division, will be required for all grading activities.

Erosion control Best Management Practices (BMP) will comply with the State, County and Federal regulations during all phases of construction. A National Pollutant Discharge Elimination System (NPDES) general permit coverage authorizing discharges of storm water associated with construction activities will be required for the project from the State Department of Health, Environmental Management Division, Clean Water Branch.

5.2.2 Proposed Drainage Patterns

Storm runoff from the site will be collected through gutters, drain inlets, catch basins, trench drains, and pervious pavement. Collected flows will be transported through flow- and volume-based BMPs toward a detention system at the front of the project (along Kamehameha Highway). The detention system's proposed size was based on the Rules Relating to Storm Drainage Standards January 2000, Department of Planning and Permitting, City and County of Honolulu, which analyzes the 10-year, 1-hour recurrence interval. Table 6 shows hydrology under the proposed conditions as 18.39 cubic feet per second (cfs), an increase of 8.97 cfs from the existing conditions.

The additional 8.97 cfs is required to be detained onsite and is equivalent to approximately 16,146 cubic feet of storm water storage. Based on the latest site plan, storm water will be detained in subsurface chambers with a maximum capacity of 26,600 cubic feet. These chambers will detain storm water and discharge to HDOT's drainage system at a flow rate equal to the pre-development conditions. It's expected that the proposed improvements will not have an adverse impact to the downstream drainage system.

Table 6: Proposed Conditions Hydrology					
Tributary Area	Discharge Point	C	I(10), (in/hr)	Area (ac)	Flow, Q (cfs)
P-1	Mauka to makai surface flow through a vegetated swale and sand filter into detention chambers	0.77	8.25	0.39	2.48
P-2	Mauka to makai surface flow through a vegetated swale and sand filter into detention chambers	0.77	8.25	0.41	2.60
P-3	Mauka to makai surface flow and North building roof drains through a vegetated swale and sand filter into detention chambers	0.83	8.00	0.37	2.46
P-4	North building roof drains into vegetated planters, through vegetated swales and sand filter, and into detention chambers	0.85	8.25	0.13	0.91
P-5	Mauka building roof drains into rain gardens, through vegetated swales and sand filters, and into detention chambers	0.90	8.25	0.12	0.89
P-6	Mauka building roof drains and surface flow through pervious pavement, vegetated swales, sand filters, and into detention chambers	0.87	8.00	1.30	9.05
					18.39 cfs

5.2.3 Proposed Low Impact Development Improvements

The project’s total disturbed area is expected to be greater than 1-acre, and the project will need to comply with the City’s drainage standards which include storm water quality treatment BMPs utilizing a Low Impact Development (LID) approach. As required by the City standards, LID improvements and BMPs will be distributed and installed throughout the site where practical and feasible to improve storm water quality, and manage storm water quantity. The proposed project will maximize pervious and landscaped areas within the site.

Bioswales, rain gardens, planter boxes, sand filters, permeable pavers, and infiltration chambers will be utilized for LID. Based on preliminary soils information, infiltration may be suitable for the site if the coral layer is reached. However, the site’s clay layer ranges from 13 to 22 feet below the existing grade. Excavation to reach the coral layer may be infeasible due to the high costs of construction. As a result, all storm runoff will be detained onsite to attenuate the peak runoff flow. **See Figure 9: Concept Grading & Drainage Plan.**

5.2.4 Offsite Drainage Improvements

Foodland’s existing ingress/egress driveways off of Kamehameha Highway will be removed, and new landscaping will be installed along the Kamehameha Highway frontage. Storm runoff will follow the existing drainage pattern and flow into the new landscaping. BMPs and storm water quality improvements will need to be designed per the LID requirements. If the post-development conditions are greater than the pre-development conditions, storm runoff detention will be required before connecting to HDOT’s drainage system.

6 Electrical and Telecommunications

6.1 Existing Services

Existing overhead lines for power and telephone run along the makai side of Kamehameha Highway, North side of Pahoe Road, and South side of Pūpūkea Road. The site currently has electrical and telecommunication service provided from Kamehameha Highway and Pahoe Road.

6.2 Proposed Services

The electrical and telecommunication systems shall be designed and coordinated with HECO for electrical services and Spectrum or Hawaiian Telcom for telecommunication services.

Based on the design, electrical service could be provided from Kamehameha Highway and/or Pahoe Road. Onsite transformers will be needed for the North and Mauka buildings and for the wastewater treatment system. A transformer may not be needed for the building closest to Kamehameha Highway. Additionally, opportunities for onsite renewable energy can be designed to decrease the total electrical demand. The project is anticipating the inclusion of solar canopies over the mauka parking lot and on the roofs of the buildings. Design and evaluation of the onsite electrical and telecommunication utilities shall be done by a licensed electrical engineer.

FIGURES



Figure 1: Preliminary Concept Site Plan



Figure 2: Vicinity Map



Figure 3: Location Map



Figure 4: Existing Conditions



Figure 5: DOH UIC Line and BWS Pass/No-Pass Line

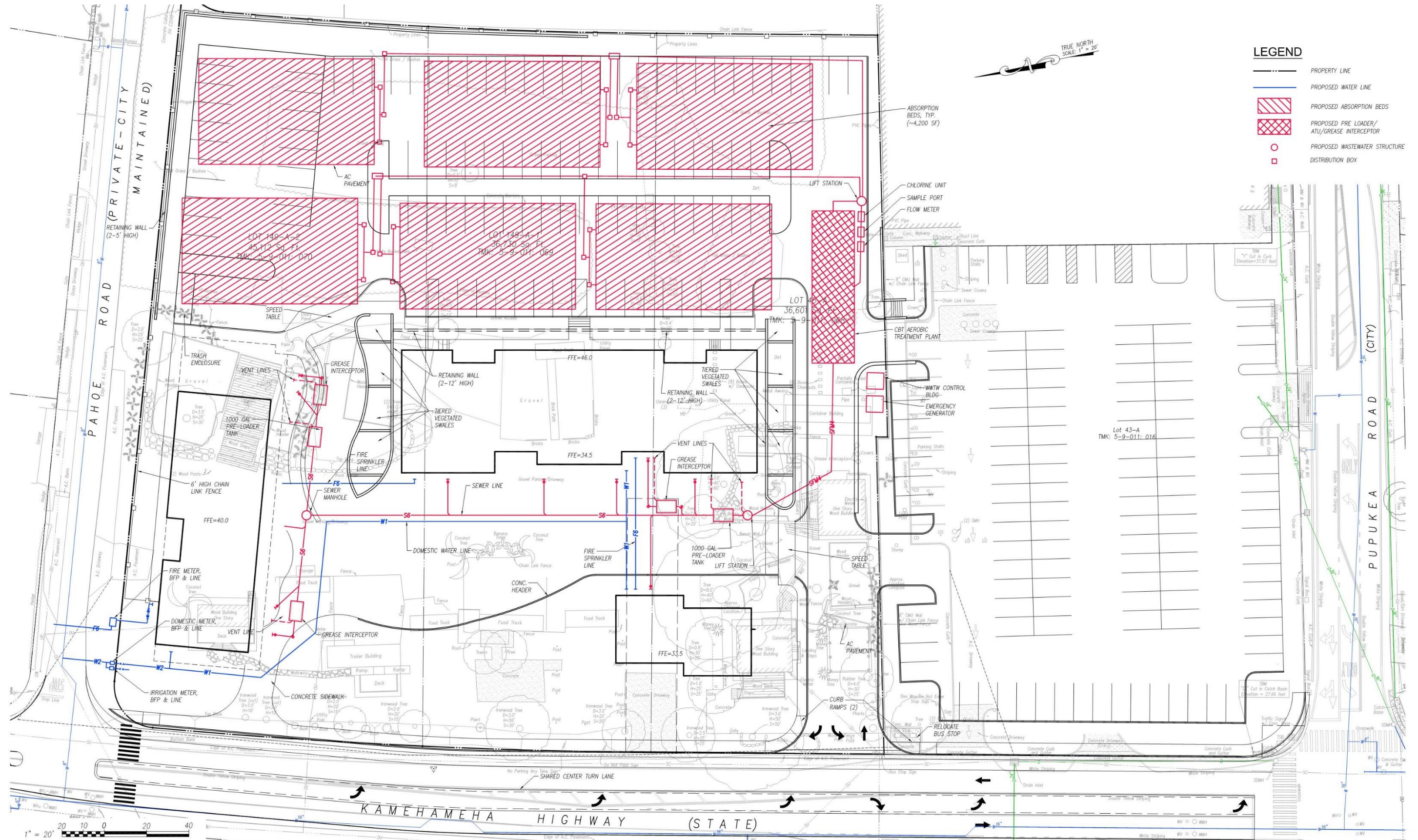


Figure 6: Concept Site & Utility Plan

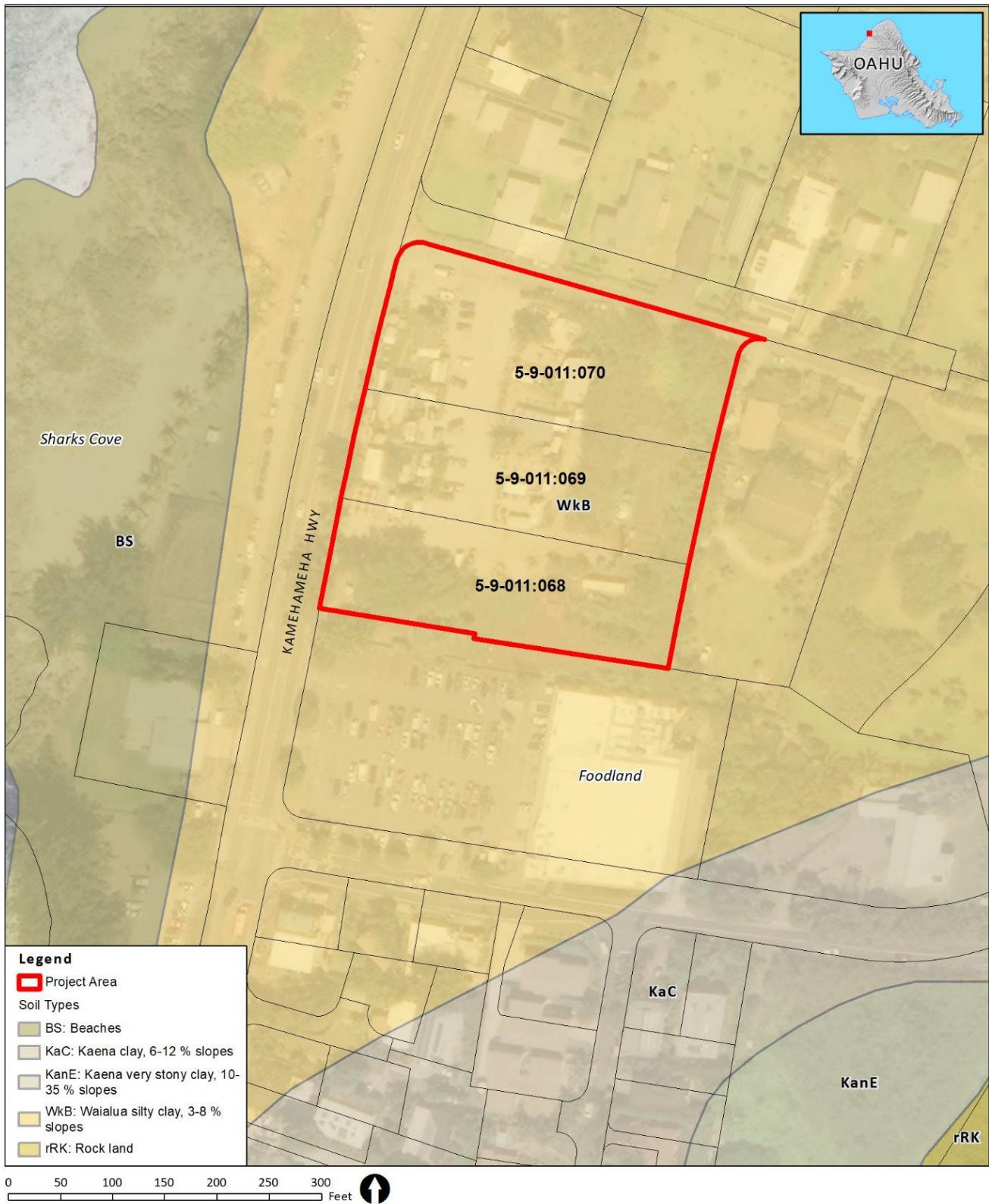


Figure 7: Soils Map

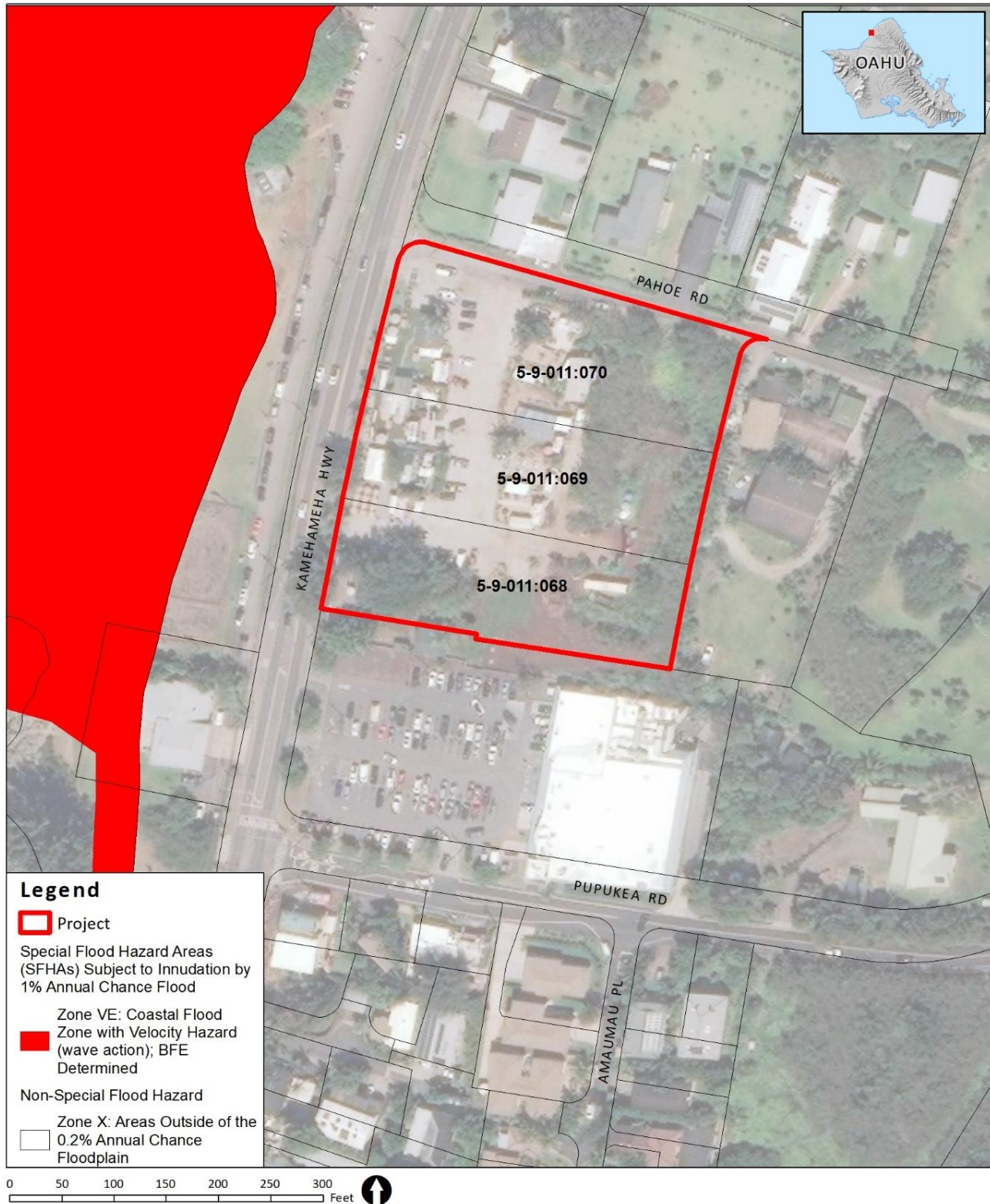


Figure 8: Flood Zones Map

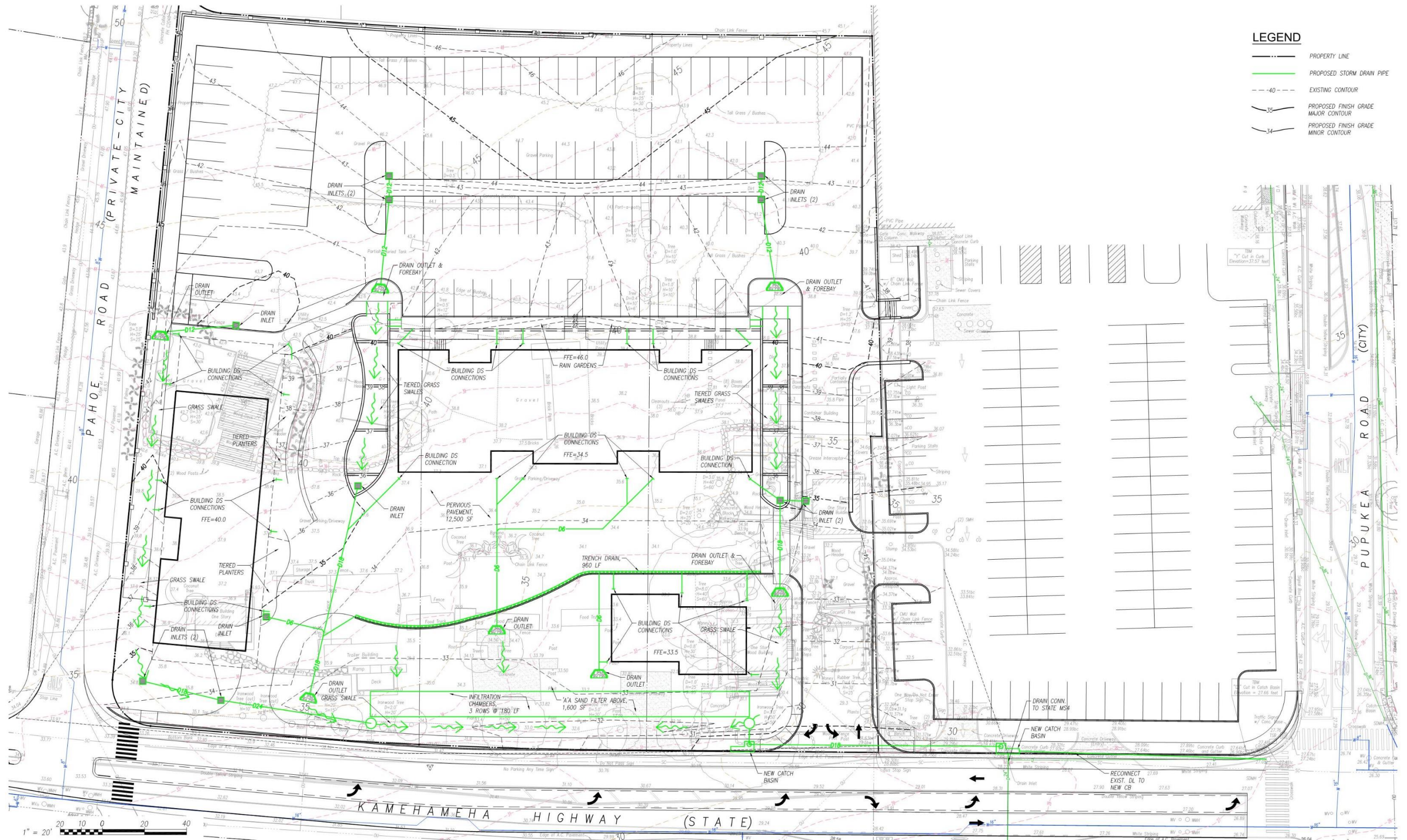


Figure 9: Concept Grading & Drainage Plan

APPENDIX A
BWS Water Availability Letter

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com




July 21, 2017

KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
DAVID C. HULIHEE
KAPUA SPROAT
KAY C. MATSUI

ROSS S. SASAMURA, Ex-Officio
FORD N. FUCHIGAMI, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer 



Mr. Paul T. Matsuda, PE, LEED AP
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Matsuda:

Subject: Your Letter Dated June 15, 2017 on the Availability of Water for the Proposed Three New Commercial Buildings at Pupukea Rural Community Commercial Center in Haleiwa – Tax Map Key: 5-9-011: 068, 069, 070

Thank you for your letter regarding the proposed three new commercial buildings in Haleiwa.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

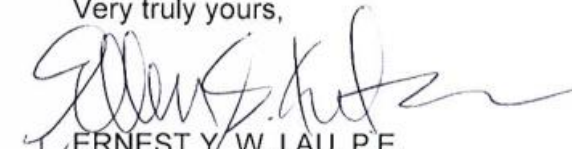
When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The applicant should investigate the availability of nonpotable water for irrigation.

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

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,


ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

APPENDIX B
Wastewater Treatment and Disposal Alternatives – Fact Sheets
March 2008

A septic tank is a tank that serves as both a settling and skimming tank. Grit and other solids settle to the bottom of the tank and create a layer of sludge. Oil, grease, fat, and other floatables rise to the top creating a layer of scum. Accumulated sludge and scum must be removed on a regular basis; failure to do so will lead to carryover of these materials into downstream systems leading to their failure. Where site conditions indicate higher quality effluent is required, septic tanks are used as pretreatment for other treatment systems, including biological treatment systems.

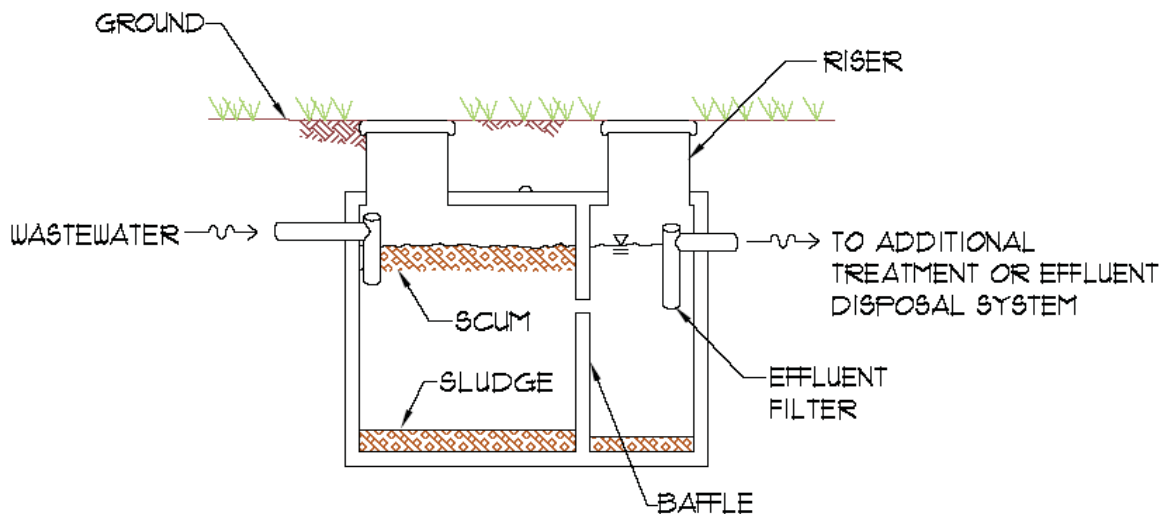


Figure 5-2 Typical Double Chambered Septic Tank

Considerations and Restrictions

A septic tank is purchased prefabricated, made of concrete or fiberglass, and it must meet the International Association of Plumbing and Mechanical Officials (IAPMO) material and property standards for prefabricated septic tanks. However, depending on site conditions, sometimes it is easier to construct a tank in-place. A constructed in-place septic tank must be designed in accordance with IAPMO specifications and stamped by a licensed structural engineer. Regardless of how a tank is constructed, it must be waterproof to prevent leakage and protected from corrosion in accordance with HAR 11-62, Subchapter 3.

The capacity of a septic tank is an important aspect in the treatment of wastewater prior to disposal. The required capacity of residential septic tanks can be referenced using HAR 11-62, Subchapter 3. The City and County of Honolulu "Design Standards of the Department of Wastewater Management" or the applicable county publication must be consulted.

A septic tank must be installed by a licensed contractor to comply with spacing and minimum distance requirements, as described in Chapter 3 of this document. Use of a septic tank requires the selection of a downstream disposal system (see Chapter 4).

Effluent Quality

In accordance with HAR 11-62, Subchapter 33, septic tank effluent must be discharged into a soil absorption system, a sand filter, a subsurface irrigation system (with director approval), or another treatment system. Septic tanks remove approximately 30% of BOD and 30% of TSS from typical domestic wastewater resulting in effluent quality of BOD ranging between 138 mg/L and 240 mg/L, and suspended solids in the range of 49 to 155 mg/L.

The DOH requires the installation of a screen on the effluent end of the septic tank to enhance solids removal and thereby prevent clogging of disposal systems. The effluent filter can be installed on the effluent tee on the inside of the septic tank, or in a separate structure outside the tank to facilitate access for required periodic cleaning, without which backups will occur.

Typical Installed Costs (2007)

A 1,000-1,250 gallon residential septic tank costs approximately \$5,000-\$12,000 installed, including material, equipment, and labor. An effluent filter is about \$200-\$700 installed. The cost of a septic tank does not include the disposal system (see Chapter 4).

Operation and Maintenance Costs

The decomposition rate of the solids that settle to the bottom of the tank and those that accumulate in the scum layer on the surface is slow, resulting in the accumulation of solids in the septic tank. Because of the accumulation of solids and scum, periodic pumping is required (every 2-3 yrs) to keep the tank functioning as designed and prevent solids from breaking and overflowing to the soil absorption system. The estimated cost for these pumping services range between \$150 and \$550 per visit. Assuming that the septic tank is pumped every 2-3 years, the equivalent cost is about \$50-\$200 per year. Pumping costs vary due to difficulty accessing the tank, haul distances, and limited pump truck capacity. Minimal use of kitchen sink grinders will help reduce the solids load, and extend the time between pumping of the septic tank and any downstream treatment units.

The effluent filter must be cleaned on a regular basis because of the growth of bacteria that will clog the filter. Frequency of cleaning is dependent on the size of the screen, environmental conditions, and type of wastewater entering the septic systems. Some manufacturers recommend cleaning every 1-3 years depending on level of use and site conditions. Cleaning consists of hosing off the filter into the septic tank and can be done by the homeowner.

Septic Tank Summary

Meets NSF 40 Standards	No
Effluent BOD:	132-217 mg/L
Effluent TSS	49-161 mg/L
Removes 50% total influent nitrogen	No
Effluent Nitrogen:	39-82 mg/L
Effluent Phosphorus:	11 -22 mg/L
Effluent Fecal Coliform:	1,000,000 /100 mL
Maintenance Level:	2-3 yrs
Power Required:	No
Typical Installed Cost:	\$5,000-\$12,000 /1,000 gal

A Sequencing Batch Reactor (SBR) is a form of ATU in which all of the aerobic and clarifying processes occur within a single tank. The tank may be constructed from concrete, fiberglass, or high-density polyethylene (HDPE). A SBR is designed to operate by sequencing through at least four (4) steps as follows:

- 1) **FILL**: tank is filled with wastewater to a predetermined volume or time;
- 2) **AERATION**: aeration is started with the suspended microorganisms in the wastewater;
- 3) **SETTLE**: aeration is turned off and the microorganisms settle to the bottom of the tank; and
- 4) **DECANT**: decant the clarified portion as effluent.

After decanting, the cycle repeats with filling again. By allowing the tank water level to vary, providing influent stilling zones, and only decanting during aeration off cycles, these single-tank systems can be designed to operate continuously. Of great importance to the SBR process is the control system consisting of timers, level sensors, and microprocessors.

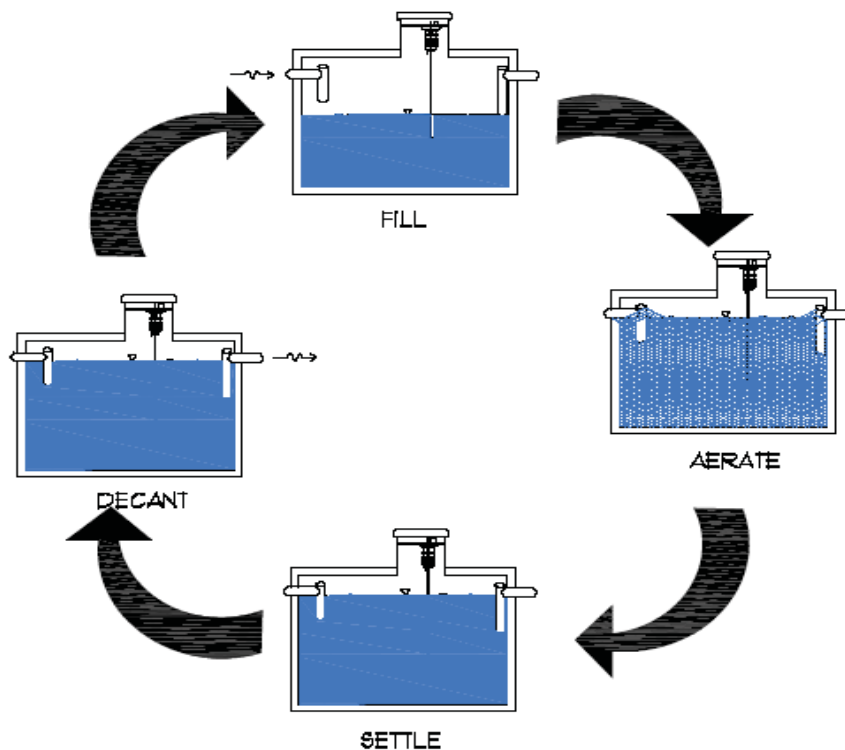


Figure 5-5 Cycles of an SBR / CBT

Considerations and Restrictions

SBRs are a type of suspended-growth ATU that can oxidize BOD and provide both nitrification and denitrification (enhanced nitrogen removal). SBRs require power, control, and monitoring and alarm systems. SBRs have mechanical equipment (pumps, blowers, decanters) which must be properly maintained to ensure optimal operation.

Use of an SBR system requires the selection of a disposal system (see Chapter 4).

Effluent Quality

Effluent from SBRs is of very good quality in terms of BOD and TSS. Typical ranges are from 5 –15 mg/L BOD and 10-30 mg/L of TSS.

SBRs will completely oxidize ammonia to nitrate via nitrification during the aeration cycle (aerobic cycle), and then facilitate nitrogen removal via denitrification during the settle and decant cycles (cycles that are anoxic). They can also provide enhanced biological phosphorus removal. The higher quality of effluent produced reduces the organic loading on the disposal system. SBRs also provide a consistent effluent, eliminating the fluctuations caused by varying influent loads.

Typical Installed Costs (2007)

Equipment costs range from \$7,000-\$9,000 with installation costs of \$1,500-\$3,000 based on Mainland costs. Current costs to install in Hawaii are in the range of \$20,000 - \$30,000. This cost does not include the cost for a preloader, if required, or the cost for a disposal system. See Septic Tanks (Sheet P-1) for a cost range for preloaders. See Chapter 4 for the costs of disposal systems.

Operation and Maintenance Costs

Annual energy costs are less than \$600 and pumping and inspection costs are greater than \$100. Trained professionals should manage the SBR system, which should be inspected every 3-4 months with sludge/scum pumping as needed. Homeowner neglect and/or interference can lead to operational malfunction. Alarms to warn of system failures are critical. Energy requirements are between 3 and 10 kW-h/day.

SBR Summary

Meets NSF 40 Standards	Yes
Effluent BOD:	5-15 mg/L
Effluent TSS	10-30 mg/L
Removes 50% total influent nitrogen	Yes
Effluent Nitrogen:	7-45 mg/L
Effluent Phosphorus:	2-10 mg/L
Effluent Fecal Coliform:	1,000,000 /100 mL
Maintenance Level:	Quarterly
Power Required:	Yes
Typical Installed Cost:	\$20,000-\$30,000 /1,000 gallons

Chlorine is the most commonly used chemical and/or method for disinfection of water and wastewater, and has a long history of use in the US. Chlorine is effective against a wide range of pathogenic organisms. Common forms of chlorine include chlorine gas, solid or liquid chlorine (calcium hypochlorite and sodium hypochlorite), and chlorine dioxide.

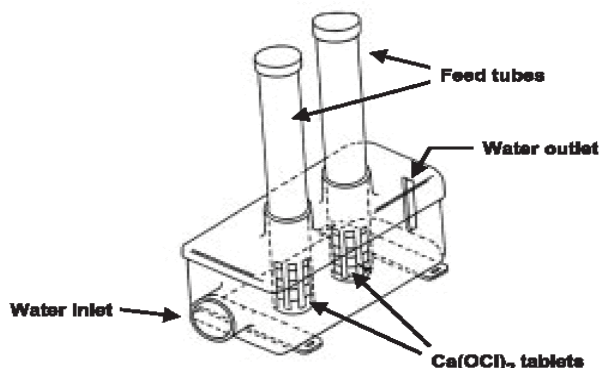


Figure 5-8 Tablet Chlorination Chamber (Adapted from USEPA)

Considerations and Restrictions

Gaseous chlorine is the most commonly used form; however, due to its highly corrosive nature and significant safety concerns, it is generally not recommended for onsite applications. Liquid hypochlorite solutions are commonly used at small treatment plants, where safety and simplicity are top priorities. Solid hypochlorite (powder or tablets) is common for onsite treatment systems (the same materials used for swimming pools and hot-tubs). All forms of chlorine are generally toxic and corrosive. They require careful handling and storage. The residual chlorine is effective as a disinfectant after the initial treatment. However, even at low concentrations, it can be toxic to aquatic life, and de-chlorination is necessary for discharges to (or impacting) surface waters.

Effluent Quality

One advantage of using chlorine as a disinfectant is its ability to exist as a residual in wastewater effluent even after initial treatment. Chlorine has been shown to reduce fecal coliforms by 99-99.99%.

Typical Installed Costs (2007)

A hypochlorite tablet feed system could cost \$800-\$1,000 for 1,000 gallons per day for the system itself. Labor and material costs vary depending on whether the tablet feeder is part of a pre-packaged system or added to an existing system. A gas chlorine system may cost \$75,000 to treat 100,000 gallons per day.

Operation and Maintenance Costs

Operational costs for a tablet system are approximately \$30-\$50 per year for tablets, \$75-\$100 per year in labor, and \$15-\$25 per year in repairs and replacements.

Estimated cost for a gaseous chlorine system is approximately \$4,500 for chemicals, \$4,000 for labor, \$4,000 for power, and \$6,000 for materials.

Operating and maintenance cost and tasks include power consumption, cleaning, chemicals and supplies, repairs, and labor.

Chlorination Summary

Meets NSF 40 Standards	NA
Effluent BOD:	- mg/L
Effluent TSS	- mg/L
Removes 50% total influent nitrogen	NA
Effluent Nitrogen:	- mg/L
Effluent Phosphorus:	- mg/L
Effluent Fecal Coliform:	1000-10000 /100 mL
Maintenance Level:	Quarterly
Power Required:	No
Typical Installed Cost:	\$800-\$1,000 /1,000 gallons

Ultraviolet (UV) light is a physical disinfection agent that takes advantage of the germicidal properties of UV in the range of 240-270 nm. This radiation penetrates the cell wall of organisms, preventing reproduction. The effectiveness of UV disinfection depends on the characteristics of wastewater (particularly clarity as measured by turbidity), UV intensity, time of exposure, and reactor configuration.

Considerations and Restrictions

UV is effective in the inactivation of most viruses, spores, and cysts. UV eliminates the handling and storage of hazardous or toxic chlorine chemicals. However, UV performance is highly dependent on the quality of the wastewater it is disinfecting. High turbidity and total suspended solids will shield bacteria, making UV treatment ineffective.

Effluent Quality

UV disinfection is lacking in field studies, but typical units treating sand filter effluents can reduce fecal coliforms by 99.9%.

Typical Installed Costs (2007)

The component cost for a UV system is between \$1,000-\$2,000 per 1,000 gpd. Labor and material costs vary depending on whether the system is a built-in component of a packaged treatment system or added as an off-the-shelf component to enhance an existing system.

Operation and Maintenance Costs

Annual power costs are \$35-\$45, labor \$50-\$100, and lamp replacement \$70-\$80 per year. Power consumption is about 35 W or 307 kW-h/y.

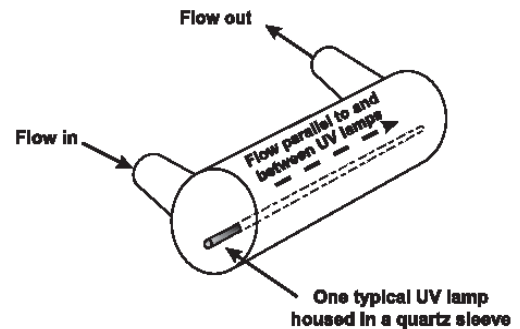


Figure 5-9 Ultraviolet Radiation Chamber (Adapted from USEPA)

UV Disinfection Summary

Meets NSF 40 Standards	NA
Effluent BOD:	- mg/L
Effluent TSS	- mg/L
Removes 50% total influent nitrogen	NA
Effluent Nitrogen:	- mg/L
Effluent Phosphorus:	- mg/L
Effluent Fecal Coliform:	~1,000 /100 mL
Maintenance Level:	Quarterly
Power Required:	Yes
Typical Installed Cost:	\$1,000-\$2,000 /1,000 gallons

Absorption beds are subsurface wastewater infiltration systems (SWIS) that have beds at least three feet wide. Absorption beds are similar to absorption trenches. For an absorption trench system, there is a distinct section of undisturbed soil between the absorption trenches. With an absorption bed, the area designated for disposal is excavated, and a layer of gravel is installed with the distribution pipe laid atop. In the case of gravelless systems, the plastic chambers are laid on the exposed soil. In essence, the wastewater will be spread over the entire area, instead of restricted to beneath the distribution pipe.

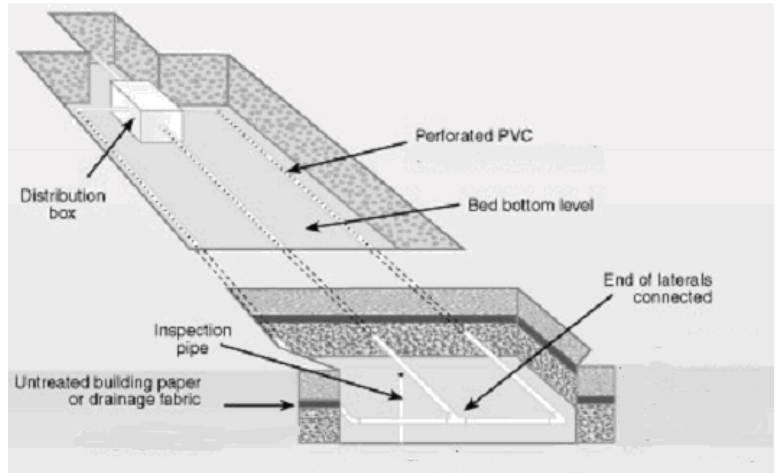


Figure 4-3 Bed disposal system (Adapted from Kent County, DE DPW)

Considerations and Restrictions

Beds are not allowed in terrain with slopes exceeding 8%. Since the entire area of the bed is considered as absorption area the total amount of land required is smaller compared to an absorption trench system. Roots from bushes and trees will damage the performance of the absorption system, therefore, root barriers should be utilized.

Effluent Quality

Effluent quality from an absorption bed will be similar to that of absorption trenches (see D-4).

Typical Installed Costs (2007)

These costs include excavation, gravel, piping, and/or plastic chambers/storage panels. Typical costs are about \$7,000-\$18,000 per 1,000 gpd of treated wastewater.

Operation and Maintenance Costs

Operational and maintenance issues are the same as for trenches. See Appendix A for tips extending the functional life of SWIS.

Absorption Beds Summary

Use in Steep Terrain	<8% slope
Use in High Ground Water Areas	No
Percolation Rate	Faster than 60 min/in
Relative Footprint When Compared To Conventional Drainfield	Medium
Maintenance Level:	Low
Power Required:	No
Typical Installed Cost:	\$7,000-\$18,000 /1,000 gallons

APPENDIX C
CBT Design Parameters

Preliminary Pretreatment Design

International Wastewater Technologies, Inc.
1931-A Kahai Street
Honolulu, HI 96819

PROJECT: Pupukea Commercial Center
MODEL NUMBER: PRE CBT13.0-500
DATE: 6.27.17
SITE LOCATION: Pupukea, Oahu, Hawaii
ELECTRIC: 208-V, 3-Phase with 120-V for Controls.
 Honolulu, Hawaii 96806
Basin: Xerxes 14,000 Gal 26'-11-1/4" x 10.33 ft Diameter
Blowers: 3BA7610-OAT36
Diffusers: EDI FLEXAIR 91 x 762
Pumps: Ebara 50DWXU6.4

INFLUENT PROCESS PARAMETERS

AVERAGE DAILY WASTEWATER FLOW	0.011000 MGD
PEAK FLOW (4 HOUR DURATION)	0.011000 MGD
pH	6 -9
BOD ₅	500.00 mg/l
	53.83 lb/day
TSS	500.00 mg/l
	53.83 lb/day
NH ₃ -N	25.00 mg/l
	2.69 lb/day
TKN	45.00 mg/l
OIL & GREASE	< 100 mg/l
MINIMUM ALKALINITY (CaCO ₃)	150.00 mg/l
MINIMUM PHOSPHORUS	5.00 mg/l
WASTEWATER TEMPERATURE	20 °C
AIR TEMPERATURE	0 - 40 °C
SITE ELEVATION	50 feet

EFFLUENT PROCESS PARAMETERS

AVERAGE DAILY WASTEWATER FLOW	0.011000 MGD
PEAK FLOW (4 HOUR DURATION)	0.011000 MGD
pH	6 -9
BOD ₅	To Treatment Unit
	NA
TSS	To Treatment Unit
	NA
NH ₃ -N	To Treatment Unit
TKN	To Treatment Unit

DESIGN PARAMETERS

MLVSS ₅ @ BOTTOM WATER LEVEL (BWL)	9,093 mg/l
F:M RATIO	0.054 lb BOD ₅ / lb MLVSS
SLUDGE AGE	70 days
CYCLES/DAY	1 cycles / day
LENGTH PER CYCLE	24 hours cycle
SLUDGE PRODUCTION	0.27 lb / lb BOD ₅ removed
TOTAL SLUDGE PRODUCTION	14.24 lb / day

BASIN GEOMETRY

INSIDE DIAMETER	10.00 feet
OUTSIDE LENGTH	27.00 feet
BOTTOM WATER LEVEL (BWL)	8.67 feet
HIGH WATER LEVEL (HWL)	8.67 feet
TOP WATER LEVEL (TWL)	8.67 feet
ALARM WATER LEVEL (AWL)	8.42 feet
INFLUENT INVERT	8.91 feet
VOLUME @ BWL	13,148 gallons
VOLUME @ HWL	13,148 gallons
VOLUME @ TWL	13,148 gallons
DETENTION TIME @ BWL	24.44 hours
INFLUENT GATE HOUSING DIAMETER	6.00 inches
PRE-REACT ZONE WIDTH	0.00 feet
PRE-REACT ZONE LENGTH	0.00 feet
PRE-REACT ZONE BOTTOM HEIGHT	0.00 feet
INFLUENT GATE HOUSING BOTTOM HEIGHT	4.33 feet
NUMBER OF GATES	0 gates
SLUDGE STORAGE @ 8,500 mg/l	-5 days
SLUDGE PRODUCTION @ 8,500 mg/l	201 gallons / day

AIR SUPPLY

TOTAL OXYGEN REQUIREMENT (SOR)	186.61 lb / day
AIR SUPPLIED (FOR BIOLOGICAL REMOVAL)	45.34 scfm
BRAKE HP REQUIRED	1.94 brake HP
NUMBER OF OPERATING BLOWERS	1 blower(s)
NUMBER OF STANDBY BLOWERS	1 blower(s)
BLOWER HP	5.09 HP / blower
INSTALLED DIFFUSER LENGTH	30.28 inches
INSTALLED DIFFUSERS	8 diffuser(s)

DECANTER

NORMAL DECANT TIME	180 - 60 minutes
PEAK DECANT TIME	180 - 60 minutes
DECANT RATE	72 gal / min
NORMAL DECANT VOLUME	12,910 gallons
PEAK DECANT VOLUME	12,910 gallons
NUMBER OF PORTS PROVIDED	0 ports
EMERGENCY SETTLE TIME	0.00 min
TOTAL NUMBER OF PUMPS	0 pump(s)
BRAKE HP PER PUMP	0.00 HP / pump

MOTOR REQUIREMENTS

REACTOR BASIN AIR BLOWER(S)	91.62 KWH / day
EFFLUENT DECANTER PUMP	0.00 KWH / day
BLOWER HEAT OUTPUT	12,939 BTU

PROJECT: Pupukea Commercial Center
MODEL NUMBER: CBT13.0KFX300
DATE: 6.27.17
SITE LOCATION: Pupukea, Oahu, Hawaii
ELECTRIC: 208-V, 3-Phase with 120-V for Controls.
Honolulu, Hawaii 96806
Basin: Xerxes 35,000 Gal 64'-3/4" x 10.33 ft Diameter
Blowers: 3BA7610-OAT36
Diffusers: EDI FLEXAIR 62 x 762
Pumps: Ebara 50DWXU6.4

BASIN GEOMETRY

INSIDE DIAMETER	10.00 feet
OUTSIDE LENGTH	64.08 feet
BOTTOM WATER LEVEL (BWL)	6.25 feet
HIGH WATER LEVEL (HWL)	6.67 feet
TOP WATER LEVEL (TWL)	6.75 feet
ALARM WATER LEVEL (AWL)	7.75 feet
INFLUENT INVERT	8.67 feet
VOLUME @ BWL	23,728 gallons
VOLUME @ HWL	25,576 gallons
VOLUME @ TWL	25,939 gallons
DETENTION TIME @ BWL	44.11 hours
INFLUENT GATE HOUSING DIAMETER	6.00 inches
PRE-REACT ZONE WIDTH	2.50 feet
PRE-REACT ZONE LENGTH	10.00 feet
PRE-REACT ZONE BOTTOM HEIGHT	1.00 feet
INFLUENT GATE HOUSING BOTTOM HEIGHT	3.38 feet
NUMBER OF GATES	3 gates
SLUDGE STORAGE @ 8,500 mg/l	130 days
SLUDGE PRODUCTION @ 8,500 mg/l	119 gallons / day

AIR SUPPLY

TOTAL OXYGEN REQUIREMENT (SOR)	123.22 lb / day
AIR SUPPLIED (FOR BIOLOGICAL REMOVAL)	82.07 scfm
BRAKE HP REQUIRED	2.57 brake HP
NUMBER OF OPERATING BLOWERS	1 blower(s)
NUMBER OF STANDBY BLOWERS	1 blower(s)
BLOWER HP	5.09 HP / blower
INSTALLED DIFFUSER LENGTH	29.92 inches
INSTALLED DIFFUSERS	16 diffuser(s)

DECANTER

NORMAL DECANT TIME	30 - 60 minutes
PEAK DECANT TIME	35 - 60 minutes
DECANT RATE	72 gal / min
NORMAL DECANT VOLUME	2,152 gallons
PEAK DECANT VOLUME	2,500 gallons
NUMBER OF PORTS PROVIDED	2 ports
EMERGENCY SETTLE TIME	34.79 min
TOTAL NUMBER OF PUMPS	1 pump(s)
BRAKE HP PER PUMP	0.50 HP / pump

MOTOR REQUIREMENTS

REACTOR BASIN AIR BLOWER(S)	45.81 KWH / day
EFFLUENT DECANTER PUMP	1.13 KWH / day
BLOWER HEAT OUTPUT	12,939 BTU

INFLUENT PROCESS PARAMETERS

AVERAGE DAILY WASTEWATER FLOW	0.011000 MGD
PEAK FLOW (4 HOUR DURATION)	0.011000 MGD
pH	6 - 9
BOD ₅	Assumed 300.00 mg/l
TSS	32.30 lb/day
NH ₃ -N	Assumed 300.00 mg/l
TKN	32.30 lb/day
OIL & GREASE	Assumed 25.00 mg/l
MINIMUM ALKALINITY (CaCO ₃)	2.69 lb/day
MINIMUM PHOSPHORUS	Assumed 45.00 mg/l
WASTEWATER TEMPERATURE	< 100 mg/l
AIR TEMPERATURE	150.00 mg/l
SITE ELEVATION	3.00 mg/l
	20 °C
	0 - 40 °C
	50 feet

EFFLUENT PROCESS PARAMETERS

AVERAGE DAILY WASTEWATER FLOW	0.011000 MGD
PEAK FLOW (4 HOUR DURATION)	0.011000 MGD
pH	6 - 9
BOD ₅	10.00 mg/l
TSS	1.08 lb/day
NH ₃ -N	10.00 mg/l
TKN	1.08 lb/day
	1.00 mg/l
	0.11 lb/day
	10.00 mg/l

DESIGN PARAMETERS

MLVSS ₅ @ BOTTOM WATER LEVEL (BWL)	2,982 mg/l
F:M RATIO	0.055 lb BOD ₅ / lb MLVSS
SLUDGE AGE	70 days
CYCLES/DAY	6 cycles / day
LENGTH PER CYCLE	4 hours cycle
SLUDGE PRODUCTION	0.27 lb / lb BOD ₅ removed
TOTAL SLUDGE PRODUCTION	8.43 lb / day