ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

FILE COPY

OCT 23 2013

September 24, 2013

Ms. Genevieve Salmonson, Interim Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

SUBJECT: WAIKAPU LIGHT INDUSTRIAL PROJECT AT WAIKAPU, MAUI, HAWAII TMK (2) 3-8-007:105, (EA 2013/0003)

With this letter, the Department of Planning hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (FONSI) for the proposed Waikapu Light Industrial Project situated at Tax Map Key (2)3-8-007:105, in the Wailuku District on the island of Maui for publication in the next available edition of the Environmental Notice.

Enclosed is a completed Office of Environmental Quality Control (OEQC) Publication Form, two copies of the Draft Environmental Assessment and Anticipated FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

Thank you for your cooperation. If additional clarification is needed, please contact Staff Planner Paul Fasi at (808) 270-7735.

Sincerely,

WILLIAM SPENCE
Planning Director

RECEIVED
'13 OCT 10 P1:16
OFC. OF ENVIRONMENTAL QUALITY CONTROL

ONE MAIN PLAZA BUILDING / 2200 MAIN STREET, SUITE 315 / WAILUKU, MAUI, HAWAII 96793
MAIN LINE (808) 270-7735 / FACSIMILE (808) 270-7634
CURRENT DIVISION (808) 270-8205 / LONG RANGE DIVISION (808) 270-7214 / ZONING DIVISION (808) 270-7253

APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JANUARY 2013 REVISION)

Project Name	**Waikapu Light Industrial Project**
Island:	Maui
District:	Wailuku
TMK:	(2)3-8-007:105
Permits:	National Pollutant Discharge Elimination System Permit, as applicable; State Land Use District Boundary Amendment; County Community Plan Amendment; County Change in Zoning; Department of Health Community Noise Permit, as applicable;Work to Perform in County Right-of-Way Permit; and Construction Permits (Building, Grading, Grubbing)
Approving Agency:	County of Maui, Maui Planning Commission, 2200 Main Street, Suite 315, Wailuku, Hawaii 96793, Contact: William Spence, Phone: (808)270-7735
Applicant:	ABC Development Company, LLC, 815 A. Waiakamilo Road, Honolulu, Hawaii 96817, Contact: Albert Y. Kanno, Phone: (808)847-4017
Consultant:	Munekiyo & Hiraga, Inc., 305 South High Street, Suite 104, Wailuku, Hawaii 96793, Contact: Leilani Pulmano, Phone No.: (808) 244-2015

(*Address, Contact Person, Telephone*)

Status (check one only):

_**X**_DEA-AFNSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day comment period ensues upon publication in the periodic bulletin.
__FEA-FONSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov; no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the approving agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov. NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The approving agency simultaneous transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the applicant. No comment period ensues upon publication in the periodic bulletin.
__Statutory hammer Acceptance	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.
__Section 11-200-27 Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

The Applicant proposes to develop seven (7) light industrial lots ranging from 0.8 acre to 1.5 acres under a condominium regime on 8.55 acres. The project is situated in a region of light industrial uses, with other light industrial subdivisions and baseyards located to the east and west of East Waiko Road. Related improvements include site grading/grubbing, landscaping, utilities installation, offsite infrastructure improvements and roadways construction on County lands. The proposed project site is in the State "Agricultural" District; designated "AG, Agriculture" by the Wailuku-Kahului Community Plan; and located within the County "AG, Agricultural" zoning district. The applicant is initiating applications requesting land use changes for a State Land Use District Boundary Amendment to an "Urban" designation, a Community Plan Amendment to "L1,Light Industrial" and a County Change In Zoning to "M-1, Light Industrial". As the Project is situated on lands formerly used for a scrap metal recovery facility the applicant coordinated with the State Department of Health and prepared a site closure plan. After several years of intensive cleanup, the Applicant has properly removed the scrap metal from the project site and is finalizing the site restoration plan so the project is fit for light industrial use.

Draft Environmental Assessment

PROPOSED WAIKAPU LIGHT INDUSTRIAL PROJECT AT WAIKAPU, MAUI, HAWAII

TMK (2)3-8-007:105

Prepared for:

ABC Development Company, LLC

Approving Agency:

County of Maui,
Maui Planning Commission

August 2013

Copyright © 2013,
by Munekiyo & Hiraga, Inc.

MUNEKIYO & HIRAGA, INC.

CONTENTS

List of Acronyms . . . . . Page i

Executive Summary . . . . . Page iii

I. PROJECT OVERVIEW . . . . . Page 1

A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP Page 1
B. PROJECT NEED . . . . . Page 6
C. PROPOSED ACTION . . . . . Page 6
D. PROJECT COSTS AND IMPLEMENTATION . . . . . Page 8
E. CHAPTER 343, HAWAII REVISED STATUTES (HRS) REQUIREMENTS . . . . . Page 8
F. LONG-TERM MANAGEMENT . . . . . Page 8

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES . . . . . Page 9

A. PHYSICAL SETTING . . . . . Page 9
1. Surrounding Land Uses . . . . . Page 9
2. Climate . . . . . Page 10
3. Agricultural Lands . . . . . Page 11
4. Topography and Soils Characteristics . . . . . Page 15
5. Flood and Tsunami Hazards . . . . . Page 18
6. Streams and Wetlands . . . . . Page 20
7. Flora and Fauna . . . . . Page 20
8. Archaeological Resources . . . . . Page 21
9. Cultural Resources . . . . . Page 23
10. Air Quality . . . . . Page 25
11. Noise . . . . . Page 26
12. Scenic and Open Space Resources . . . . . Page 28
13. Chemicals and Hazardous Substances . . . . . Page 28
14. Beach and Mountain Access . . . . . Page 30
B. SOCIO-ECONOMIC ENVIRONMENT . . . . . Page 32
1. Population . . . . . Page 32
2. Economy . . . . . Page 32
C. PUBLIC SERVICES . . . . . Page 33
1. Police and Fire Protection . . . . . Page 33
2. Medical Services . . . . . Page 34
3. Solid Waste . . . . . Page 34
4. Recreational Resources . . . . . Page 35
5. Schools . . . . . Page 36

D. INFRASTRUCTURE ..... Page 36
1. Roadways ..... Page 36
2. Water ..... Page 40
3. Wastewater ..... Page 41
4. Drainage ..... Page 42
5. Electricity and Telephone Systems ..... Page 45
E. CUMULATIVE AND SECONDARY IMPACTS ..... Page 45

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS .... Page 48

A. STATE LAND USE DISTRICTS ..... Page 48
B. CHAPTER 226, HRS, HAWAII STATE PLAN ..... Page 52
1. Objectives and Policies of the Hawaii State Plan ..... Page 52
2. Priority Guidelines of the Hawaii State Plan ..... Page 54
C. GENERAL PLAN OF THE COUNTY OF MAUI ..... Page 55
1. Countywide Policy Plan ..... Page 56
2. Maui Island Plan ..... Page 60
D. WAILUKU-KAHULUI COMMUNITY PLAN ..... Page 62
E. COUNTY ZONING ..... Page 67
F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES .. Page 69
1. Recreational Resources ..... Page 69
2. Historic Resources ..... Page 71
3. Scenic and Open Space Resources ..... Page 71
4. Coastal Ecosystems ..... Page 72
5. Economic Uses ..... Page 73
6. Coastal Hazards ..... Page 74
7. Managing Development ..... Page 75
8. Public Participation ..... Page 75
9. Beach Protection ..... Page 76
10. Marine Resources ..... Page 77

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES ..... Page 78

V. ALTERNATIVES TO THE PROPOSED ACTION ..... Page 80

A. PREFERRED ALTERNATIVE ..... Page 80
B. NO ACTION ALTERNATIVE ..... Page 80
C. DEFERRED ACTION ALTERNATIVE ..... Page 80

VI. SIGNIFICANCE CRITERIA ASSESSMENT ..... Page 86

VII. LIST OF PERMITS AND APPROVALS ..... Page 87

VIII. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS . . . . . Page 87

IX. REFERENCES . . . . . Page i

K:\DATA\ABC Dev\Waikapu LI\DraftEA.wpd

LIST OF FIGURES

Figure 1. Regional Location Map . . . . . Page 2
Figure 2. Property Location Map . . . . . Page 3
Figure 3. Photographs Before Cleanup . . . . . Page 4
Figure 4. Photographs After Cleanup . . . . . Page 5
Figure 5. Site Plan . . . . . Page 7
Figure 6. Agricultural Lands of Importance to the State of Hawaii (ALISH) Map . . Page 13
Figure 7. Land Study Bureau Classification Map . . . . . Page 14
Figure 8. Soil Association Map . . . . . Page 16
Figure 9. Soil Classification Map . . . . . Page 17
Figure 10. Flood Insurance Rate Map . . . . . Page 19
Figure 11. Conceptual Location of Impacted Containment Cells . . . . . Page 30
Figure 12. State Land Use District Boundary Map . . . . . Page 49
Figure 13. Wailuku-Kahului Community Plan Map . . . . . Page 63
Figure 14. Maui County Zoning Map . . . . . Page 68

LIST OF TABLES

Table 1. Summary of Requested Land Use Changes . . . . . Page iv
Table 2. Summary of Requested Land Use Amendments . . . . . Page 8
Table 3. Storm Discharges for a 1-Hour Storm at Full Build-Out . . . . . Page 43

LIST OF APPENDICES

Appendix A. Preliminary Development Plans
Appendix B. Preliminary Civil Engineering and Drainage Report
Appendix C. Archaeological Assessment Survey Report
Appendix C-1. State Historic Preservation Division Approval
Appendix D. Cultural Impact Assessment
Appendix E. Traffic Impact Analysis Report
Appendix F. Community Information Meeting Summary

List of Acronyms

AAR	Archaeological Assessment Survey Report
ABC	ABC Development Company, LLC
AFNSI	Anticipated Finding of No Significant Impact
ALISH	Agricultural Lands of Importance to the State of Hawaii
AMSL	Above Mean Sea Level
ATA	Austin, Tsutsumi & Associates, Inc.
BMP	Best Management Practice
CF	Cubic Feet
CFS	Cubic Feet per Second
CIA	Cultural Impact Assessment
CIZ	Change in Zoning
CP	Conditional Permit
CPA	Community Plan Amendment
CPR	Condominium Property Regime
CZM	Coastal Zone Management
DBA	District Boundary Amendment
DOE	Department of Education
DOH	Department of Health
DOT	State Department of Transportation
DWS	Department of Water Supply
EA	Environmental Assessment
EAL	Environmental Action Level
EHMP	Environmental Hazard Management Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GPD	Gallons per Day
GPM	Gallons per Minute
HAR	Hawaii Administrative Rules
HC&S	Hawaiian Commercial & Sugar Company
HDOA	Hawaii Department of Agriculture
HSG	Hydrologic Soil Group
HRS	Hawaii Revised Statutes
IWS	Individual Wastewater System
JaC	Jaucas Sand
LOS	Level of Service
LSB	Land Study Bureau
MIP	Maui Island Plan
MPH	Miles per Hour
NPDES	National Pollutant Discharge Elimination System
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCEDR	Preliminary Civil Engineering and Drainage Report

PZUE	Puuone Sand
RCRA	Resource Conservation and Recovery Act
RGB	Rural Growth Boundary
SHPD	State Historic Preservation Division
SLUC	State Land Use Commission
SMA	Special Management Area
STB	Small Town Boundary
SUP	State Special Use Permit
TIAR	Traffic Impact Assessment Report
TPH-DRO	Total Petroleum Hydrocarbons as Diesel Range Organics
TPH-RRO	Total Petroleum Hydrocarbons as Residual Range Organics
TMK	Tax Map Key
UGB	Urban Growth Boundary
UH	University of Hawaii
UHMC	University of Hawaii Maui College
VOC	Volatile Organic Compounds
WWPS	Wastewater Pump Station
WKWWRF	Wailuku-Kahului Wastewater Reclamation Facility

Executive Summary

Project Name:	Proposed Waikapu Light Industrial Project
Type of Document:	Draft Environmental Assessment
Legal Authority:	Chapter 343, Hawaii Revised Statutes
Agency Determination:	Anticipated Finding of No Significant Impact (AFNSI)
Applicable Environmental Assessment Review "Trigger":	Amendment to Existing County General Plan Use of County Lands
Location:	Island of Maui Waikapu TMK (2)3-8-007:105
Applicant:	ABC Development Company, LLC 815A Waiakamilo Road Honolulu, Hawaii 96817 Contact: Albert Y. Kanno Phone: (808) 847-4017
Approving Agency:	County of Maui Maui Planning Commission 250 South High Street Wailuku, Hawaii 96793
Consultant:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawaii 96793 Contact: Leilani Pulmano Phone: (808) 244-2015
Project Summary:	ABC Development Company, LLC (ABC) is proposing to develop seven (7) light industrial lots and related improvements under a condominium regime on approximately 8.55 acres of land at Tax Map Key (TMK) (2)3-8-007:105, located at 109 East Waiko Road in Waikapu, Maui, Hawaii. The lots will range in size from 0.8 acre to 1.5 acres. Related improvements will be completed as part of the project implementation, including site grading and grubbing, landscaping, installation of utilities, offsite infrastructure

improvements, and construction of roadways.

The proposed project site is located within the State " Agricultural" District; designated "AG, Agriculture" by the Wailuku-Kahului Community Plan; and located within the County "AG, Agricultural" zoning district. To enable project implementation, ABC is initiating applications for a State Land Use District Boundary Amendment (DBA); a Community Plan Amendment (CPA) to the Wailuku-Kahului Community Plan land use map; and a County Change in Zoning (CIZ). The requested land use changes for the project are summarized in **Table 1** below:

Table 1. Summary of Requested Land Use Changes

Land Use Designation	Existing	Requested Changes
State Land Use District	Agricultural	Urban
Wailuku-Kahului Community Plan	AG, Agriculture	LI, Light Industrial
Maui County Zoning	AG, Agricultural	M-1, Light Industrial

The CPA and offsite infrastructure improvements involving County lands trigger compliance with Hawaii Revised Statutes (HRS), Chapter 343 environmental review requirements. Therefore, this Environmental Assessment (EA) is prepared to evaluate the technical characteristics, environmental impacts and alternatives, as well as advance findings relative to the significance of the proposed project impacts. The Approving Agency for the EA will be the Maui Planning Commission, while the approving body for the DBA, CPA, and CIZ will be the Maui County Council.

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

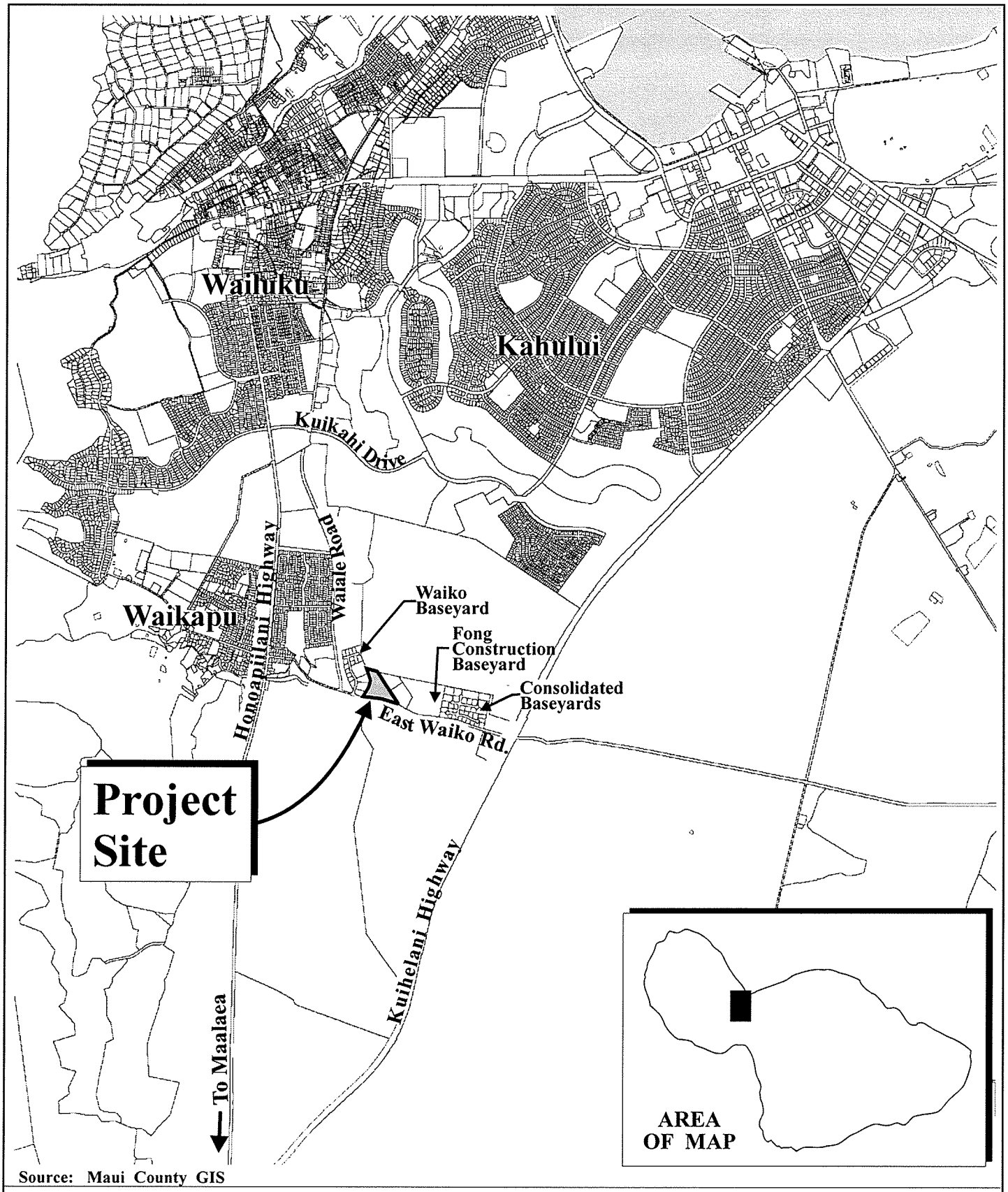
A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

ABC Development Company, LLC (ABC), hereinafter referred to as the "Applicant", proposes to develop seven (7) light industrial lots and related improvements under a condominium property regime (CPR), hereinafter referred to as "units", on approximately 8.55 acres of land at Tax Map Key (TMK) (2)3-8-007:105 (hereinafter referred to as "project site"), located at 109 East Waiko Road in Waikapu, Maui, Hawaii. Access to the project site is via East Waiko Road. See **Figure 1** and **Figure 2**. As used in this document, the proposed project is referred to as the "Waikapu Light Industrial" project.

The project site was formerly utilized by Maui Scrap Metal Company, Inc. (Maui Scrap) and for many years was the largest scrap metal recovery facility on Maui. Maui Scrap's operations were enabled through a State Special Use Permit, a County Conditional Permit, and a State of Hawaii, Department of Health (DOH) Solid Waste Management Permit. Over time, the State Special Use Permit, County Conditional Permit and Solid Waste Management Permit expired and the property became subject to cleanup orders issued by DOH. In 2007, ABC purchased the property "as is", subject to the requirement to comply with DOH cleanup orders.

At the time of acquisition in 2007, site conditions included stockpiles of scrap metal amounting to approximately 35,000 to 45,000 tons of material, including such debris as discarded automobiles, used appliances, used construction equipment, and discarded tires that blanketed the vast majority of the 8.55-acre property. See **Figure 3**. In coordination with DOH, ABC prepared a site closure plan for the property. Now, after several years of intensive cleanup, ABC has properly removed the scrap metal from the project site and is in the process of finalizing the site restoration plan. See **Figure 4**. With the site cleanup and restoration completed, the project site is fit for conversion to light industrial use.

The project site is owned by ABC.



Source: Maui County GIS

Figure 1

Proposed Waikapu Light Industrial Project

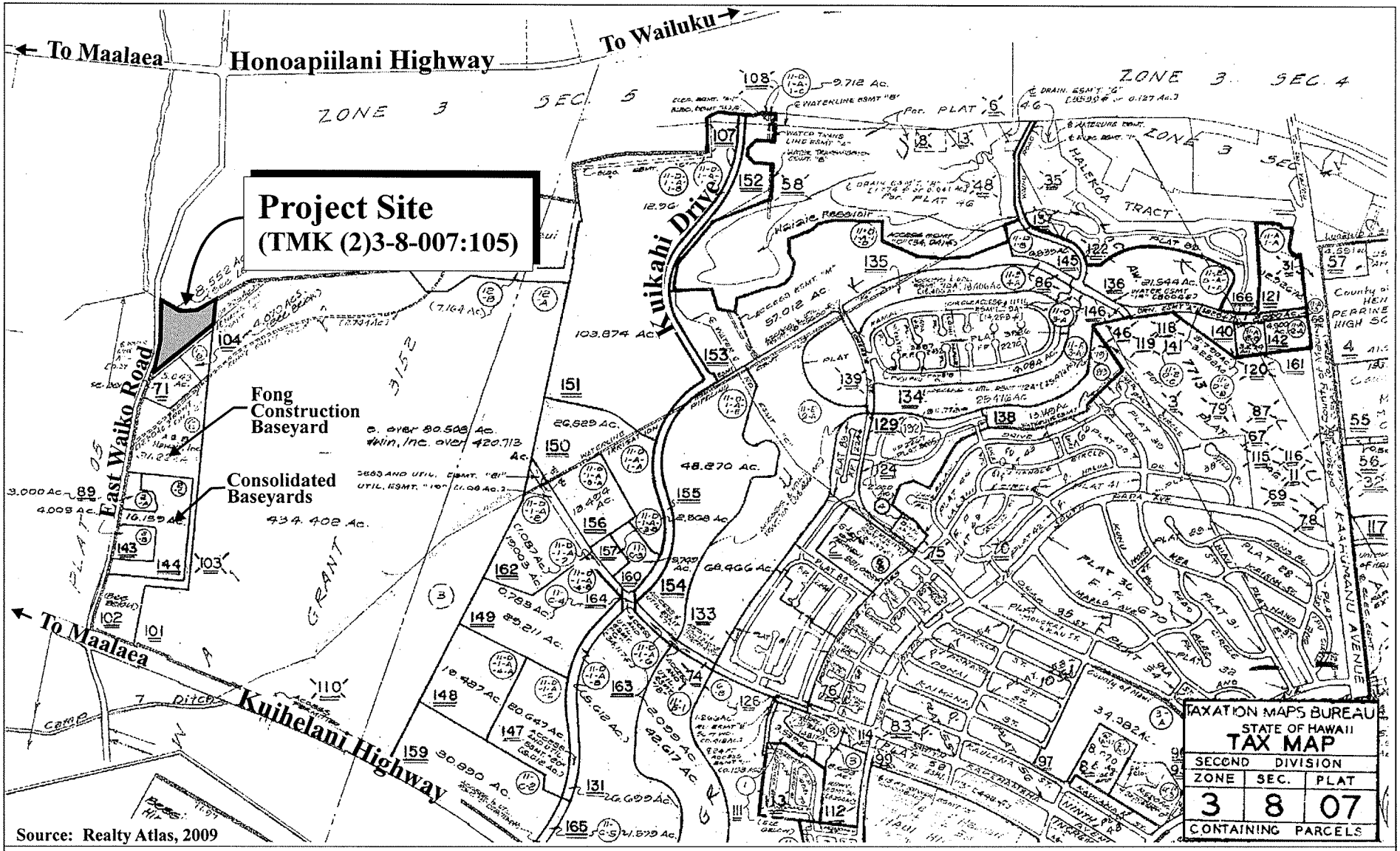
Regional Location Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\regionalmap



Source: Realty Atlas, 2009

Figure 2 Proposed Waikapu Light Industrial Project

Property Location Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\TMK Map

View west from within project site, towards West Maui Mountains; electrical line within Waiko Baseyard in background

View east from within project site, towards Haleakala; East Waiko Road to the right, outside photo

Source: ABC Development Company, LLC

Figure 3

Proposed Waikapu Light Industrial Project

Photographs Before Cleanup

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

View northwest from within project site; electrical line along Waiko Baseyard in background

View north from within project site

Source: Munekiyo & Hiraga, Inc.

Figure 4

Proposed Waikapu Light Industrial Project

Photographs After Cleanup

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

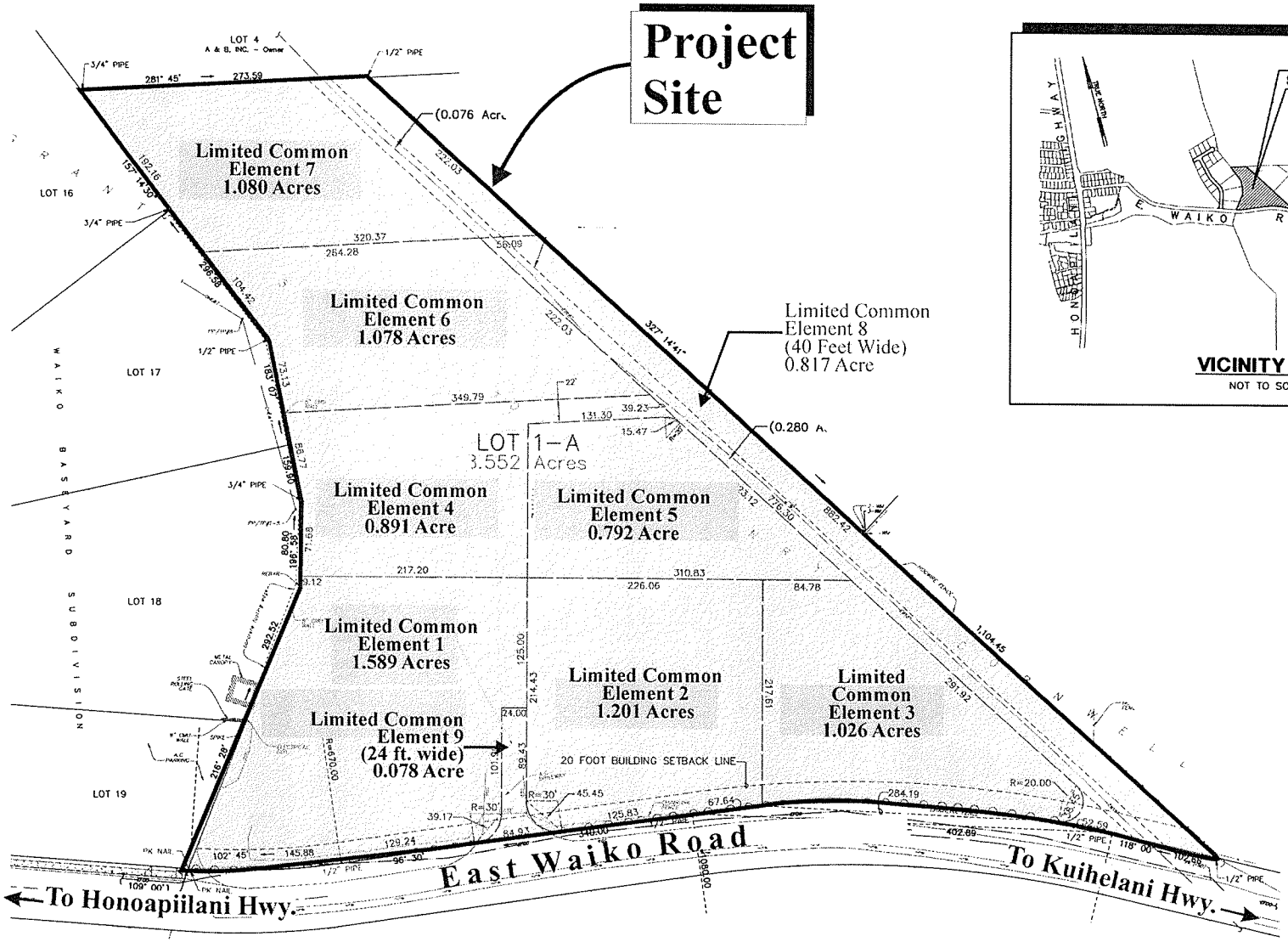
B. PROJECT NEED

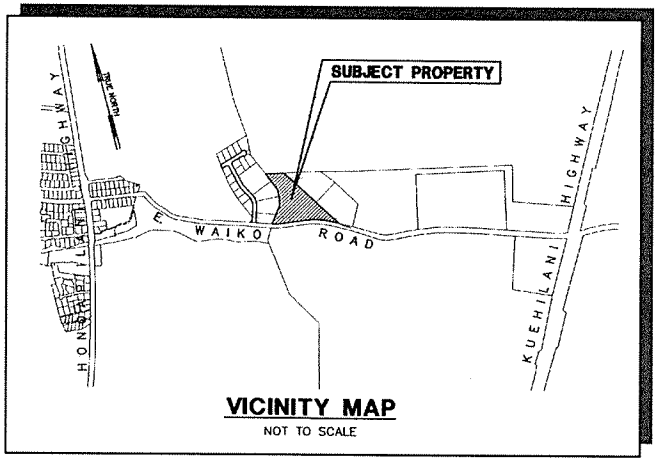
As previously mentioned, the project site was formerly utilized as a scrap metal recovery facility, an industrial use despite the underlying "Agricultural" zoning. Additionally, the project site is situated in a region of light industrial uses, with other light industrial subdivisions and baseyards located to the east and west of the subject property, along East Waiko Road. In the context of the land use history of the site and the surrounding light industrial uses, the project site is considered to be an ideal location for the continuation of light industrial uses along East Waiko Road.

C. PROPOSED ACTION

The proposed Waikapu Light Industrial project involves the creation of seven (7) light industrial lots and related improvements under a condominium property regime on the approximately 8.55-acre property. The lots will range in size from approximately 0.8 acre to 1.5 acres. Related improvements include site grading and grubbing, landscaping, installation of utilities, construction of internal roadways, and offsite infrastructure improvements. Drainage improvements, off street parking, and other applicable requirements set forth by the Maui County Code will be installed by future individual unit owners. The offsite infrastructure improvements will affect portions of East Waiko Road that are owned by the County Maui. The northern side of East Waiko Road that abuts the project site will be improved by ABC with the additions of pavement widening, curbs and gutters, and a 10-foot shoulder area. The shoulder area will consist of a 6-foot wide concrete sidewalk and a 4-foot wide grass strip. See **Figure 5** and **Appendix "A"**. The project will be accessed off of East Waiko Road with two (2) driveways; one (1) driveway to access unit 1 and unit 2, while the other driveway to access the remaining units.

The project site is located within the State "Agricultural" district; designated "AG, Agriculture" by the Wailuku-Kahului Community Plan; and zoned "AG, Agricultural" by the Maui County zoning ordinance. To enable project implementation, State Land Use District Boundary Amendment (DBA), Community Plan Amendment (CPA), and Change in Zoning (CIZ) applications will be initiated for the project site. The requested land use changes for the project are summarized in **Table 2** below:





Source: R. T. Tanaka Engineers, Inc.

Figure 5 Proposed Waikapu Light Industrial Project

Site Plan

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\siteplan.dea

Table 2. Summary of Requested Land Use Amendments

Land Use Designation	Existing	Requested Changes
State Land Use District	Agricultural	Urban
Wailuku-Kahului Community Plan	AG, Agriculture	LI, Light Industrial
Maui County Zoning	AG, Agricultural	M-1, Light Industrial

D. PROJECT COSTS AND IMPLEMENTATION

The cost of the proposed project is estimated to be $1.1 million. Project construction is expected to take 6 to 12 months to complete, commencing approximately three (3) months after the receipt of the necessary regulatory approvals.

E. CHAPTER 343, HAWAII REVISED STATUTES (HRS) REQUIREMENTS

The CPA and offsite infrastructure improvements involving County lands trigger compliance with the Hawaii Revised Statutes (HRS), Chapter 343 requirements. Therefore, this Environmental Assessment (EA) is being prepared pursuant to Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Environmental Impact Statement Rules to evaluate the proposed project's technical characteristics, environmental and socio-economic impacts, and alternatives, as well as to advance findings relative to the significance of the project's potential impacts and proposed mitigation measures. Upon completion, the EA will act as the primary supporting technical document for the DBA, CPA, and CIZ applications. The Approving Agency for the EA will be the Maui Planning Commission. The approving body for the DBA, CPA, and CIZ applications is the Maui County Council.

F. LONG-TERM MANAGEMENT

ABC will manage the condominium units through an owners' association. It is ABC's intent to sell the light industrial condominium units to local businesses engaged in light industrial activities. As with other associations, the owners' association will manage the common areas. The hours of operation will depend on the purchasers of the condominium units.

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

A. PHYSICAL SETTING

1. Surrounding Land Uses

a. Existing Conditions

The project area is located in the vicinity of Waikapu Village in the Central Maui region. Originally developed as a sugar plantation town, Waikapu Village today is primarily a single-family residential community with limited areas for commercial businesses along Honoapiilani Highway. From a regional perspective, Wailuku is located north of the project site, while Kahului is located northeast of the project site. Refer to **Figure 1**.

In addition to residential neighborhoods and a community business area, the Waikapu Village area also includes the Waikapu Community Center and the industrial areas along East Waiko Road. There are existing industrial uses to the west (Waiko Baseyard Subdivision) and east (Fong Construction Baseyard and Consolidated Baseyards) of the project site. Agricultural lands are located to the east and south of the project site. The agricultural lands to the north are vacant; to the east are the Nobriga cattle feeding pens. The agricultural lands to the south, immediately across East Waiko Road, are not under cultivation. Further south, just beyond Waikapu Stream are agricultural lands that are cultivated in sugar cane. It is noted that the proposed Waiale Master Planned community is located to the north of the project site.

East Waiko Road connects Honoapiilani Highway with Kuihelani Highway. Kuihelani Highway is located east of the project site and is a State-owned four-lane divided highway. It provides regional access from Kahului to West Maui via Honoapiilani Highway. Honoapiilani Highway is located west of

the project site and is a State-owned two-lane highway. It provides regional access between Wailuku and West Maui through Waikapu.

b. Potential Impacts and Mitigation Measures

The proposed Waikapu Light Industrial project is a compatible use within the context of the adjacent Waiko Baseyard light industrial subdivision and the nearby Fong Construction Baseyard and Consolidated Baseyards light industrial subdivision. These light industrial subdivisions uses are located outside of the residential areas of Waikapu Town. As such, the proposed project is a compatible use in the context of the surrounding land uses and is not anticipated to create any adverse impacts on existing residences.

2. Climate

a. Existing Conditions

Like most areas of Hawaii, the climate in Waikapu is relatively uniform year-round. Characteristic of Maui's climate, the project site experiences mild and uniform temperatures, moderate humidity and relatively consistent northeasterly tradewinds. This stability is attributed to Maui's tropical latitude, relative to the Pacific anticyclone and storm tracts, and the surrounding ocean currents. Variations in climate among the different regions in Maui are largely due to local terrain.

In 2011, August was the warmest month with an average in the high 80 degrees Fahrenheit (measured at Kahului Airport), while the coolest month was February with an average in the low 60s (Maui County Data Book 2011, 2012).

Rainfall in the region is seasonal, with most precipitation in 2011 occurred in the month of January. Annual rainfall data for Central Maui showed an average of 18.49 inches in 2011 (Maui County Data Book 2011, 2012).

The winds in the region are predominantly tradewinds from the north-northeast. In general, tradewinds blow stronger in the afternoon. The tradewinds blow onshore toward the warmer land mass during the day; during the evening, the tradewinds blow offshore toward the relatively warmer ocean.

b. Potential Impacts and Mitigation Measures

According to the United States Environmental Protection Agency, the development of urban areas, including industrial areas, has a tendency to increase temperatures slightly (up to 10 degrees Fahrenheit, in dense cities) as compared to surrounding natural land cover. This "heat island" effect, as it is often denoted, refers to urban air and surface temperatures that may be higher than nearby rural or undeveloped areas.

In order to minimize the potential of an elevated heat island profile, the Applicant will implement measures to reduce the "heat island" effect. For example, the Applicant will provide landscape vegetation throughout the project site to take advantage of the natural cooling effects of shading and the evaporative effects of water from the soil and leaves. Further, the Applicant will recommend to future owners of the units that the buildings be architecturally designed with light colored roofs and façade. Light colors help to minimize surface temperatures of the buildings. It is anticipated that these mitigation measures will serve to offset the potential heat island effect of the proposed project. As a result, the proposed action is not anticipated to significantly alter local micro-climates.

3. Agricultural Lands

a. Existing Conditions

In 1977, the State of Hawaii, Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawaii (ALISH), based primarily, though not exclusively, on soil characteristics of the underlying land. The three (3) classes of ALISH lands are "Prime", "Unique", and "Other Important" agricultural land, with the remaining non-classified lands termed "Unclassified". When utilized with modern farming methods, "Prime" agricultural lands have soil quality,

growing season, and moisture supply needed to produce sustained crop yields economically; while "Unique" agricultural lands contain a combination of soil quality, growing season, and moisture supply to produce sustained yields of a specific crop. "Other Important" agricultural lands include those important agricultural lands that have not been rated as "Prime" or "Unique".

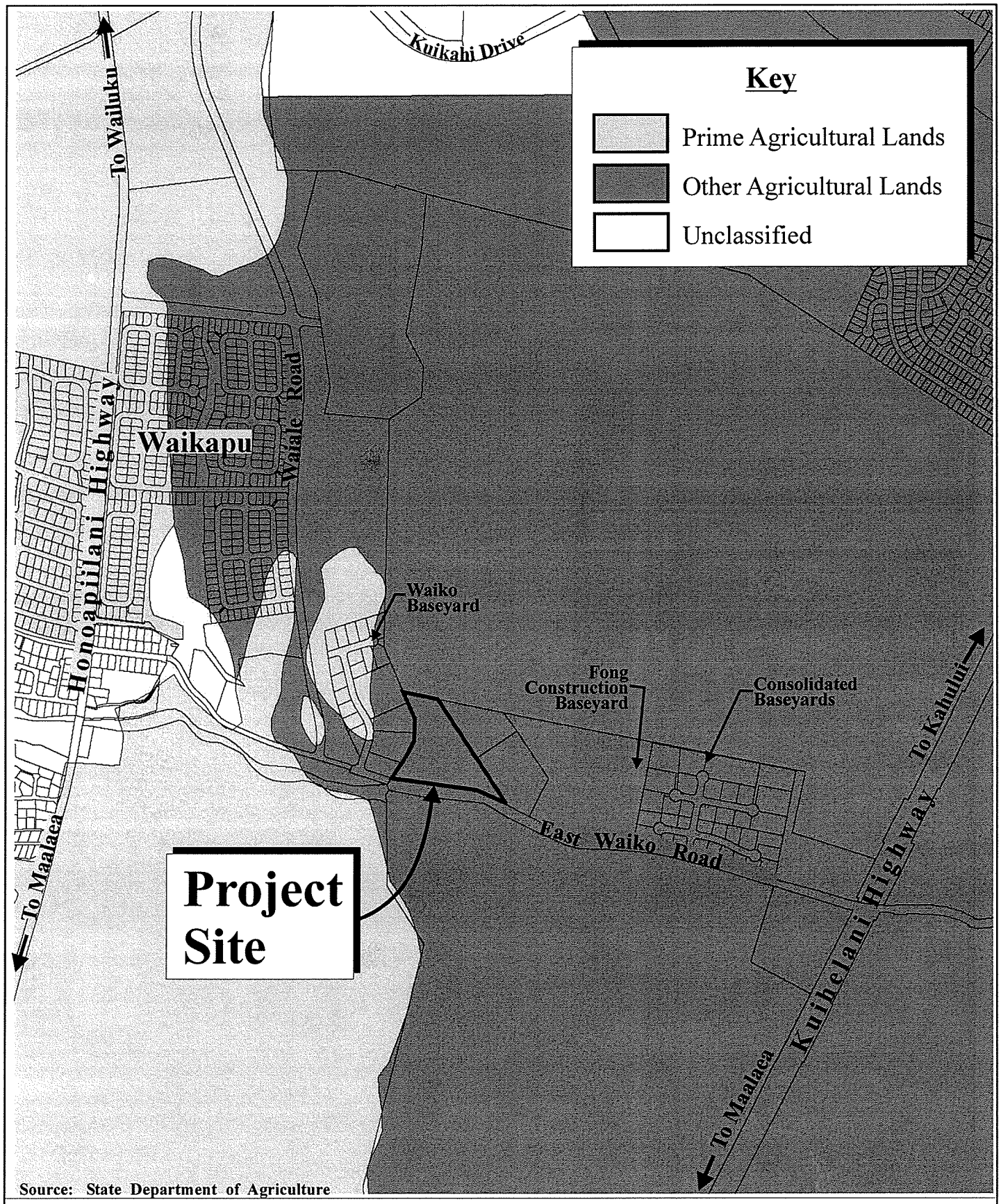
The project site, as reflected by the ALISH map, is located on lands designated as "Other Important" agricultural lands. See **Figure 6**.

Additionally, the University of Hawaii, Land Study Bureau (LSB) developed the Overall Productivity Rating, which classified soils according to five (5) levels, with "A" representing the class of highest productivity soils and "E" representing the lowest. These letters are followed by numbers which further classify the soil types by conveying such information as texture, drainage and stoniness. The LSB classification for the proposed project area is "E58". See **Figure 7**. The "E58" classification reflects an Overall Productivity Rating of E, the lowest possible rating. The soils are characterized as non-stony, with soil depths over 30 inches and an average slope of 11 to 20 percent, with dunes present. The soil is of medium grain and excessively drained. This land type is typically found at an elevation of 0 to 200 feet and experiences a mean annual rainfall of 10 to 30 inches. The soils are light brown in color and are part of the Catano series (UH Land Study Bureau, 1967).

The project site has been utilized for scrap metal recovery, an industrial use, since 1989. With respect to active agricultural uses in the surrounding area, sugar cane cultivation occurs just past Waikapu Stream to the south of the project site and Nobriga cattle feed pens are adjacent to the east of the project site.

b. <u>Potential Impacts and Mitigation Measures</u>

As previously mentioned, the project site was previously used as a scrap metal operation by the previous owner, Maui Scrap. Prior to Maui Scrap, the land was vacant. Although the project site was designated as "Agricultural" in terms of land use, the site has been used for industrial purposes for nearly 25 years. Given the historical use of the project site and its low LSB Overall



Source: State Department of Agriculture

Figure 6

Proposed Waikapu Light Industrial Project

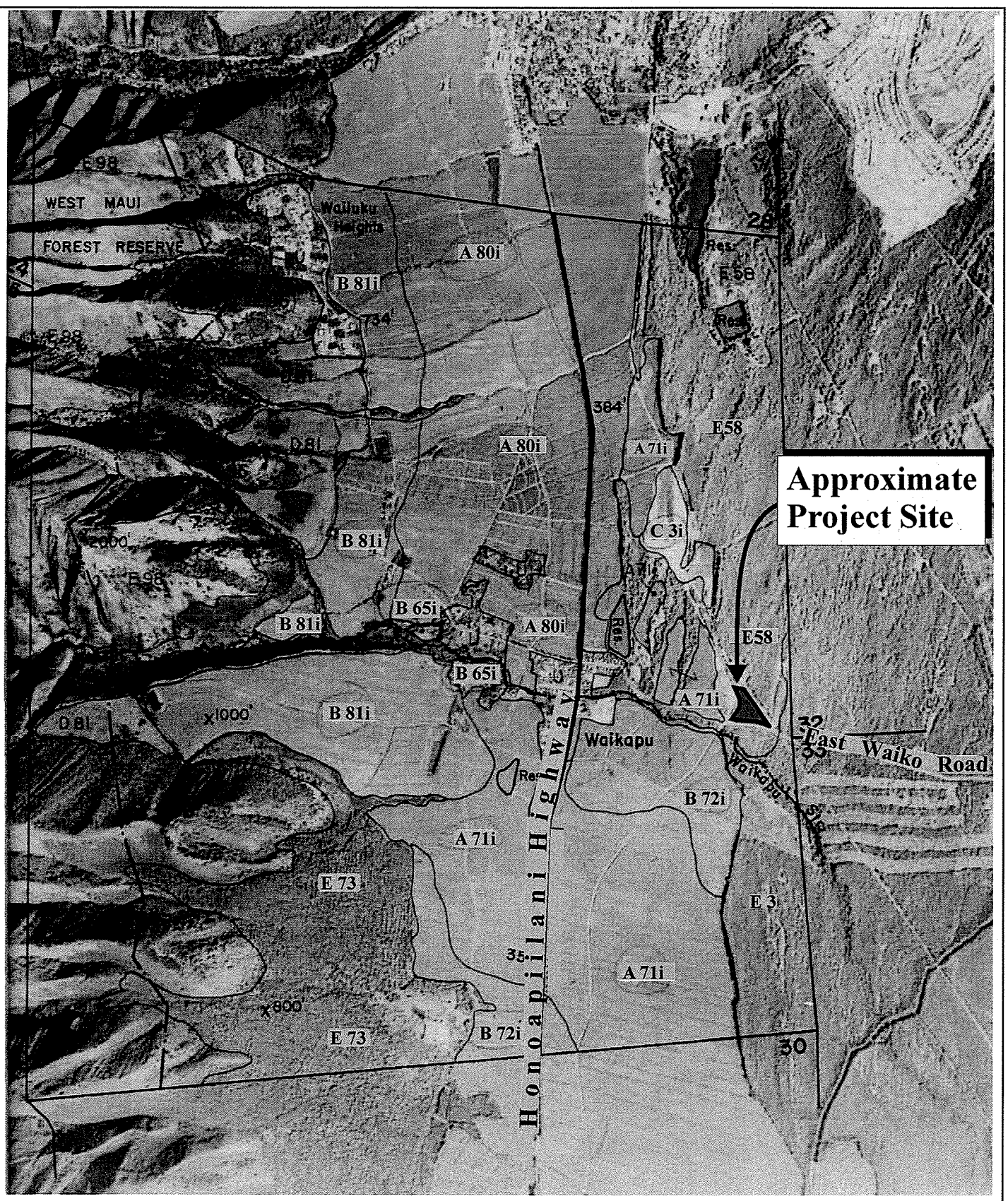
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map

0 534 Feet
267 1,067

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\alish_map



Source: University of Hawaii - Land Study Bureau

Figure 7

Proposed Waikapu Light Industrial Project

Land Study Bureau Classification Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\LSBClassificationMap

Productivity Rating, adverse impacts to agricultural productivity are not anticipated to result from project implementation. The proposed project is considered to be a suitable use of otherwise unproductive agricultural lands.

4. Topography and Soils Characteristics

a. Existing Conditions

The site contains dirt piles and a few concrete slabs. Setting aside the dirt piles, the ground is relatively flat, sloping from west to east at an average range of about 2.0 to 2.5 percent. Ground elevation ranges from 281 to 297 feet above mean sea level (amsl). See **Appendix "B"**, Preliminary Civil Engineering and Drainage Report. Prior to the establishment of Maui Scrap, portions of the project site had been mined, requiring Maui Scrap to import fill material in order to prepare the scrap yard. Even today, there is a substantial grade difference of 10 to 30 feet between the project site and the adjacent Waiko Baseyard.

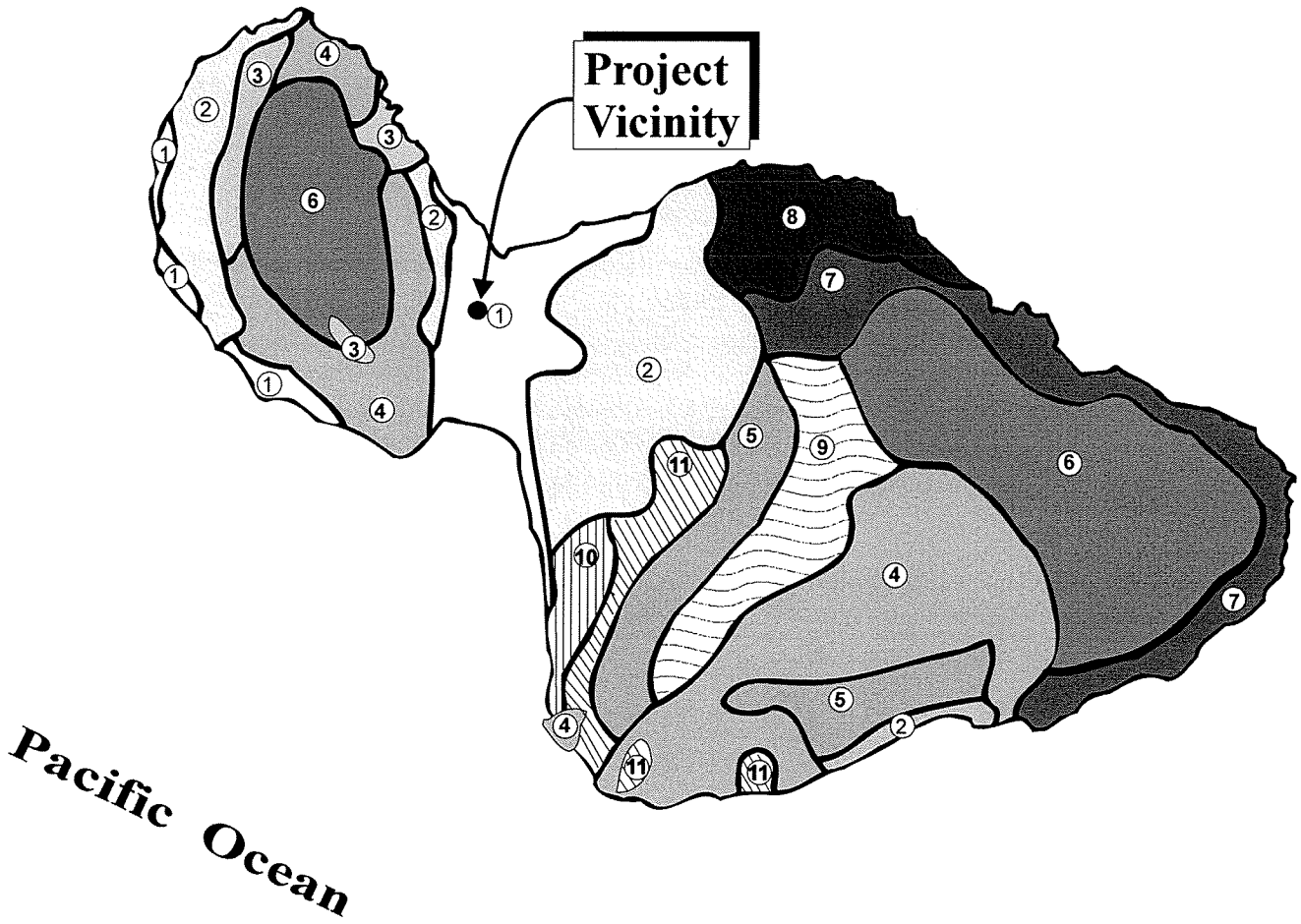
The project site consists of soils within the Pulehu-Ewa-Jaucas association, which is characterized as having deep, nearly level to moderate slope, with well drained soils that have moderately fine to course texture (USDA, 1972). See **Figure 8.** Underlying the project site are Jaucas Sand (JaC) and Puuone Sand (PZUE). See **Figure 9**.

Jaucas Sand (JaC) is a brown, single grain sand. Permeability is rapid, runoff is very slow to slow, the erosion hazard is slight, and the Hydrologic Soil Group (HSG) rating is "A". Exposed JaC soils can be susceptible to severe erosion where vegetation has been removed. These soils are used primarily for pasture, sugar cane, recreational areas, and urban development (USDA, 1972).

Puuone Sand (PZUE) consists of approximately 20 inches of sand over a strong cemented sand layer. Permeability is rapid above the cemented layer, runoff is slow, and the hazard of wind erosion is slight to moderate. The HSG for PZUE is "C". These soils are used for pasture and homesites (USDA, 1972).

LEGEND

- (1) Pulehu-Ewa-Jaucas association
- (2) Waiakoa-Keahua-Molokai association
- (3) Honolua-Olelo association
- (4) Rock land-Rough mountainous land association
- (5) Puu Pa-Kula-Pane association
- (6) Hydrandepts-Tropaquods association
- (7) Hana-Makaalae-Kailua association
- (8) Pauwela-Haiku association
- (9) Laumaia-Kaipoipoi-Olinda association
- (10) Keawakapu-Makena association
- (11) Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

Figure 8

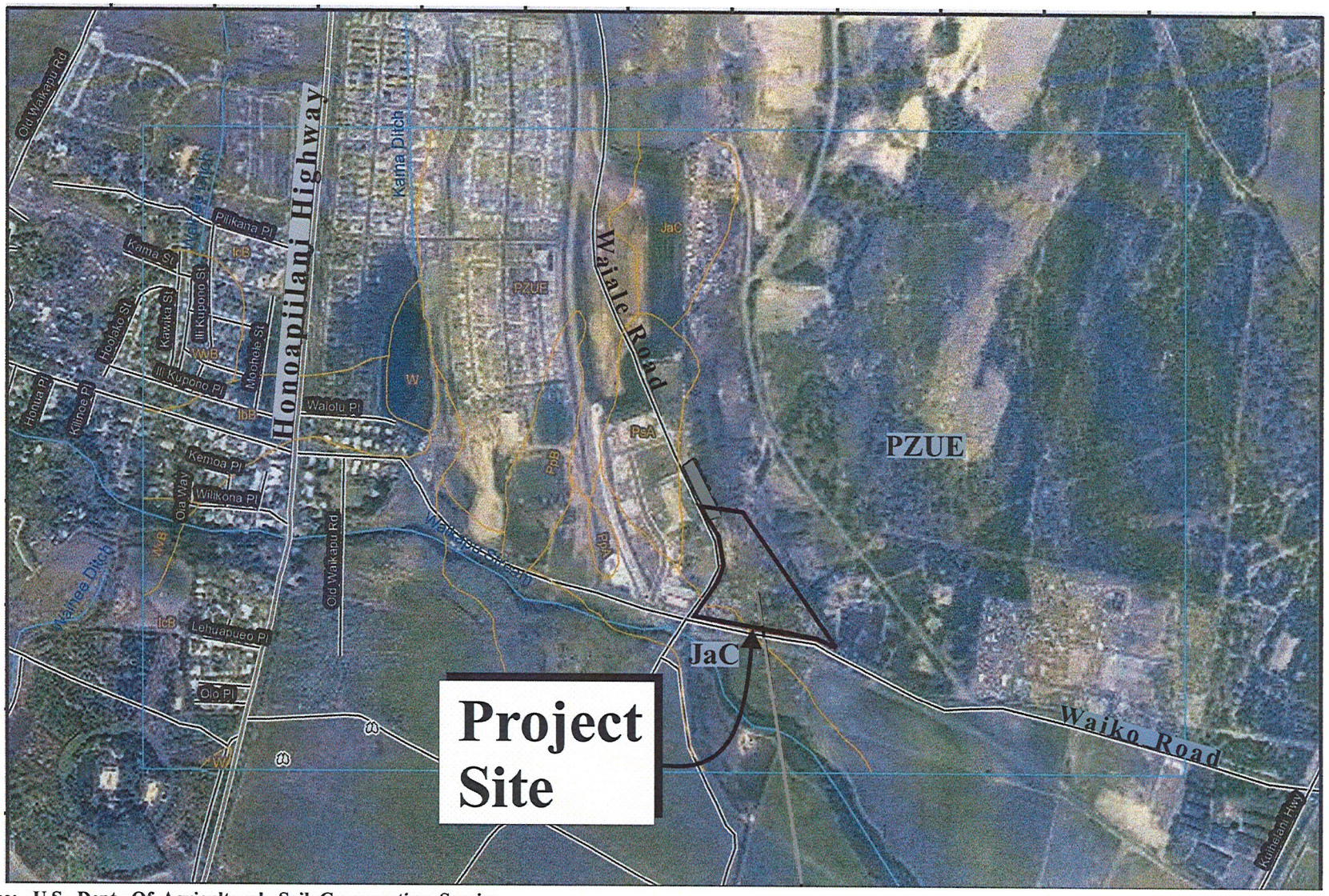
Proposed Waikapu Light Industrial Project
Soil Association Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LDSOILS



Source: U.S. Dept. Of Agricultural, Soil Conservation Service

Figure 9 Proposed Waikapu Light Industrial Project

Soil Classification Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\soilsclass

b. Potential Impacts and Mitigation Measures

Adverse impacts to underlying soil conditions and topography are not anticipated to result from grading for the proposed Waikapu Light Industrial project. However, special care will be taken during construction of road widening improvements on East Waiko Road in consideration of the loose, sandy soils within this area. Best Management Practices will be incorporated during the construction period to minimize soil loss, such as periodic water spraying of the disturbed soils to help prevent airborne dirt particles from reaching adjacent properties. Ingress/egress gravel access ways will be constructed near the entrance of the project site to minimize the tracking of onsite soils by construction vehicles onto existing roadways. Lastly, an application for a National Pollution Discharge Elimination System (NPDES) permit will be submitted to the State Department of Health prior to construction for review and approval.

5. Flood and Tsunami Hazards

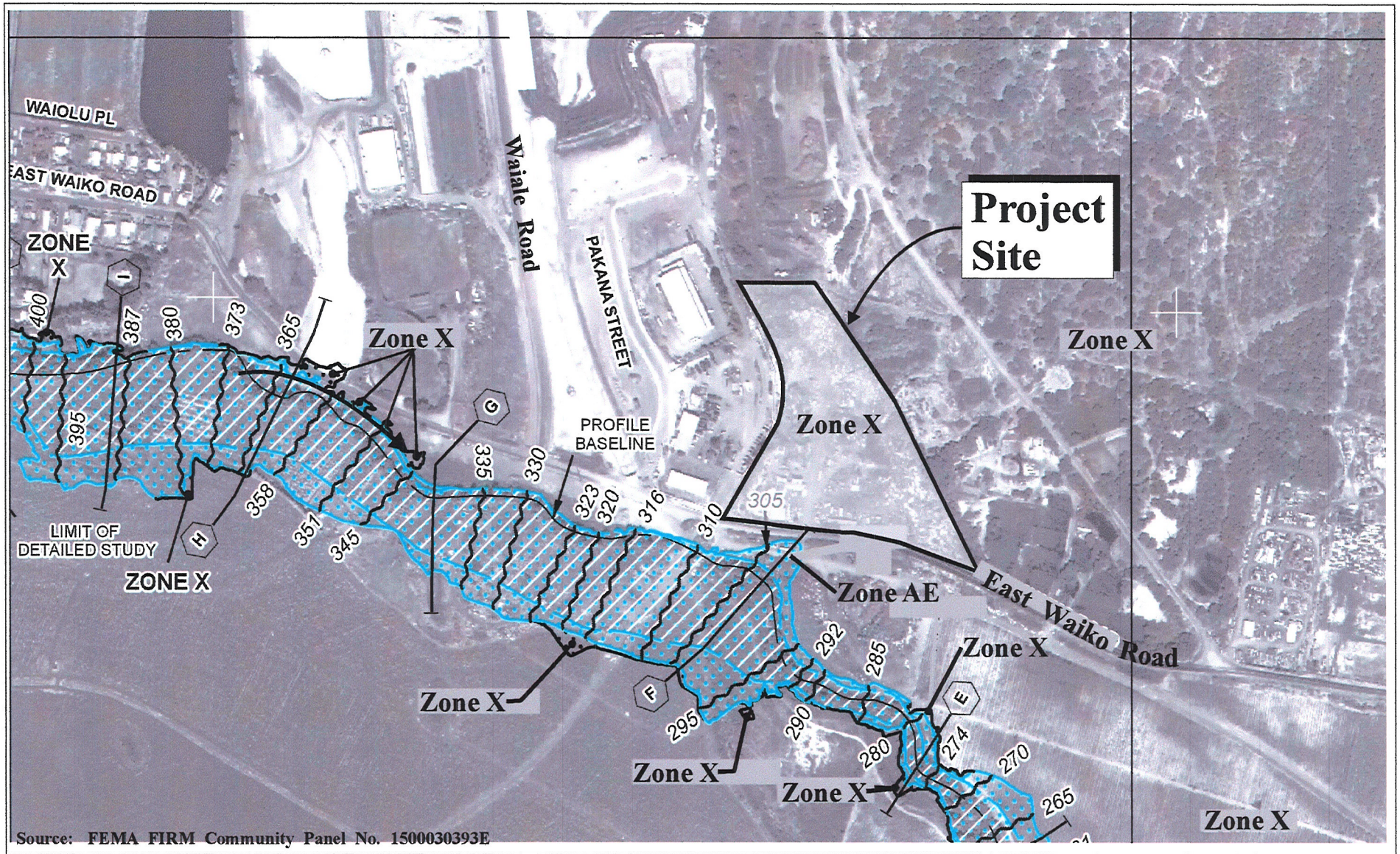
a. Existing Conditions

The project site is located near the eastern base of the West Maui Mountains. As indicated by the Flood Insurance Rate Map for the County of Maui, the project site is located within Zone X. Zone X is the flood insurance rate zone that corresponds to areas of minimal flooding or areas determined to be outside the 0.2 percent annual chance flood plain. See **Figure 10**. Refer to **Appendix "B"**.

The project site is located inland and outside the tsunami inundation zone.

b. Potential Impacts and Mitigation Measures

Given the location of the project site within Flood Zone X and outside of the tsunami inundation zone, there are no anticipated adverse effects to the proposed project from flooding or tsunami related events.



Source: FEMA FIRM Community Panel No. 1500030393E

Figure 10 Proposed Waikapu Light Industrial Project

Flood Insurance Rate Map

0 125 250 500 Feet

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\firm

6. Streams and Wetlands

a. Existing Conditions

There are no streams or wetlands within the project site. Waikapu Stream, which is south of East Waiko Road, generally runs west to east. At its westernmost point, the project site is approximately 150 feet from Waikapu Stream; at its easternmost point, the project site is approximately 575 feet away from the stream. Waikapu Stream originates in the West Maui mountains, at an elevation of approximately 3,300 feet, and flows through Waikapu Valley, ultimately discharging into Kealia Pond. Waikapu Stream is classified by the State of Hawaii as a perennial stream. This stream is listed by the State of Hawaii, Department of Health as impaired waters due to turbidity during the May to October dry season. This listing indicates that the water quality within the stream may not meet State of Hawaii water quality criteria for streams.

The Kealia Pond National Wildlife Refuge is located approximately 3.6 miles southeast of the project site.

b. Potential Impacts and Mitigation Measures

As indicated, there are no streams or wetlands on the project site. No adverse impacts to Waikapu Stream are anticipated to result from construction-related activities. Furthermore, as will be discussed in Section D.4. Drainage, onsite drainage improvements will ensure that downstream lands are not affected by the proposed project.

7. Flora and Fauna

a. Existing Conditions

Due to the previous scrap metal recovery operation and subsequent cleanup activities, the project site is devoid of any flora and habitat for any fauna. Prior to these uses and activities, the general characteristic of the project site would have been similar to the pre-development condition of the nearby Consolidated Baseyards property. A biological survey of the Consolidated Baseyards site conducted by Robert Hobdy in 2004, identified buffelgrass

(*Cenchrus ciliaris*) and *kiawe* as the predominant flora in the area. Fauna found in the area in 2004 included axis deer (*Axis axis*) and a domestic dog. It is also likely the area includes rats (*Ratus*), mice (*Mus domesticus*), feral cats (*Felis catus*), and mongoose (*Herperstes auropuntatus*) (Hobdy, 2004).

Non-native birds observed in the area during the 2004 survey included barred dove, black francolin, spotted dove, house sparrow, American cardinal, gray francolin, Japanese white eye, house finch, domestic chicken, golden plover, and cattle egret (Hobdy, 2004).

b. Potential Impacts and Mitigation Measures

Under the existing site conditions, there are no federally listed endangered or threatened species of flora or fauna on the project site, mainly due to its former use as a scrap metal recovery facility and the subsequent site cleanup activity. Further, based on the results of the nearby Consolidated Baseyards 2004 biological survey, which found no federally listed endangered or threatened species on that site, the proposed project is not anticipated to have an adverse impact on flora or fauna resources in the area.

Between March and November of each year, the protected seabirds, *uau* and *ao*, are known to fly over the area at dawn and dusk to their burrows high in the mountains. The young birds are easily confused by bright lights; therefore, all building exterior lighting and street lights within the project site will be shielded to direct the light downward. There will be no construction work during the night.

8. Archaeological Resources

a. Existing Conditions

The project site is located within the *moku* of Wailuku and the *ahupuaa* of Waikapu. The project site is situated at an elevation of 300 feet above mean sea level (amsl), within the southern margins of the sandy region of Puuone. This region of sand hills was historically used for cattle pasture, and following World War II, many dunes were mined for sand. Prior to the establishment of Maui Scrap, portions of the project site had been mined, requiring Maui Scrap to import fill material in order to prepare the scrap yard.

Even today, there is a substantial grade difference of 10 to 30 feet between the project site and the adjacent Waiko Baseyard.

An Archaeological Assessment Survey Report (AAR) report was compiled by Aki Sinoto Consulting, Inc. in August 2010. Archeological fieldwork conducted in March 2010 consisted of a 100 percent surface survey, eleven (11) subsurface inspection units, and formal subsurface testing at nine (9) locations throughout the project site. See **Appendix "C"**. The AAR was accepted by the State Historic Preservation Division (SHPD). See **Appendix "C-1"**. At the time fieldwork was conducted in March 2010, the project site contained large piles of sorted scrap metal, dirt, and boulders resulting from the site clean up operations. Although some concrete foundation slabs remained, all other structures had been demolished. The subsurface test units were sited in locations that appeared to have less prior disturbance and in locations where stratigraphic anomalies were observed in the subsurface inspection units. With the exception of small patches of non-native weeds and grass, such as castor bean, cane grass, *koa haole* and *kiawe*, around the periphery of the project site, the ground surface was largely devoid of cover vegetation.

The surface survey yielded no evidence of structural remains or remains of significant past cultural activity. Similarly, the subsurface inspection units and test trenches yielded an absence of subsurface cultural remains. No features indicative of prehistoric or historic period cultural activities were encountered during any of the fieldwork activities. The AAR report notes that extensive physical evidence of previous ground disturbance was observed throughout the project site.

b. <u>Potential Impacts and Mitigation Measures</u>

The AAR report concludes there is an absence of surface and subsurface remains and a lack of other indicators of prehistoric or historic cultural activities at the project site. However, the sandy Puuone region is known to be an area of traditional Hawaiian burials, and a number of other archaeological surveys in the region have encountered clusters of human burials. Yet, surveys in the peripheral areas of Puuone, where extensive historic and modern period land alteration has taken place, have yielded negative findings. The project site is situated in such a peripheral area, such

that previous sand mining and other ground disturbing activities have truncated the layers of soil at which evidence of past human activities may have been deposited.

Notwithstanding the foregoing, due to the potential for human burials to occur in sandy deposits, the AAR report recommends archaeological monitoring of ground-altering activities during construction. Further data recovery procedures or other pre-construction archaeological procedures are not warranted. Refer to **Appendix "C"**. A monitoring plan will be submitted to the SHPD for review and approval prior to the commencement of construction. Should any archaeological resources or human burials be encountered during ground-altering activities, all work in the vicinity of the find will cease, and SHPD will be notified.

9. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment (CIA) for the proposed project, dated July 2010, was prepared by Hana Pono, LLC. See **Appendix "D"**. The purpose of the CIA is to identify any traditional or contemporary native Hawaiian or other cultural practices, resources, sites, and beliefs associated with the project site and surrounding lands. The CIA was informed in part by archival and literature research, including review of Mahele (land division of 1848), census, and tax records; previous CIA reports, studies, and recorded ethnographic interviews; historic maps and photographs; and other pertinent documents. Alongside this research, oral ethnographic interviews were conducted with *kupuna,* individuals who have lineal and/or cultural ties to the project site and surrounding lands and who possess knowledge or participated in traditional or contemporary cultural practices.

Within the Hawaiian cultural context, the project site is located within Wailuku *moku*, one of 12 *moku* on Maui, and more specifically within Waikapu *ahupuaa*, the southernmost of the four (4) *ahupuaa* of Wailuku. There are many interpretations of the name Waikapu; the most common being Wai-ka-pu, *Water of the Conch,* and Wai-kapu, *Sacred* or *Forbidden Water*. A story goes that in ancient times, the sound of a loud and resounding conch shell would ring out from Waikapu valley, to be heard around the

island. A dog named Puapualenalena who lived on the northern side of Waikapu Stream was infatuated with the conch and wanted it for himself. The owners of the conch became careless, and one day, Puapualenalena gained entrance to the cave on the southern side of the stream where the conch was hidden. From that day forward, the conch no longer sounded from the valley. Another story states that Waikapu is the place where Kamehameha sounded the conch to begin the battle for Maui. Yet another story says that when Kamehameha landed his canoes at Kalepolepo, a *kapu* was put upon the nearest stream, rendering that stream, namely Waikapu, sacred to royalty.

The region of Na Wai Eha, *The Four Streams,* encompasses the four (4) *ahupuaa* of Wailuku, which are from north to south, Waihee, Waiehu, Wailuku, and Waikapu. With an abundance of freshwater and fertile soil, the valleys of Na Wai Eha were likely settled early, with the rich valley bottoms being cleared, terraced, and irrigated for cultivation of taro. While the coastal areas of Maalaea, Kahului, and Paukukalo were first to be settled, families would have slowly cleared lands to create *kauhale*, family home sites, further up in the valleys. By the time of European contact, Na Wai Eha was well known across the Hawaiian chain for the profusion of *kalo* production. Like the other *ahupuaa* of Na Wai Eha, Waikapu Valley was once covered with a patchwork of *loi kalo*, irrigated taro patches, that extended out of the valley, towards the lowlands.

Apart from *kalo* production, Na Wai Eha also hosted a number of battles significant in Hawaiian history. For one, the battle of *Ahulau ka Piipii I Kakanilua*, the Slaughter of Piipii at Kakanilua, also known as the *Alapa* battle, took place in 1776. Kalaniopuu, chief of Hawaii Island, fought Maui Island Chief Kahekili herein an effort to expand his reign. Kalaniopuu made landfall in Maalaea and battles were waged in the central valley, on the sand hills of Wailuku *moku*. After days of fighting, Kalaniopuu recognized his defeat and sent word to Kahekili wishing a cessation of the battle. Another famous battle in the region is the invasion of Maui by Kamehameha. This battle, known as Kepaniwai, was the last battle to take place on Maui. Kamehameha landed his canoes near Kalepolepo, and his forces stretched from Kihei to Maalaea. From Kalepolepo, Kamehameha pushed Maui's forces towards Na Wai Eha, with Waikapu being the first place to which

Maui's warriors fled.

After European contact and the privatization of land, many lands in Waikapu were acquired by sugar cane plantations. *Loi kalo* were refashioned into house pads or truck gardens, while many were plowed under to make way for sugar cane fields. Initially cultivated by the Waikapu Sugar Company, these lands were later absorbed by Wailuku Sugar Company. After the closing of Wailuku Sugar Company, lands in and around the project site were utilized as pasture land or left fallow.

b. Potential Impacts and Mitigation Measures

The five (5) *kupuna* that provided oral ethnographic information recalled no past or present cultural practices or sites occurring on or in relation to the project site. Refer to **Appendix "D"**. Some of the *kupuna* remember the area being covered with *kiawe* and pasture grasses, and none remembered any trails or native plants within the area. While many families living *mauka* (upland) of Honoapiilani Highway, continue to cultivate *kalo* in ancient *loi* that have been restored, there are no current or ancient *loi kalo* in the project site or surrounding lowlands.

Considering that there are no known cultural practices associated with the project site, and that there are no cultural resources to be found within the project site, the CIA concludes that the proposed project will not have an adverse impact on cultural resources of the region.

10. Air Quality

a. Existing Conditions

The project site, in general, does not experience adverse air quality conditions. There are no point sources of airborne emissions within close proximity to the project site. Point sources in the surrounding Central Maui region include the Maalaea Power Plant, Puunene Sugar Mill, and rock quarry at Puunene, all of which are well over two (2) miles from the project site. Non-point sources of pollution in the vicinity of the project site include: vehicular exhaust from East Waiko Road and other nearby roadways; dust generated by agricultural operations conducted in the Waikapu area and

industrial operations along East Waiko Road; and/or burning activities from sugar cane harvesting and cultivation operations conducted in the central valley area. Emissions from these sources, however, are quickly dispersed by prevailing tradewinds. Overall, Maui's air quality index is rated good, with 97 percent of days with good air quality and 3 percent with moderate air quality (Scorecard, 2013).

b. Potential Impacts and Mitigation Measures

During construction, airborne particulates as a result of construction-related activities may temporarily affect the ambient air quality within the immediate vicinity of the project site. Mitigative measures will include utilization of dust barriers, water wagons, and/or sprinklers to control dust, as well as other appropriate Best Management Practices to ensure that fugitive dust from the project area is minimized. By effectively employing these mitigative measures, construction-related activities are not anticipated to pose a significant impact to the air quality in the surrounding area.

The proposed project is not anticipated to have a long-term adverse impact on air quality parameters. As dictated by Section 19.24.010, Maui County Code, the "M-1, Light Industrial" district is intended primarily to contain warehousing and distribution activities, with the compounding or assembly of materials also permitted. Activities such as heavy manufacturing and processing of raw materials, which generate noticeable air quality impacts, are relegated to the "M-2, Heavy Industrial" zoning district. It follows that future activities associated with the proposed project will not generate significant air quality impacts. Although vehicular traffic may increase, exhaust from these vehicles is not anticipated to have an adverse impact on air quality in the area, as prevailing winds quickly disperse airborne particulates.

11. Noise

a. Existing Conditions

The predominant source of noise in the vicinity of the project site stems from traffic traveling along East Waiko Road. Other background noise sources include agricultural and light industrial operations conducted along East

Waiko Road.

The lands abutting the north, east, and south sides of the Waikapu Light Industrial project are agricultural lands. The Waiko Baseyard subdivision borders the west side of the project site and the Fong Construction Baseyard and Consolidated Baseyards subdivision are located further east, on East Waiko Road. There are no noise-sensitive activities in the immediate area, as the project site is far removed from residential areas in Waikapu.

b. <u>Potential Impacts and Mitigation Measures</u>

As discussed above, Section 19.24.010, Maui County Code states that the "M-1, Light Industrial" district is mainly intended to contain warehousing and distribution types of uses. In this context, noise generated by the proposed project would be associated with delivery vehicles, related machinery, and vehicular traffic. Noise impacts from such sources are not anticipated to be significant, and long-term adverse impacts to ambient noise conditions are not anticipated.

Ambient noise conditions may be temporarily affected by construction-related activities. Heavy construction machinery, such as backhoes, dump trucks, front-end loaders, paving equipment, and material transport vehicles, are anticipated to be the dominant noise-generating sources during the construction period. Mitigation measures for construction-related activities will include using proper equipment and conducting regular vehicle maintenance, both of which are anticipated to reduce noise levels. Equipment mufflers or other noise attenuating equipment may also be employed as required. Noisy construction activities, such as pile drivers, hydraulic hammers, jack hammers, high pressure sprayers, and chain saws, will be restricted to daylight hours, Monday through Friday, excluding holidays. By effectively employing these measures, potential noise-related impacts from construction-related activities will be mitigated to an acceptable level.

12. Scenic and Open Space Resources

a. Existing Conditions

The project site is not located within any significant view corridors identified by the State or County. Open space and scenic resources in the region include the West Maui Mountains and Haleakala. Much of the Central Valley between these mountains is covered with agricultural fields predominantly cultivated in sugar cane.

b. Potential Impacts and Mitigation Measures

The project site is not part of a scenic corridor and will not affect views from Waikapu, Honoapiilani Highway, the Central Valley, or Kuihelani Highway. As the project site was previously used as a scrap metal recovery facility and not for open space, the proposed project will not adversely affect open space resources.

13. Chemicals and Hazardous Substances

a. Existing Conditions

From 1989, Maui Scrap accepted cars, appliances, and other types of scrap metal for dismantling and eventual shipment off-island. Vehicles and equipment processed for scrap metal were relocated throughout the facility until they were sheared and baled. Light metal appliances were baled and stockpiled on the northern portion of the site. Refer to **Figure 3**. In March 2010, ABC completed a scrap removal operation during which thousands of tons of scrap metal were removed from the site. The removal action was conducted in response to an order issued by the Hawaii Department of Health (DOH) Solid Waste and Hazardous Waste Branch. Soil piles were generated on the site from a separation process that removed scrap metal from surface soils. The soil piles totalled approximately 15,655 cubic yards and remain on site.

Following the scrap removal operation, a comprehensive environmental investigation was conducted to characterize the post-removal condition of the site, including the remaining soil piles (Bureau Veritas, 2010a). In addition,

an Environmental Hazard Evaluation was performed to identify potential environmental hazards specific to this site (Bureau Veritas, 2010a). The soil stockpiles were found to be impacted with the following contaminants at concentrations above the Hawaii DOH Tier 1 Environmental Action Levels (EALs):

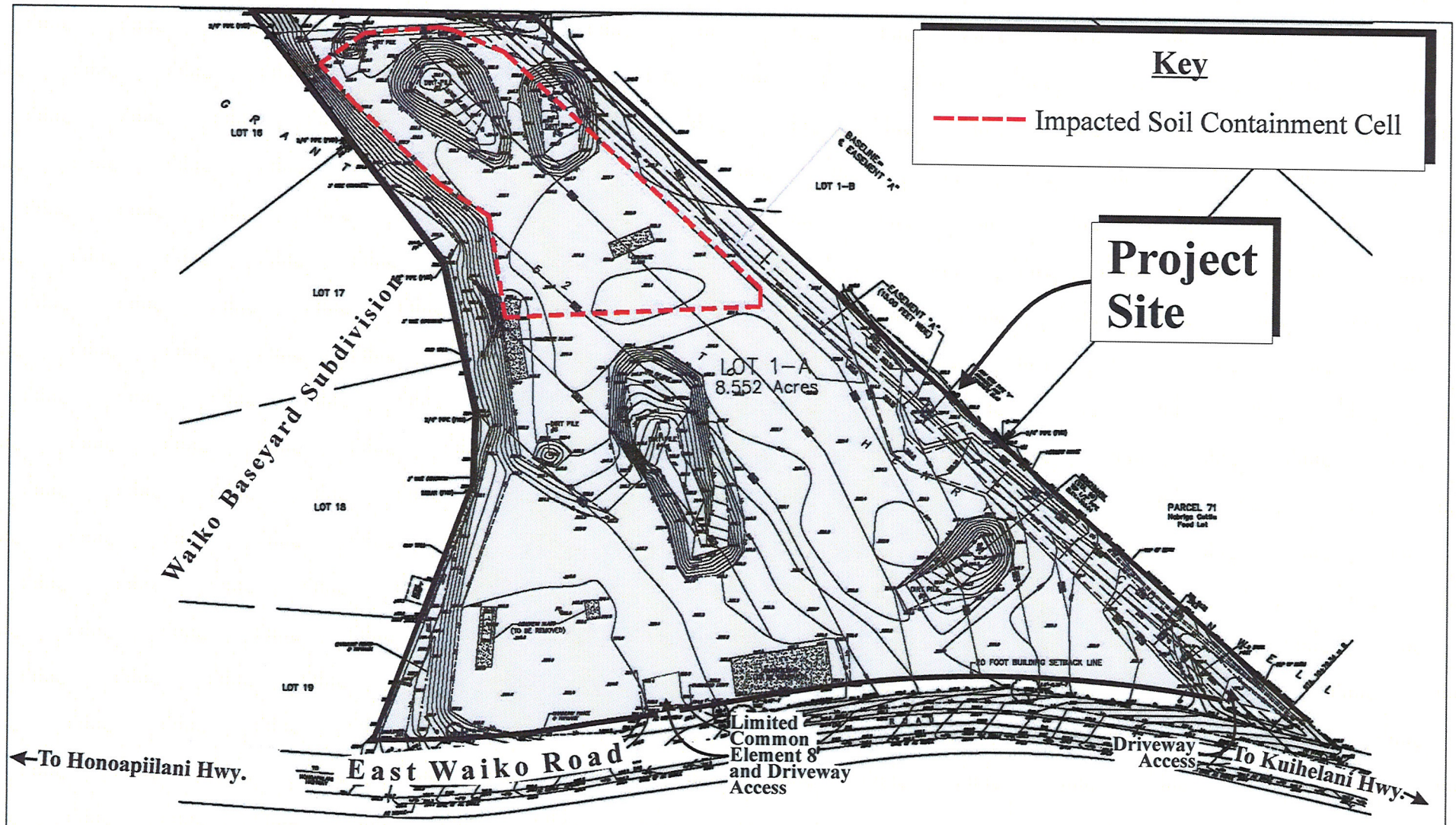
- lead
- zinc
- Total Petroleum Hydrocarbons as Diesel Range Organics (TPH-DRO)
- Total Petroleum Hydrocarbons ad Residual Range Organics (TPH-RRO)
- polychlorinated biphenyls (PCB)
- benzo(a)pyrene

Because the above soil contaminants exceeded their respective Hawaii DOH Tier 1 EALs, the soil stockpiles could not be left onsite as surface soil where potential receptors could potentially be exposed. A Remedial Alternatives Analysis was subsequently prepared to evaluate potential remedies for the remaining soil stockpiles (Bureau Veritas, 2010b).

b. <u>Potential Impacts and Mitigation Measures</u>

The Remedial Alternatives Analysis identified a preferred remedial alternative for the remaining soil stockpiles, which was approved by the Hawaii DOH (State of Hawaii, DOH, 2010).

The preferred alternative was Alternative 2a: Engineering and Institutional Controls (Consolidation and Capping), which included the consolidation and capping of the soil stockpiles in a select area of the site, referred to as the containment cell, combined with institutional controls (Bureau Veritas, 2010a). The preferred remedial alternative included incorporating the stockpiled soil into the final design of the site and capping it with clean fillto prevent potential future exposures. **Figure 11** presents the approximate location of the containment cell. A subsurface visual barrier (e.g., orange construction fencing and printed warning tape) was included in the remedial design to be placed on top of the impacted soil as a conservative measure to



Source: Bureau Veritas North America, Inc.

Figure 11

Proposed Waikapu Light Industrial Project

Conceptual Location of Impacted Containment Cell

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\SoilCell

warn potential future subsurface workers. The institutional controls will limit the use of the site and establish conditions on activities such as construction, excavation, underground utility or sewer maintenance, and the installation and/or use of groundwater wells.

The institutional controls will be managed through an Environmental Hazard Management Plan (EHMP). The EHMP will include an access policy that will apply when construction and/or utility workers need access to the areas containing contaminated soil (i.e., the containment cell). The EHMP will also include a soil management plan, a maintenance plan for the cap, and an exposure management plan.

Implementation of the preferred remedial alternative began in October 2012 and is anticipated to be completed in June 2013.

14. Beach and Mountain Access

a. Existing Conditions

The project site is located approximately four (4) miles from the nearest beach and approximately 1.9 miles from the foot of the West Maui mountains. A Cultural Impact Assessment (CIA) was completed for the proposed project by Hana Pono, LLC, and did not identify any traditional access corridors within the project site. Refer to **Appendix "D"**.

b. Potential Impacts and Mitigation Measures

No traditional access corridors were identified by the CIA within the project site. There are no anticipated adverse impacts to beach and mountain access from the proposed project.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

a. Existing Conditions

The population of the County of Maui has exhibited relatively strong growth over the past decade. In 2010, there were 154,834 residents in the County, a 21 percent increase in the resident population since 2000. The Wailuku-Kahului region is the most populous region in the County and has grown at a faster rate than the County as a whole. In 2010, there were approximately 54,400 residents living in the Wailuku-Kahului region, a 31 percent increase over the last decade (U.S. Census Bureau, 2000 and 2010). Population in the County of Maui is projected to grow to 199,550 residents by 2030 while the Wailuku-Kahului region is anticipated to have approximately 71,200 residents (County of Maui, Department of Planning, 2006).

b. Potential Impacts and Mitigation Measures

The proposed Waikapu Light Industrial project will provide light industrial lands to support the anticipated growth of the island. In this capacity, no long-term, adverse impacts to population are anticipated to result from project implementation.

2. Economy

a. Existing Conditions

The Wailuku region is the island's center of governmental activity. Along with neighboring Kahului, the region encompasses a broad range of commercial, service, and public sector activities. In addition, the region is surrounded by approximately 32,000 acres of sugar cane. This vast expanse of agricultural land, managed by Hawaiian Commercial & Sugar Company (HC&S), are key contributors to the local economy.

Not-seasonally-adjusted unemployment rates for both Maui County and the Island of Maui in February 2013, were 5.6 percent and 5.5 percent, respectively. These rates both decreased from the February 2012

unemployment rates of 6.9 percent and 6.7 percent, respectively (DLIR, April 2013). The recent economic recession affected Maui County's major industries of tourism, construction and real estate due to, among other factors, reduction in discretionary income and tightening of credit. However, employment has improved since 2012.

b. Potential Impacts and Mitigation Measures

In the short term, the proposed project will provide construction-related revenue and employment. Accordingly, the project will have a beneficial impact on the local economy during the construction phase.

In the long term, the proposed project will increase employment and provide opportunities for new light industrial businesses in the Central Maui region.

In summary, the proposed action is expected to positively benefit the economy of Maui County.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

Police protection for the Wailuku and Waikapu region is provided by the Maui County Police Department headquartered on Mahalani Street, approximately 3.3 miles north of the project site. The region is served by the Department's Central Maui station, which is divided in three (3) sectors. Each sector is divided into three (3) beats, each patrolled by a single officer.

Fire prevention, suppression, and protection services for the Waiehu, Waihee, and Wailuku regions are provided by the County Department of Fire and Public Safety's Wailuku station, located on Kinipopo Street in Wailuku Town, approximately 2.9 miles north of the project site. The region is also served by the Department's Kahului Station, located on Dairy Road, approximately 3.4 miles northeast of the project site.

b. Potential Impacts and Mitigation Measures

The proposed project will not affect the service area limits or personnel for police and fire protection. Fire protection systems will be installed in accordance with applicable requirements for light industrial developments set forth by the Maui County Fire Code.

2. Medical Services

a. Existing Conditions

The only major medical facility on the island is Maui Memorial Medical Center, located approximately 3.0 miles north of the project site, midway between Wailuku and Kahului. Acute, general, and emergency care services are provided at the 231-bed facility. Other private medical service providers in the Central Maui region, which have regular hours, include Maui Medical Group and Kaiser Permanente.

b. Potential Impacts and Mitigation Measures

The proposed project will not affect requirements for medical services. As with police and fire protection services, service area limits for medical emergency responders will not be affected by the proposed project.

3. Solid Waste

a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui. Residential solid waste collected by County crews is disposed at the County's Central Maui Landfill, located four (4) miles southeast of the Kahului Airport. Commercial waste from private collection companies is also disposed at the Central Maui Landfill. A County-operated green waste recycling facility is also located at the Central Maui Landfill.

Privately owned facilities, such as the Maui Demolition and Construction Landfill accept solid waste and concrete from demolition and construction activities. This facility is located at Maalaea, south of the project site, near

Honoapiilani Highway's junction with North Kihei Road and Kuihelani Highway.

b. Potential Impacts and Mitigation Measures

The project site is cleared and vacant with the exception of soil stockpiles generated from cleanup activities. In accordance with the restoration plan, these stockpiles will be managed onsite in subsurface containment cells and thus diverted from the landfills. Construction waste which may be generated from implementation of the project will be recycled or disposed of at the appropriate construction waste disposal location, via a private collection company. With these solid waste management measures, the contribution of construction waste to the landfills will be minimized. Thus, the proposed action is not anticipated to adversely affect collection or capacity parameters of the County's solid waste system. After project implementation, solid waste collection will be handled by a private waste management company.

4. Recreational Resources

a. Existing Conditions

The Waikapu Community Center is located in the vicinity of the project site. This County-owned facility includes a baseball field, basketball court, and community center building. In addition, Waikapu Gardens, a residential community located in the vicinity of the project site, includes a passive park with picnic tables and walking trails.

b. Potential Impacts and Mitigation Measures

The proposed project will provide condominium lots for future light industrial businesses. These light industrial businesses will not create a need for additional recreational facilities. Therefore, the proposed project is not anticipated to adversely impact existing public recreational facilities.

5. Schools

a. Existing Conditions

The Wailuku-Kahului region is served by the State Department of Education's (DOE) public school system and by several privately operated schools. Public schools operated by DOE in the Kahului area include Lihikai, Kahului, and Pomaikai Elementary Schools (Grades K-5); Maui Waena Intermediate School (Grades 6-8); and Maui High School (Grades 9-12). Existing DOE public schools in the Wailuku area include Wailuku Elementary School (Grades K-5); Iao Intermediate School (Grades 6-8); and Baldwin High School (Grades 9-12). The University of Hawaii-Maui College, located north of the project site in Kahului, serves as the island's primary higher education facility.

b. Potential Impacts and Mitigation Measures

Inasmuch as the proposed Waikapu Light Industrial project will provide for future light industrial uses, the proposed project is not anticipated to generate or adversely impact school enrollments or facility requirements.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

A Traffic Impact Analysis Report (TIAR) was prepared by Austin, Tsutsumi & Associates, Inc. (ATA) in March 2013. See **Appendix "E"**. According to the TIAR, there are several main roadways in the area. Honoapiilani Highway and Kuihelani Highway serve as the primary arterials through the Waikapu area. While the former generally serves traffic originating from or destined towards Wailuku, the latter serves traffic originating from or destined towards Kahului, Kihei, or Upcountry. Waiale Road provides an alternate north-south route between Wailuku and Waikapu, terminating at East Waiko Road. East Waiko Road and Kuikahi Drive both serve as roads connecting Honoapiilani Highway and Kuihelani Highway. Summary descriptions of key roadways in the project vicinity are provided below.

(1) **West Waiko Road**

West Waiko Road is an east-west, two-way, two-lane undivided County collector road with a posted speed limit of 20 miles per hour (mph). West Waiko Road begins approximately 4,500 feet west of Honoapiilani Highway in an established residential neighborhood, and extends eastward towards its terminus at its intersection with Honoapiilani Highway and East Waiko Road.

(2) **East Waiko Road**

East Waiko Road is an east-west, two-way, two-lane, undivided collector road with a posted speed limit of 20 mph. East Waiko Road currently serves residential and industrial land uses, while also providing connectivity (via Waiale Road) to the Waikapu Gardens subdivision and areas further north, including Wailuku. Through the Waikapu region, the 20-foot wide East Waiko Road is currently narrow and winding; the road appears to offer limited sight distance around some of its curves, and is stop-controlled approximately 650 feet east of its intersection with Waiale Road. East Waiko Road provides direct access between Honoapiilani Highway and Kuihelani Highway.

Portions of East Waiko Road to the west of the project site are owned by Wailuku Agribusiness Co., Inc. The portion of East Waiko Road that fronts and runs east from the project site is owned by the County of Maui.

(3) **Waiale Road**

Waiale Road is a north-south, two-way, two-lane, undivided collector road with a posted speed limit of 20 mph. To the north, Waiale Road serves as the extension of Lower Main Street, wherefrom it extends southward past the Maui Community Correctional Center and residential areas, and eventually terminates at its intersection with East Waiko Road.

(4) **Honoapiilani Highway**

Honoapiilani Highway is a north-south, two-way, two-lane, undivided State-owned arterial road with posted speed limits ranging between 30 mph and 45 mph in the vicinity of the project site. Honoapiilani Highway begins as the continuation of South High Street near Kahookele Street, and continues southward through Waikapu, Maalaea, and wraps around the "Pali" towards West Maui. Channelization is provided at all of its major intersections in the vicinity of the project site.

(5) **Kuihelani Highway**

Kuihelani Highway is a north-south, two-way, four-lane, divided State-owned arterial road with a posted speed limit of 55 mph in the vicinity of the proposed project. Kuihelani Highway begins to the north in Kahului at its intersection with Puunene Avenue and Dairy Road. The road extends southward along the eastern border of the Maui Lani master planned community, intersects with East Waiko Road, and ultimately terminates at its signalized intersection with Honoapiilani Highway to the south near Maalaea.

There are six (6) Levels-Of-Service (LOS), "A" through "F", which categorize driving conditions from best to worst. In general, LOS "A" represents free-flow conditions with no congestion; LOS "F", on the other hand, represents severe congestion with stop-and-go conditions. Level-Of-Service "D" is typically considered acceptable for peak hour conditions in urban areas. The determination of the LOS for each study intersection was based on traffic counts taken in January 2013.

At the Waiko Road/Honoapiilani Highway intersection, the westbound approach experiences delays of LOS E during the AM peak hour of traffic due to the shared movements. All other movements operate relatively smoothly at LOS D or better during the AM and PM peak hours of traffic.

b. Potential Impacts and Mitigation Measures

The TIAR concludes that with the project, by Base Year 2015, traffic

movements at the study intersections will operate at LOS D or better during both peak hours of traffic, except for the westbound approach at the Waiko Road/Honoapiilani Highway intersection, which will continue to operate at LOS E during the AM peak hour of traffic. Due to the limited right-of-way, no improvements to this intersection are recommended by the TIAR. See **Appendix "E"**.

The project access road intersection would be stop controlled on the southbound approach to East Waiko Road. This intersection would operate at LOS B or better during both peak hours of traffic. The TIAR recommends the following improvements at the project accesses:

Project Main Access

- **Southbound approach** - shared left-turn/right-turn lane (stop-controlled)
- **Eastbound approach** - shared left-turn/through lane
- **Westbound approach** - shared right-turn/through lane

Project Secondary Access

- **Southbound approach** - shared left-turn/right-turn lane (stop-controlled)
- **Eastbound approach** - shared left-turn/through lane
- **Westbound approach** - shared right-turn/through lane

It is recommended that both of the project accesses ultimately be designed in a manner that will not require vehicles to reverse onto East Waiko Road when entering or exiting the Project Site.

Improvements to East Waiko Road include pavement widening and an extension of the curb and gutter from the existing facilities fronting Waiko Baseyard subdivision within a 10-foot shoulder area. The shoulder area would consist of a 6-foot wide concrete sidewalk from the existing sidewalk and a 4-foot wide grassed strip. Access to the interior limited common elements will be from a minimum 20-foot wide pavement roadway, wide enough to accommodate fire trucks per the provisions of the Fire Code, Chapter 16.04B, Maui County Code . Refer to **Appendix "B"**.

During construction of the proposed project, there will be construction traffic impacts to the roadways around the improvements on East Waiko Road. General construction impacts may include traffic congestion due to construction and temporary single-lane closures outside of the peak hours of traffic.

2. Water

a. Existing Conditions

Water to the Wailuku-Kahului region is provided by the County Department of Water Supply (DWS) Central Maui System which also serves the Paia, Maalaea, Kihei, and Makena areas. The main sources of water for this system include the Iao and Waihee aquifers, the Iao Tunnel, and the Iao Waikapu Ditch.

The existing County water system in the vicinity of the project site consists of a 12-inch waterline along East Waiko Road which was installed for the Waiko Baseyard subdivision that lies on the west side of the project site. The 12-inch waterline is interconnected to the existing 18-inch waterline that runs along the eastern boundary of the project site. Refer to **Appendix "B"**.

b. Potential Impacts and Mitigation Measures

According to the Preliminary Civil Engineering and Drainage Report (PCEDR) prepared by R.T. Tanaka Engineers, Inc. (refer to **Appendix "B"**), the anticipated water requirements for the proposed project at full occupancy are as follows:

Average Domestic Daily Demand ..... 51,312 gallons per day (gpd)

Maximum Daily Demand ..... 76,968 gpd

Peak Hour Demand ..... 107 gallons per minute (gpm)

Fire Flow Demand ..... 2,000 gpm

The anticipated fire flow plus maximum daily demand of 2,107 gpm can be accommodated by the existing 12-inch waterline that runs along East Waiko Road. Fire hydrants are installed along East Waiko Road and the project

access road spaced at no more than 250 feet apart. A 2-inch water meter is anticipated to serve the project site.

The proposed project is anticipated to connect to the DWS water system. The applicant is aware of DWS' comment during early consultation that noted *"currently no additional source is available to system standards on the Central Maui System . . . may delay issuance of water meters until new sources are on line"*. The applicant will continue to work with DWS to ensure that adequate water resources will be provided for the proposed project.

3. Wastewater

a. Existing Conditions

Wastewater from the Wailuku-Kahului region is treated at the Wailuku-Kahului Wastewater Reclamation Facility (WKWWRF). The WKWWRF also receives flow from Kuau, Paia, Skill Village, and Spreckelsville. Currently, the WKWWRF has a design capacity of 7.9 mgd and average dry weather flow of 4.4 mgd. Effluent disposal from the WKWWRF is via eight (8) gravity injection wells. Principal solids from the WKWWRF are treated, processed and digested, dewatered and then composted at the Central Maui Landfill. There are 15 major wastewater pump stations which are part of the WKWWRF system.

There are no existing County sewer system facilities in the immediate vicinity of the project site. The nearest County sewer line is located on East Waiko Road about 1,700 feet west of the project site at the Pakani Street intersection which serves the nearby Waiko Baseyard through an existing 4-inch force main. Refer to **Appendix "B"**.

b. Potential Impacts and Mitigation Measures

According to the PCEDR prepared by R.T. Tanaka Engineers, Inc., the anticipated average wastewater flow for the project when fully occupied is estimated as approximately 36,774 gpd. As an unserviced property, the following options are being considered:

Option 1: Provide an individual wastewater system (IWS) for each condominium unit. As each unit is developed, the design wastewater flow and details of the IWS will be submitted to the State Department of Health (DOH) for review and approval.

Option 2: Collect onsite wastewater flows and pump to the nearest County sewer system on East Waiko Road. This system would consist of an onsite collection system, a factory-built duplex wastewater pump station (WWPS) and a 4-inch force main along the south side of East Waiko Road.

Option 3: Collect onsite wastewater flows and pump to the existing WWPS serving the adjacent Waiko Baseyard subdivision. This option will require approval of the owner of the WWPS and may require upgrading the existing pumps and enlarging the 4-inch force main. Easements for this sewer force main would also have to be obtained from adjacent landowners.

Option 4: Collect onsite wastewater flows and convey via gravity sewerlines to the existing treatment plant serving Consolidated Baseyards that is located east of the project site. This option will require approval from the operator of the treatment plant and may require increasing the capacity of the plant to accommodate the increased flow from the proposed project.

The applicant proposes to continue evaluating the various options to accommodate the wastewater from the proposed project. Refer to **Appendix "B"**.

4. Drainage

a. Existing Conditions

According to the PCEDR prepared by R.T. Tanaka Engineers, Inc., there is no offsite storm runoff that affects the project site. Refer to **Appendix "B"**. Runoff from the adjacent lots of the Waiko Baseyard subdivision to the west

of the project site is collected by drainage swales and grated drain inlets and then conveyed to a retention basin further north of the project site.

Existing onsite runoff generally flows in an easterly direction originating from the western boundary of the project site. Runoff from the northern half of the project site drains into the neighboring parcel to the east. Runoff from the southern portion of the project site flows to the easterly boundary where it is blocked by an existing berm and diverted to the southeast corner of the project site, eventually flowing out onto East Waiko Road.

b. Potential Impacts and Mitigation Measures

Based on preliminary calculations, the PCEDR determined that in a 1-hour storm, the proposed project at full build-out could generate the storm discharges identified in **Table 3** below.

Table 3. Storm Discharges for a 1-Hour Storm at Full Build-Out

Storm Occurrence	Existing	Developed	Increase
50-Year runoff peak rate	4.8 cfs[1]	38.3 cfs	33.5 cfs
50-Year runoff volume	11,640 cf[2] (1,361 cf/acre)	62,075 cf (7,260 cf/acre)	50,435 cf (5,899 cf/ac)

[1]cubic feet per second.
[2]cubic feet
Source: R. T. Tanaka Engineers, Inc., 2010.

In accordance with Maui County Drainage Standards, the storage capacity of the drainage improvements would be at least equal to the projected 1-hour, 50-year storm water runoff volume. Refer to **Appendix "B"**. The runoff created by the proposed project will be retained onsite by means of open-cut drainage ponds or subsurface retention basins consisting of perforated pipes with crushed rocks. Notwithstanding, the operation and maintenance of the drainage system will be subject to the following operation and maintenance procedures, among others:

1. Inspection of the drainage facilities annually and after major storms. Repair damage, if any. Remove debris, if any, at grated drain inlets to permit unimpeded flow.

2. Periodic inspection of the drainage system; remove debris and

sediment build-up, as required, specifically inside grated drain inlets, if any, upstream of the retention basins.

3. Prevent grass and landscape cuttings from entering the drainage system.

4. Clean parking areas as often as possible to minimize the entry of debris and sediments into the drainage system.

5. Maintain healthy growth of grass lawns and landscaping to prevent soil erosion, thereby reducing sediments that might enter the drainage system.

As noted previously, the proposed project will be required to impound the incremental increase in runoff volume from a 50-year, 1-hour storm that is generated. With this mitigation, adverse impacts to downstream properties are not anticipated. Refer to **Appendix "B"**.

Grading will be done in accordance with the applicable requirements of the Maui County's Grading Ordinance No. 2684 or Chapter 20.08, Maui County Code, 1980, as amended. Prior to ground disturbing activities, a grubbing and grading permit will be obtained from the County of Maui, as required. Additionally, since the grading area is anticipated to be larger than one (1) acre, a National Pollutant Discharge Elimination System (NPDES) permit will be obtained from the State Department of Health, Clean Water Branch.

Best Management Practices (BMPs) will include, but not be limited to the following:

1. Control dust by means of water trucks.

2. Graded areas shall be thoroughly watered after construction activity has ceased for the day and for weekends and holidays.

3. All exposed areas shall be grassed as soon as finished grading is completed.

4. Minimize time of grading operations.

5. Construction of temporary sediment basin(s) prior to mass grading of project site. Construct temporary swale to direct storm runoff to temporary basin(s).

6. Installation of a dust control fence surrounding the project site, as required.

7. Installation of silt fence, gravel bag berms or other approved sediment trapping devices along the makai limits of the grading area and sediment pit.

8. Temporary control measures shall be in place and functional prior to grading and shall remain operational throughout the grading operations period or until permanent controls, such as grassing, are in place.

5. Electricity and Telephone Systems

a. Existing Conditions

There are overhead electrical and telephone lines located along East Waiko Road and along the eastern boundary of the Waiko Baseyard subdivision. These existing facilities currently service adjacent and nearby existing developments.

b. Potential Impacts and Mitigation Measures

Coordination with Maui Electric Company, Ltd. and Hawaiian Telcom will be undertaken during design of the project. It is anticipated that electrical and telephone service will be attained via connection to the existing nearby overhead utility lines. It is further anticipated that utilities within the project site will be installed underground.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined by Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Environmental Impact Statement Rules as:

> *the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

A "secondary impact" or "indirect effect" from the proposed action are defined by Title 11, Chapter 200, HAR as:

effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

In order to assess the potential cumulative and secondary impacts of the proposed action, the geographical and temporal contexts for the analysis must first be defined. Geographically speaking, the area of consideration is the lower Waikapu area along East Waiko Road, between Waiale Road and Kuihelani Highway. Temporally speaking, the anticipated complete buildout of the light industrial businesses falls during the year 2015. Beyond this, the Maui County General Plan sets forth goals, objectives, and parameters to guide future growth through the 2030 planning horizon.

Given this situational context, foreseeable actions include the establishment of additional light industrial uses along East Waiko Road, on vacant lands to the east of the project site. Potential cumulative and secondary impacts of the proposed action, therefore, would be related to the continued urbanization of lands along East Waiko Road between Kuihelani Highway and Waiale Road. Considering the characteristics of this region, major secondary impacts would pertain to the provision of infrastructure to support future development of these lands, while cumulative impacts would relate to the potential conversion of agricultural lands to industrial uses.

With respect to secondary impacts to infrastructure, the proposed project would affect water, wastewater, and roadway systems. In order to support the project's future light industrial users, the existing 12-inch waterline within Waiko Road will be extended eastward to serve the project site. As these lines will be installed by the applicant, investments of funding, materials and labor will not be incurred by the County. Furthermore, water system capacity and related design parameters will be coordinated with the Department of Water Supply.

It is highlighted that East Waiko Road and surrounding lands are included in the Urban Growth Boundary (UGB) defined by the Maui Island Plan (MIP), an integral component of the Maui County General Plan. The intent of the UGB, in part, is to ensure that urban growth occurs in proximity to available infrastructure systems. While future development projects on East Waiko Road may also tie into the County water and wastewater lines, the fact that the project site and surrounding lands are included in the UGB indicates that the project site is included in the infrastructure service area and planned infrastructure capacity should be available to support future development in this area.

With respect to vehicular circulation along East Waiko Road, as previously discussed in this chapter, the TIAR for the proposed project investigated traffic impacts resulting from project

implementation. Based on projected trip generation rates for the proposed project, the TIAR concluded that the level-of-service (LOS) at each of the study intersections would not change as a result of project implementation. Thus, the proposed project would not necessitate future roadway improvements. Nevertheless, proposed roadway improvements include the installation of a paved shoulder and sidewalk along the project's East Waiko Road frontage.

Apart from secondary impacts to infrastructure systems, agricultural productivity impacts have also been considered. As discussed previously in this chapter, the lands underlying the project site and vacant lands to the east are rated "E" for agricultural productivity, the lowest possible rating, by the University of Hawaii Land Study Bureau. Thus, although the establishment of additional industrial uses along East Waiko Road would remove lands from the agricultural district, this will not equate to the loss of productive agricultural resources. Moreover, as previously mentioned, the project site and lands surrounding East Waiko Road are included in the proposed UGB of the MIP. Along with managing infrastructure systems, the intent of the UGB is to ensure that important agricultural lands are protected. That the project site and surrounding lands are included in the UGB indicates that the urbanization of this area will not result in significant adverse impacts to agricultural resources.

In light of the foregoing analysis, significant adverse cumulative and secondary impacts are not anticipated to result from implementation of the proposed project.

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

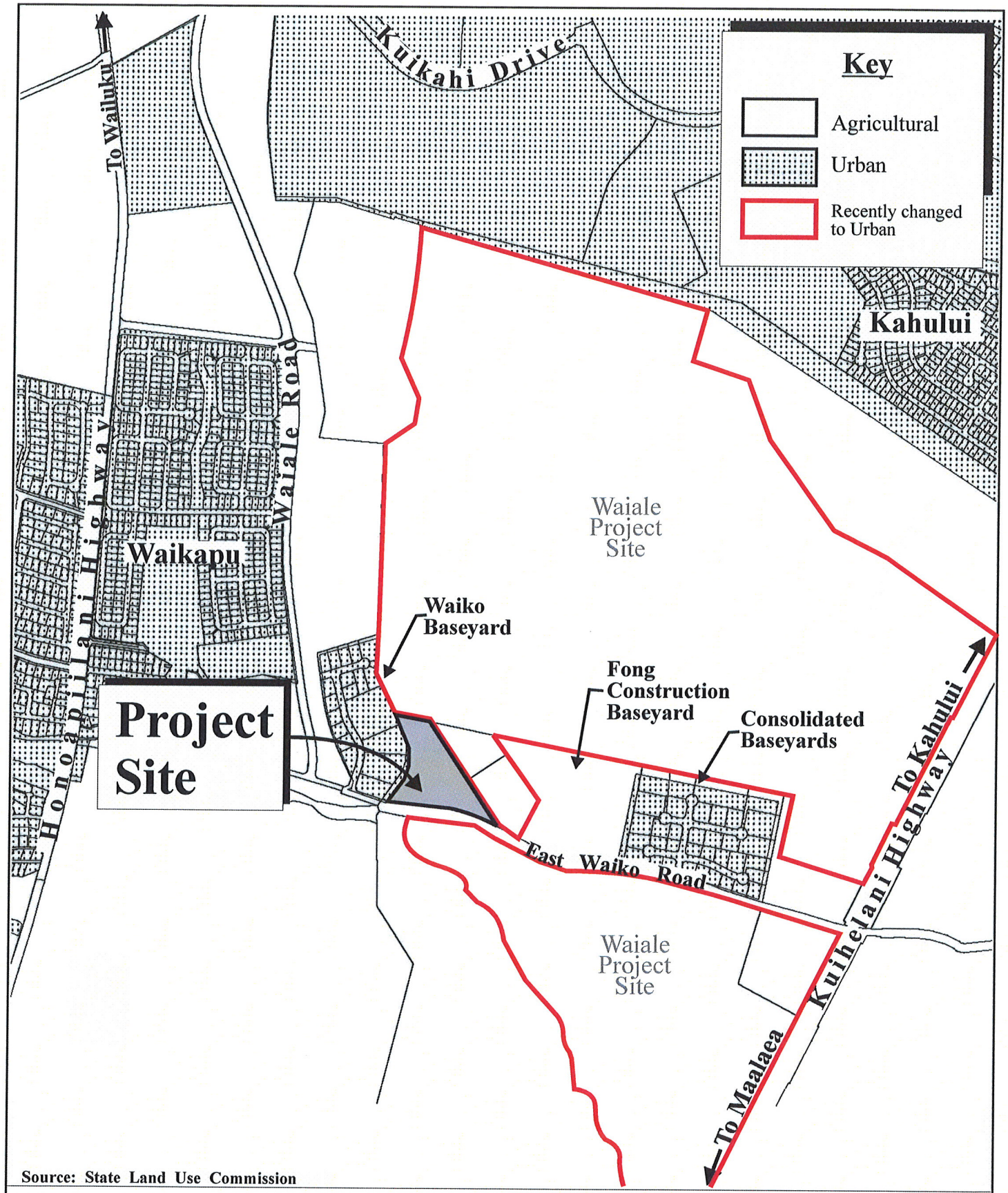
A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) land use districts by the State Land Use Commission. These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The project site is classified "Agricultural". See **Figure 12**. In order to enable the proposed Waikapu Light Industrial project to proceed, a State Land Use District Boundary Amendment (DBA) from the "Agricultural" District to the "Urban" District will be required for the 8.55-acre project site. Pursuant to Section 205-3.1, HRS, responsibility for a DBA involving 15 acres or less has been delegated to the counties. As such, processing the amendment will be in accordance with Chapter 19.68, Maui County Code, 1980, as amended.

The criteria used for the "Urban" District is pursuant to the Land Use Commission's Administrative Rules. The proposed project meets the criteria for the "Urban" District, as follows:

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

The project site is located near the residential community of Waikapu and immediately adjacent to Waiko Baseyard, both of which are located within the State "Urban" District. Located on East Waiko Road, to the east of the project site, is the Consolidated Baseyards light industrial subdivision, which is also located within the State "Urban" District. In addition A&B Properties, Inc.'s Waiale project recently received its "Urban" reclassification for approximately 545 acres which surround the Waikapu Light Industrial project site. In this context, the project site is located in an area of "city like" concentrations of people, structures, streets, urban level of services and other related land uses. Given these conditions, the project site provides a logical extension of the existing "Urban" area. Refer to **Figure 12**.



Source: State Land Use Commission

Figure 12

Proposed Waikapu Light Industrial Project

State Land Use District Boundary Map

0 267 534 1,067 Feet

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC Dev\Waikapu LI\SLUMap

2. **It shall take into consideration the following specific factors:**

   A. **Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;**

   B. **Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection; and**

   C. **Sufficient reserve areas for foreseeable urban growth;**

   As mentioned previously, the project site is immediately adjacent to Waiko Baseyard and proximate to the other light industrial uses along East Waiko Road. Basic services and infrastructure systems are available in close proximity to the project site. The County's Maui Island Plan (MIP) includes the project site within the Urban Growth Boundary (UGB) for the Central Maui region. Thus, the project site is generally recognized as an area suitable for foreseeable growth.

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

   The project site has satisfactory topography, drainage, and stable soil conditions. The project site is located outside flood and tsunami hazard areas. As mentioned previously, the project site was formerly a scrap metal recovery facility. The project site has undergone extensive site closure and restoration activities in preparation for the proposed light industrial uses. Site restoration involved the removal and containment of scrap/metal debris and impacted soils to ensure the project site is free from adverse environmental hazards. Institutional controls managed through an Environmental Hazard Management Plan will ensure that the proposed action does not pose any adverse environmental effects.

4. **Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans;**

   As mentioned previously, the project site is contiguous to existing urban lands, specifically Waiko Baseyard and A&B Properties, Inc.'s Waiale urban area. Other existing urban areas in the vicinity of the project site include the Consolidated Baseyards light industrial subdivision and the Waikapu residential area. Refer to **Figure 12**. A Community Plan Amendment (CPA) is being requested to identify the

project site for light industrial use in the county's general plan. As previously noted, the project site is located within the UGB of the MIP.

5. **It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans;**

As discussed above, a CPA is being requested to establish a "light industrial" land use designation for the property. Meanwhile, the project site is included within the UGB of the MIP. In this context, the project site is situated in an area designated for future urban growth.

6. **It may include lands which do not conform to the standards in paragraphs (1) to (5);**

(A) When surrounded by or adjacent to existing urban development; and

(B) Only when those lands represent a minor portion of this district;

The project site conforms to the standards in paragraphs (1) to (5).

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

The proposed DBA will not contribute toward scattered spot urban development. As previously discussed, the project site is located adjacent to and in close proximity to existing urban areas. Public infrastructure systems and support services are available in relatively close proximity to serve the project site. Emergency service limits will not be affected. In addition, the proposed project is located within the UGB of the MIP. In the context of the UGB, the proposed project is not considered a scattered spot urban development.

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

The project site does not contain lands with a general slope of 20 percent or more.

Further, pursuant to HRS Section 205-3.1, any decision approving a DBA pursuant to HRS Chapter 205, where lands in the petition area are contiguous or adjacent to lands in the agricultural district, shall include the following conditions in the decision granting approval:

> *(1) A prohibition on any action that would interfere with or restrain farming operations; provided the farming operations are conducted in a manner consistent with generally accepted agricultural and management practices on adjacent or contiguous lands in the agricultural district; and*
>
> *(2) Notification to all prospective developers or purchasers of land or interest in land in the petition area and subsequent notification to lessees or tenants of the land, that farming operations and practices on adjacent or contiguous land in the agricultural district are protected under chapter 165, the Hawaii right to farm act, and that the notice shall be included in any disclosure required for the sale or transfer of real property or any interest in real property.*

B. CHAPTER 226, HRS, HAWAII STATE PLAN

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The proposed action is consistent with the following goals of the Hawaii State Plan:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.
- Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

1. Objectives and Policies of the Hawaii State Plan

The proposed action is consistent with the following objectives and policies of the Hawaii State Plan:

Chapter 226-5, HRS, Objectives and Policies for Population

226-5(a), HRS: *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.

226-5(b)(1), HRS: *Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.*

226-5(b)(2), HRS: *Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.*

226-5(b)(3), HRS: *Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.*

Chapter 226-6, HRS, Objective and Policy for the Economy - in General

Planning for the State's economy in general shall be directed toward achievement of the following objectives:

226-6(a)(1), HRS: *Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.*

226-6(a)(2), HRS: *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.*

To achieve the general economic objectives, it is the policy of the State to:

226-6(b)(6), HRS: *Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.*

226-6(b)(13), HRS: *Stimulate 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.*

Chapter 226-10, HRS, Objective and Policies for the Economy--Potential Growth Activities.

226-10(a), HRS: *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 Hawaii's economic base.*

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment - Land-Based, Shoreline, and Marine Resources.

226-11(b)(3), HRS: *Take into account the physical attributes of areas when planning and designing activities and facilities.*

226-11(b)(8), HRS: *Pursue compatible relationships among activities, facilities, and natural resources.*

Chapter 226-13, HRS, Objectives and Policies for the Physical Environment - Land, Air, and Water Quality.

226-13(b)(2), HRS: *Promote the proper management of Hawaii's land and water resources.*

226-13(b)(7), HRS: *Encourage urban developments in close proximity to existing services and facilities.*

2. Priority Guidelines of the Hawaii State Plan

The proposed action coincides with the following priority guidelines of the Hawaii State Plan.

Chapter 226-103, HRS, Economic Priority Guidelines:

226-103(a), HRS: *Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy.*

Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines

226-104(a)(1), HRS: *Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.*

226-104(a)(3), HRS: *Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.*

226-104(b)(1), HRS: *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.*

226-104(b)(2), HRS: *Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.*

226-104(b)(12), HRS: *Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline conservation lands, and other limited resources for future generations.*

C. GENERAL PLAN OF THE COUNTY OF MAUI

As indicated by the Maui County Charter, the purpose of the general plan shall be to:

> *... indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth*

the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density; land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan. The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010, while the Maui Island Plan, which delineates areas for future urban and rural growth as part of a Directed Growth Strategy, was adopted as Ordinance No. 4004 on December 28, 2012.

The following sections identify pertinent objectives, policies, implementing actions and related provisions set forth in the Countywide Policy Plan and the Maui Island Plan. It is recognized that both documents are comprehensive in nature and address a number of functional planning areas which apply to all programs, plans, and projects. However, for purposes of addressing General Plan compliance requirements, policy considerations which are deemed most relevant in terms of compatibility and consistency are addressed in this report section.

1. Countywide Policy Plan

With regard to the Countywide Policy Plan, Section 2.80B.030 of the Maui County Code states the following.

The countywide policy plan shall provide broad policies and objectives which portray the desired direction of the County's future. The countywide policy plan shall include:

1. *A vision or the County;*

2. *A statement of core themes or principles for the County; and*

3. *A list of countywide objectives and policies for population, land use, the environment, the economy, and housing.*

Core principles set forth in the Countywide Policy Plan are listed as follows:

1. *Excellence in the stewardship of the natural environment and cultural resources;*

2. *Compassion for and understanding of others;*

3. *Respect for diversity;*

4. *Engagement and empowerment of Maui County residents;*

5. *Honor for all cultural traditions and histories;*

6. *Consideration of the contributions of past generations as well as the needs of future generations;*

7. *Commitment to self-sufficiency;*

8. *Wisdom and balance in decision making;*

9. *Thoughtful, island appropriate innovation; and*

10. *Nurturance of the health and well-being of our families and our communities.*

Congruent with these core principles, the Countywide Policy Plan identifies goals objectives, policies and implementing actions for pertinent functional planning categories, which are identified as follows:

1. *Natural environment*

2. *Local cultures and traditions*

3. *Education*

4. *Social and healthcare services*

5. *Housing opportunities for residents*

6. *Local economy*

7. *Parks and public facilities*

8. *Transportation options*

9. *Physical infrastructure*

10. *Sustainable land use and growth management*

11. *Good governance*

With respect to the proposed Waikapu Light Industrial project, the following goals, objectives, policies and implementing actions are illustrative of the compliance with the Countywide Policy Plan.

STRENGTHEN THE LOCAL ECONOMY

Goal:

Maui County's economy will be diverse, sustainable, and supportive of community values.

Objective:

Promote an economic climate that will encourage diversification of the County's economic base and a sustainable rate of economic growth.

IMPROVE PHYSICAL INFRASTRUCTURE

Goal:

Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

Objective:

Improve waste-disposal practices and systems to be efficient, safe, and as environmentally sound as possible.

Objective:

Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available

infrastructure capacity.

Policy:

- *Promote land use patterns that can be provided with infrastructure and public facilities in a cost-effective manner.*

Objective:

Improve the planning and management of infrastructure systems.

Policies:

- *Require new developments to contribute their pro rata share of local and regional infrastructure costs.*

- *Ensure that infrastructure is built concurrent with or prior to development.*

PROMOTE SUSTAINABLE LAND USE AND GROWTH MANAGEMENT

Goal:

Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.

Objective:

Improve land use management and implement a directed-growth strategy.

Policy:

- *Direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline, and cultural resources.*

In summary, the proposed Wailuku Light Industrial project is consistent with the themes and principles of the Countywide Policy Plan.

2. Maui Island Plan

The Maui Island Plan (MIP), is applicable to the island of Maui only, providing more specific policy-based strategies for population, land use, transportation, public and community facilities, water and sewage systems, visitor destinations, urban design, and other matters related to future growth.

As provided by Chapter 2.80B, the MIP shall include the following components:

1. *An island-wide land use strategy, including a managed and directed growth plan*

2. *A water element assessing supply, demand and quality parameters*

3. *A nearshore ecosystem element assessing nearshore waters and requirements for preservation and restoration*

4. *An implementation program which addresses the County's 20-year capital improvement requirements, financial program for implementation, and action implementation schedule*

5. *Milestone indicators designed to measure implementation progress of the MIP*

It is noted the Ordinance No. 4004 does not address the component relating to the implementation program. Chapter 2.80B of the Maui County Code, relating to the General Plan, was amended via Ordinance No. 3979, October 5, 2012, to provide that the implementation program component be adopted no later than one (1) year following the effective date of Ordinance No. 4004. As such, the implementation program component of the MIP will require adoption prior to December 28, 2013.

The MIP addresses a number of planning categories with detailed policy analysis and recommendations which are framed in terms of goals, objectives, policies and implementing actions. These planning categories address the following areas:

1. *Population*

2. *Heritage Resources*

3. *Natural Hazards*

4. *Economic Development*

5. *Housing*

6. *Infrastructure and Public Facilities*

7. *Land Use*

The proposed project advances the following goals, objectives and policies of the MIP.

LAND USE

Goal:

7.3 *Maui will have livable human-scale communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.*

Objective:

7.3.1 *Facilitate and support a more compact, efficient, human-scale urban development pattern.*

Policies:

7.3.1.a *Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.*

ECONOMIC DEVELOPMENT

Goal:

4.1 *Maui will have a balanced economy composed of a variety of industries that offer employment opportunities and well-paying jobs and a business environment that is sensitive to resident needs and the island's unique natural and cultural resources.*

Objective:

4.1.1 *A more diversified economy.*

Policies:

***

4.1.1.b *Support the creation of new jobs and industries that provide a living wage.*

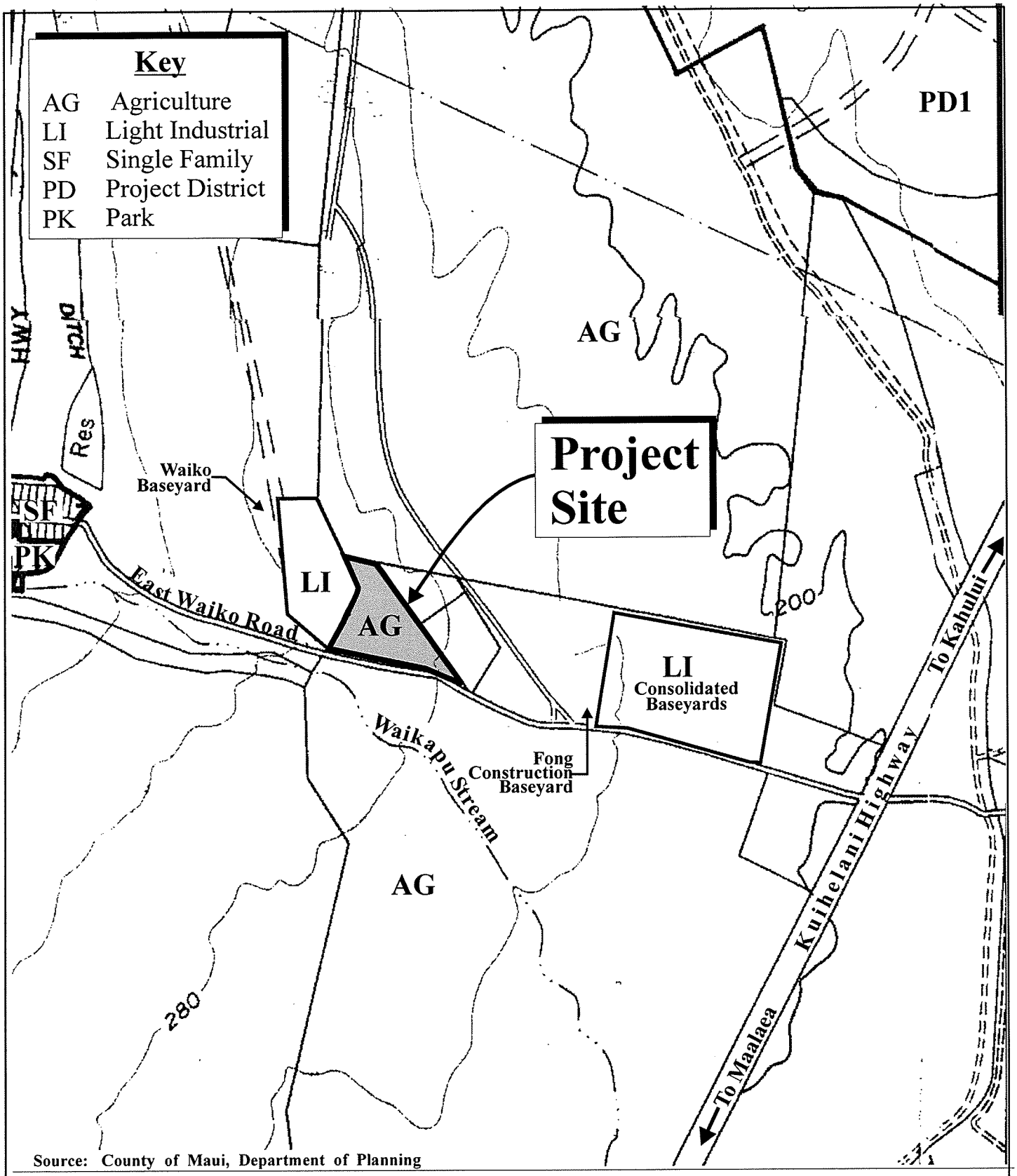
Additionally, an essential element of the MIP is its directed growth plan which provides a management framework for future growth in a manner that is fiscally, environmentally, and culturally prudent. Among the directed growth management tools developed through the MIP process are maps delineating urban growth boundaries (UGB), small town boundaries (STB) and rural growth boundaries (RGB). The respective boundaries identify areas appropriate for future growth and their corresponding intent with respect to development character.

The proposed Waikapu Light Industrial project is located within the UGB. In this regard, the proposed action is consistent with the directed growth strategy defined via growth maps adopted in the MIP.

D. WAILUKU-KAHULUI COMMUNITY PLAN

The project site is located within the Wailuku-Kahului Community Plan region, one (1) of nine (9) community plan regions established in the County of Maui. Planning for each region is guided by the respective community plan, which is designed to implement the Maui County General Plan. Each community plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

The Wailuku-Kahului Community Plan was adopted by the County of Maui through Ordinance No. 3061 which took effect on June 5, 2002. Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. See **Figure 13**. The project area is designated "Agriculture" by the Wailuku-Kahului Community Plan Map. A Community Plan Amendment (CPA) from "Agriculture" to "Light Industrial" use is being requested for the project site. As previously noted, the MIP includes the project site in the Urban Growth Boundary (UGB) for the Wailuku-Kahului region.



Source: County of Maui, Department of Planning

Figure 13

Proposed Waikapu Light Industrial Project

Wailuku-Kahului Community Plan Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC DEV\Waikapu LI\communityplan

The Wailuku-Kahului Community Plan describes Central Maui as the primary urban center of Maui Island. With its inventory of developed and developable lands, together with its concentration of public facilities and infrastructure, Central Maui possesses attributes that are conducive to industrial development. The Community Plan recognizes that the maintenance of a healthy business environment is important to the economic and social well-being of the region and its residents. In order to support a thriving business environment, a variety of retail, commercial, office, and industrial lands must be made available throughout the region.

Lands along East Waiko Road have been utilized for construction baseyards and similar light industrial enterprises for many years, precipitating CPAs to re-designate these lands for light industrial uses. Examples of this include the Waiko Baseyard and Consolidated Baseyards subdivisions. Refer to **Figure 13**. Similarly, the project site has been utilized for light industrial purposes since 1989, when Maui Scrap's scrap metal recovery operation was enabled through a State Special Use Permit (SUP) and a County Conditional Permit (CP). Problematically, however, the SUP and CP are temporary entitlements. The CPA, therefore, is sought in order to permanently entitle the project site for light industrial uses, and enable a continuation of light industrial uses along East Waiko Road.

The proposed action is consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan.

ECONOMIC ACTIVITY

Goal:

A stable and viable economy that provides opportunities for growth and diversification to meet long-term community and regional needs and in a manner that promotes agricultural activity and preserves agricultural lands and open space resources.

Objectives and Policies:

- *Provide industrial growth opportunities through the expansion of existing industrial centers associated with the airport and harbor, and Wailuku and Kahului. Encourage the fee simple ownership of lots provided by private developers.*

- *Recognize the importance of small businesses to the region's economy.*

ENVIRONMENT

Goal:

A clean and attractive physical and natural environment in which man-made developments or alterations to the natural environment relate to sound environmental and ecological practices, and important scenic and open space resources are maintained for public use and enjoyment.

Objective and Policy:

- *Encourage the use of siltation basins and other erosion control features in the design of drainage systems.*

CULTURAL RESOURCES

Goal:

Identification, protection, preservation, enhancement, and where appropriate, use of cultural practices and sites, historic sites and structures, and cultural landscapes and view planes that:

Objective and Policy:

- *Require development projects to identify all cultural resources located within the project area as part of initial project studies. Further, require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources.*

LAND USE

Goal:

An attractive, well-planned community with a mixture of compatible land uses in appropriate areas to accommodate the future needs of residents and visitors in a manner that provides for the social and economic well-being of residents and the preservation and enhancement of the region's environmental resources and traditional towns and villages.

Objective and Policy:

- *Upon adoption of this plan, allow no further development unless infrastructure, public facilities, and services needed to service new development are available prior to or concurrent with the impacts of*

new development.

URBAN DESIGN

Goal:

An attractive and functionally integrated urban environment that enhances neighborhood character, promotes quality design, defines a unified landscape planting and beautification theme along major public roads and highways, watercourses and at major public facilities, and recognizes the historic importance and traditions of the region.

Objectives and Policies for the Wailuku-Kahului Region in General

- *Maintain a design quality for commercial and public projects and large-scale master planned developments.*
- *Existing and future public rights-of-way along roads and parks shall be planted with appropriate trees, turfgrass and ground covers.*
- *Require all future subdivisions, construction projects and developments to comply with the adopted Maui County Planting Plan.*

PLANNING STANDARDS

1. Land Use

- *All zoning applications and/or proposed land uses and developments shall conform with the planned use designations, as specified in the adopted Community plan Map, and be consistent with the Community Plan policies.*

2. Cultural Resources

- *Require development projects to identify significant cultural resources located within the project area as part of initial project studies. Further require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources.*

3. Urban Design

- *Incorporate drought tolerant plant species and xeriscaping in future landscape planting.*

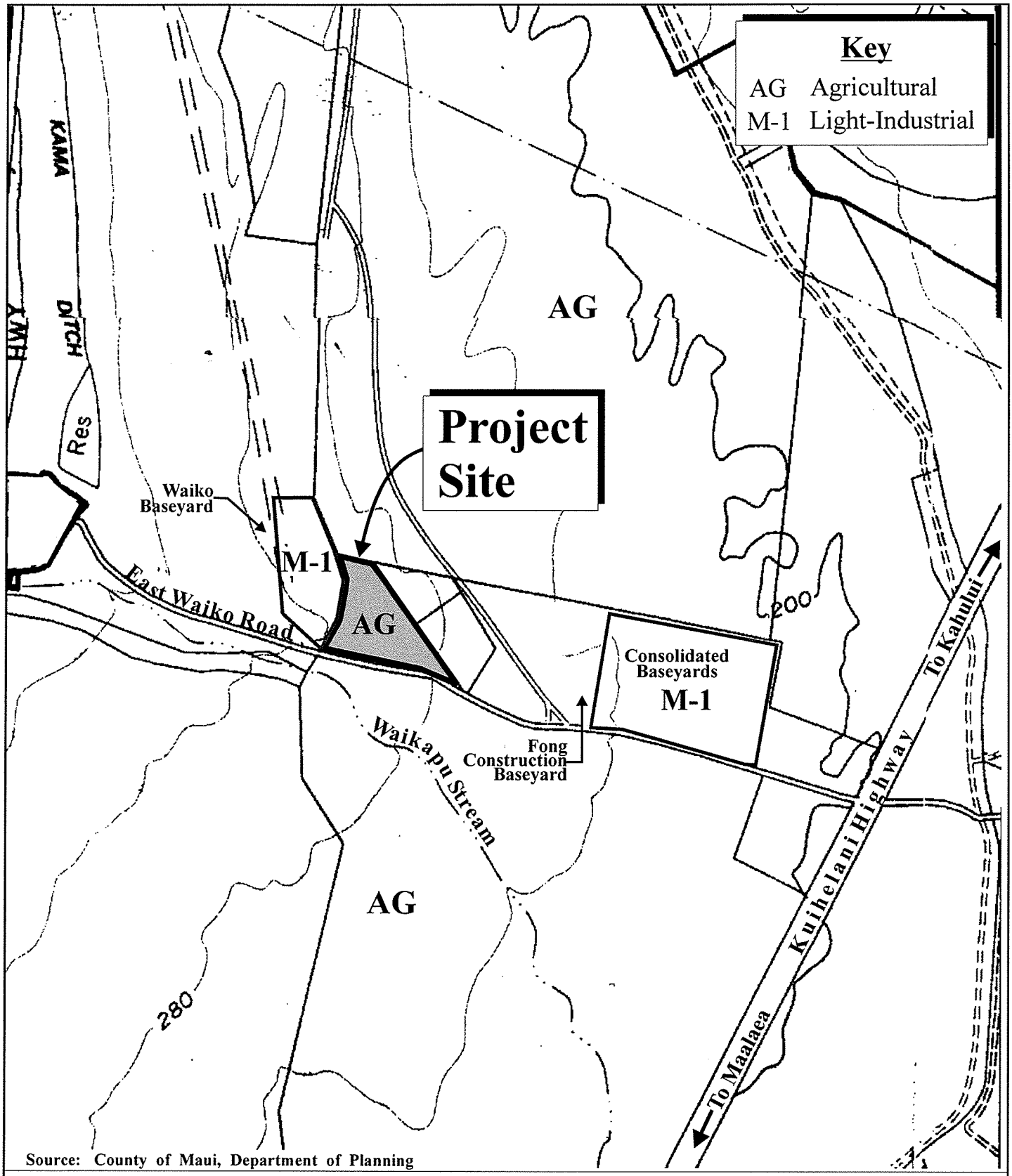
E. COUNTY ZONING

The project site is zoned "Agricultural", according to Maui County zoning; however, from a recent historical perspective, the project site has not been used for agricultural purposes. Rather, the project site has been utilized since 1989 as a scrap metal recovery facility, an industrial use, via a State Special Use Permit (SUP) and County Conditional Permit (CP). A Change in Zoning (CIZ) from the "AG, Agricultural" district to "M-1, Light Industrial" district is being requested to enable the proposed project to proceed. See **Figure 14**. Whereas the SUP and CP are subject to periodic time extensions, the CIZ will permanently allow for light industrial uses on the project site.

With respect to the proposed CIZ, it is noted that Section 19.30A.020, Maui County Code, referring to district criteria for the agricultural district, states the following:

> *Agricultural lands that meet at least two of the following criteria should be given the highest priority for retention in the agricultural district:*
>
> *A. Agricultural Lands of Importance to the State of Hawai'i (ALISH);*
>
> *B. Lands not classified by the ALISH system whose agricultural land suitability, based on soil, topographic, and climatic conditions, supports the production of agricultural commodities, including but not limited to coffee, taro, watercress, ginger, orchard and flower crops and nonirrigated pineapple. In addition, these lands shall include lands used for intensive animal husbandry, and lands in agricultural cultivation in five of the ten years immediately preceding the date of approval of this chapter; and*
>
> *C. Lands which have seventy-five percent or more of their boundaries contiguous to lands within the agricultural district.*

In terms of ALISH designations, the project site is designated by the State Department of Agriculture as "Other Important" agricultural lands. As discussed previously, "Other Important" agricultural lands are those lands that are of State or County importance, but do not have the qualities of lands rated "Prime" or "Unique".



Source: County of Maui, Department of Planning

Figure 14

Proposed Waikapu Light Industrial Project
Maui County Zoning Map

NOT TO SCALE

Prepared for: ABC Development Company, LLC

MUNEKIYO & HIRAGA, INC.

ABC DEV\Waikapu LI\Zoning

As also discussed, the land underlying the project site is rated "E58" in terms of agricultural productivity by the University of Hawaii Land Study Bureau (LSB). This rating reflects an overall productivity rating of "E", the lowest possible LSB rating for agricultural lands. Further, the LSB sets forth specific productivity ratings for selected crops for the "E58" land type. For the production of pineapple, vegetables, sugar cane, orchard crops, grazing land, and forage crops, the project site is rated "E", again the lowest possible productivity rating. The project site has not been utilized for agricultural cultivation since 1989. Maui Scrap utilized the site for a scrap metal recovery operation. Prior to Maui Scrap, the site was utilized for sand mining.

A majority of the project site is contiguous to lands within the "Urban" district. To the west lies the Waiko Baseyard Subdivision, while lands to the north and south are designated "Urban" for A&B Properties, Inc.'s Waiale Project.

As previously discussed, the project site is included in the Urban Growth Boundary (UGB) of the Maui Island Plan. This designation indicates that the project site is envisioned to be an area for future urban growth.

Given the project site's low agricultural productivity rating and its location contiguous to "Urban" district lands, the project site is considered to be appropriate for rezoning to the"M-1, Light Industrial" district.

F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 205A, Hawaii Revised Statutes, projects should be evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. The project area is approximately four (4) miles away from the coastline and will not involve work within the County of Maui's Special Management Area (SMA). However, the applicability of coastal zone management considerations has been reviewed and assessed.

1. Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

a. *Improve coordination and funding of coastal recreational planning and management; and*

b. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*

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

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

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

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

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

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

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

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

Response: The project site is located inland, approximately four (4) miles from the coastline. As such, there are no anticipated impacts on coastal recreational opportunities or existing public access to the shoreline.

2. Historic Resources

Objective:

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

Policies:

a. *Identify and analyze significant archeological resources;*

b. *Maximize information retention through preservation of remains and artifacts or salvage operations; and*

c. *Support state goals for protection, restoration, interpretation, and display of historic resources.*

Response: An Archaeological Assessment Survey Report (AAR) and a Cultural Impact Assessment (CIA) were completed for the project site. As discussed previously, the project site had been significantly altered prior to and during its previous use by Maui Scrap. The AAR recorded no significant sites or human burials. Refer to **Appendix "C"**.

The CIA found that the project site is not and has not been utilized for cultural practices, traditional subsistence or gathering activities. Thus, the CIA concluded that the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Refer to **Appendix "D"**.

3. Scenic and Open Space Resources

Objective:

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

Policies:

a. *Identify valued scenic resources in the coastal zone management area;*

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

c. *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*

d. *Encourage those developments which are not coastal dependent to locate in inland areas.*

Response: The project site does not lie within a coastal scenic view corridor, nor along the shoreline. As mentioned previously, the project site is located inland, approximately four (4) miles from the shoreline. For these reasons, no adverse impacts on scenic or open space resources are anticipated.

4. Coastal Ecosystems

Objective:

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

Policies:

a. *Improve the technical basis for natural resource management;*

b. *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*

c. *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*

d. *Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state*

water quality standards.

Response: The proposed project is not expected to adversely impact coastal ecosystems. Nonetheless, each individual unit's drainage system will be required to retain runoff volume generated by the 50-year, 1-hour storm. The drainage systems for each unit of the industrial condominium will be designed in accordance with applicable regulatory standards to ensure that there is no adverse effect on downstream properties. Furthermore, appropriate erosion control measures will be implemented during construction to minimize the effects of stormwater runoff and to ensure that coastal ecosystems are not adversely impacted.

5. Economic Uses

Objective:

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

Policies:

a. *Concentrate coastal dependent development in appropriate areas;*

b. *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*

c. *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such 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.*

Response: The proposed project is not a coastal dependent development as the project site is located approximately four (4) miles inland. The proposed project will

stimulate the economy through construction-related and industrial job opportunities. The proposed project will also augment the island's supply of light industrial lands. The proposed project is consistent with the objective and policies for economic use.

6. Coastal Hazards

Objective:

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

Policies:

a. *Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*

b. *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;*

c. *Ensure that developments comply with requirements of the Federal Flood Insurance Program;*

d. *Prevent coastal flooding from inland projects; and*

e. *Develop a coastal point and nonpoint source pollution control program.*

Response: The project site falls within Zone X, an area of minimal flooding, as indicated by the Flood Insurance Rate Map for the County of Maui. Drainage improvements for each unit will be required to retain the 50-year, 1-hour storm runoff volume anticipated for the proposed development. The drainage improvements will be designed in accordance with the Drainage Standards of the County of Maui to ensure that development of the seven (7) proposed units will not adversely affect downstream properties as a result of flooding or erosion. In addition, the project site is not located within a tsunami inundation area.

7. Managing Development

Objective:

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

Policies:

a. *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*

b. *Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and*

c. *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

Response: The HRS Chapter 343 Environmental Assessment (EA) and land use entitlements processes involve review by governmental agencies and provide for public involvement opportunities and the provision to comment on the project. Applicable State and County requirements will be adhered to in the design and construction of the project. Furthermore, a community informational meeting was held on October 5, 2010. A project overview was provided at the quarterly Waikapu Community Association meeting on June 10, 2013. The comments received at the community meeting and the Waikapu Community Association meeting are documented in **Appendix "F"**.

8. Public Participation

Objective:

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

Policies:

a. *Maintain a public advisory body to identify coastal management*

problems and to provide policy advice and assistance to the coastal zone management program;

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

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

Response: The project will meet County public awareness, education and participation objectives. Opportunities for agency and public review will be provided as part of the notification review and comment process required for the Environmental Assessment (EA), and as part of the public hearing process for the land use entitlements. As previously mentioned, a community informational meeting was held on October 5, 2010. A project overview was provided at the quarterly Waikapu Community Association meeting on June 10, 2013. Comments received at the community meeting and the Waikapu Community Association meeting are documented in **Appendix "F"**.

9. Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

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

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

c. *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

Response: The proposed project is located inland, approximately four (4) miles from the shoreline. As a result, there are no anticipated adverse impacts on beach

resources.

10. Marine Resources

Objective:

Implement the State's ocean resources management plan.

Policies:

a. *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*

b. *Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*

c. *Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;*

d. *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*

e. *Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and*

f. *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

Response: As previously stated, the project site is located inland, four (4) miles away from the ocean and is, therefore, not anticipated to have any adverse impact on marine or coastal resources.

In addition to the foregoing objectives and policies, SMA permit review criteria pursuant to Act 224 (2005) provides that:

No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from

floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

(1) Directly illuminates the shoreline and ocean waters; or

(2) Is directed to travel across property boundaries toward the shoreline and ocean waters.

Response: The proposed project is not located on or near the shoreline. Notwithstanding, any lighting for the project will be fully shielded, directed downward and will not directly illuminate the surrounding properties. Construction during the night time is not anticipated for the proposed project.

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

In the short term, the proposed Waikapu Light Industrial project will result in unavoidable construction-related impacts, including noise impacts generated by construction equipment and activities. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions from construction equipment and vehicles. These noise and air quality impacts will be temporary in nature, occurring only during the construction period, and will be mitigated to the extent practicable through implementation of Best Management Practices (BMPs).

In the long term, the proposed project will result in additional acreage of agricultural land being utilized for light industrial needs. However, as previously discussed, the project site has been utilized for industrial purposes since 1989, through a State Special Use Permit and County Conditional Permit. Prior to the establishment of Maui Scrap, the project site was not utilized for agricultural activities, despite its agricultural designation. In addition, the underlying Land Study Bureau agricultural productivity rating is "E", the lowest possible classification. In this context, although the proposed project will involve the reclassification of agriculturally zoned lands, the proposed project will not adversely impact productive agricultural resources. The requested land use changes will augment the island's inventory of light industrial lands to provide opportunities for local businesses. The use of the project site for this purpose is considered to be an appropriate and more effective use of the underlying lands.

Other resources which will be committed in the implementation of the proposed action include material and fuel resources.

Beneficial impacts relate to economic diversification facilitated by the establishment of additional industrial lands. The unavoidable impacts and commitments noted above have been weighed against the long term benefits of the proposed project. The tradeoff of the unavoidable construction-related impacts, commitment of material and fuel resources, and utilization of lands designated for

agricultural use is the creation of long term socio-economic and land use benefits of the proposed light industrial project.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the preferred alternative, which is the proposed action, include the "no action" and "deferred action" alternatives. These alternatives are addressed below.

A. PREFERRED ALTERNATIVE

The Preferred Alternative will implement the long term goals of the property owner to redevelop the property for light industrial uses. The history of the project site lends itself to the continuation of light industrial uses on this property. Additionally, the property's location in the midst of other light industrial uses makes it an ideal location for the continuation of light industrial uses along East Waiko Road.

B. NO ACTION ALTERNATIVE

The "no action" alternative would maintain the existing vacant condition of the property after the completion of site restoration activities. The "no action" alternative would not fulfill the long term goals of the property owner to expand light industrial uses along East Waiko Road; thus, the "no action" alternative was not considered.

Additionally, the historical use of the project site was light industrial use, having been utilized by Maui Scrap as a scrap metal recovery facility. Given this historical use, and considering the surrounding land uses, the project site lends itself to the continuation of light industrial uses along East Waiko Road.

C. DEFERRED ACTION ALTERNATIVE

The "deferred action" alternative would defer the proposed project to a later time. In the short term, this alternative would have the same effect as the no action alternative. In the long term, this alternative would delay the project's intended provision of light industrial lands, essentially delaying opportunities for new business enterprises. The project site has been readied for development and this alternative would defer the potential beneficial use of the land.

VI. SIGNIFICANCE CRITERIA ASSESSMENT

VI. SIGNIFICANCE CRITERIA ASSESSMENT

The proposed Waikapu Light Industrial project involves the conversion of existing nonproductive agricultural lands to light industrial use. The proposed project is compatible with the previous industrial use of the project site and the surrounding light industrial uses.

Since the proposed action will involve a Community Plan Amendment and infrastructure upgrades involving County lands, compliance with Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 200 (Title 11), Hawaii Administrative Rules, Environmental Impact Statement Rules is necessary. Every phase of the proposed action, expected primary and secondary consequences, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. Discussion of project conformance to the Significance Criteria is as follows:

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

   Due to the heavily disturbed condition of the project site, there are no endangered or threatened flora or fauna on the site, nor are there any surface archaeological, historic or cultural resources that may be affected by the proposed project. No impacts to streams or wetlands are anticipated to result from the proposed action.

   The CIA found that the project site is not and has not been utilized for cultural practices, traditional subsistence, or gathering activities. Vegetation found on the project site is limited to non-native grasses, *haole koa*, and *kiawe*. Furthermore, the AAR identified no archaeological resources within the project site. Thus, no cultural resources will be lost, or destroyed as a result of project implementation.

   Based on the discussion provided above, the proposed project is not anticipated to involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

2. **Curtails the range of beneficial uses of the environment.**

There are no adverse impacts to climate, topography, or soils anticipated to result from the proposed project. There are also no known rare, threatened, or endangered species of flora, fauna, or avifauna located within the project site.

The proposed Waikapu Light Industrial project involves lands currently designated for agricultural uses. However, these lands have been utilized for industrial purposes since 1989 as a scrap metal recovery facility. The project site has not been utilized for agricultural purposes, and the LSB overall rating of "E" indicates that the underlying land offers little productive agricultural value. Thus, land use entitlements that support the proposed light industrial uses are being sought for the project site. Given the characteristics of the project site and surrounding land uses, the proposed project is considered to be a beneficial use of the environment. Furthermore, the cleanup activities performed by ABC have allowed for the beneficial use of the environment.

3. **Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes. The proposed project meets the Environmental Policy's goal of:

> *creating opportunity for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with physical and social environments.*

The future industrial land use will provide economic opportunities in a location conducive to industrial development and its environs. The proposed project is consistent with the State's Environmental Policy and Guidelines.

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

The proposed project will directly benefit the local economy by providing construction and construction-related employment, as well as job opportunities in the light industrial sector. Therefore, the proposed project will have a positive effect on

economic and social welfare. The CIA did not identify any ongoing cultural practices occurring within the project site. As such, adverse impacts to cultural practices are not anticipated.

5. **Substantially affects public health.**

The applicant, ABC, has undertaken extensive site restoration and cleanup activities to remove the approximately 35,000 to 45,000 tons of scrap metal that once blanketed the project site. Pursuant to DOH requirements, impacted soils have been contained and a site closure report has been prepared. With the implementation of the site restoration and cleanup in accordance with DOH criteria, no adverse impacts to the public's health and welfare are anticipated from the proposed project.

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

No significant population changes are anticipated as a result of the proposed project. There are no anticipated adverse effects on public services, such as police, fire, medical, educational, or solid waste collection, as service limits or service capacities will not be affected.

7. **Involves a substantial degradation of environmental quality.**

Construction activities will create temporary short-term nuisances related to noise and dust. Appropriate dust control and noise mitigation measures will be implemented by the contractor to ensure that fugitive dust and noise generated in connection with construction is minimized.

As previously discussed in Chapter II of this Draft EA document, adverse impacts to natural resources, cultural resources, and the natural environment are not anticipated. Rather, the site cleanup activities performed by ABC have substantially improved the environmental quality of the project site. The project's drainage improvements, to be implemented by each light industrial condominium unit, will be designed to reduce the amount of stormwater runoff and silt flowing into downstream properties. In sum, the proposed project is not anticipated to have an adverse impact on the environmental quality of the project area.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The proposed action does not involve a commitment to a larger action. Although the proposed action will convert additional agricultural lands along East Waiko Road to an urban use, the underlying lands are of the lowest productivity rating and have not been utilized for agricultural purposes. In this context, the proposed project is not anticipated to have a cumulative adverse effect upon the environment.

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

Rare, threatened or endangered species of flora, fauna, avifauna or their habitats are not expected to be affected by the proposed project.

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

Construction activities will result in short-term air quality and noise impacts. Best Management Practices (BMPs) for dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize construction-related air quality impacts. Short-term noise impacts will occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance and other BMPs are anticipated to mitigate noise from construction activities. Drainage improvements that will be completed per unit are anticipated to reduce the amount of silt and stormwater runoff flowing into downstream properties.

Based on the discussion provided above, the proposed project is not anticipated to detrimentally affect air or water quality or ambient noise levels.

11. **Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.**

The proposed project is not located within any environmentally sensitive area and, as such, there are no anticipated adverse effects as a result of the proposed project.

12. **Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.**

The project site is not located in an area identified as a significant scenic vista or viewplane in any County or State plans. The proposed project is not anticipated to adversely affect scenic view corridors. It is noted that the site restoration work completed by ABC has substantially improved the visual character of the property.

13. **Requires substantial energy consumption.**

The proposed project will involve the commitment of fuel for construction equipment, vehicles, and machinery during construction activities. However, this use will be short-term and is not anticipated to result in a substantial consumption of energy resources. The long-term build-out of seven (7) light industrial units will involve commitment of energy consumption which Maui Electric Company will provide. Given the minimal amount of units, the proposed project is not anticipated to result in substantial consumption of energy resources.

Based on the aforementioned findings, it is anticipated that the proposed project will result in a Findings of No Significant Impact (FONSI).

VII. LIST OF PERMITS AND APPROVALS

VII. LIST OF PERMITS AND APPROVALS

The following permits and approvals will be required prior to the implementation of the project:

State of Hawaii

1. Hawaii Administrative Rules, Chapter 343 Compliance

2. National Pollutant Discharge Elimination System (NPDES) Permit, as applicable

3. Community Noise Permit, as applicable

County of Maui

1. State Land Use District Boundary Amendment for lands 15 acres or less

2. Community Plan Amendment

3. Change in Zoning

4. Grading Permits

5. Work to Perform on County Road

6. Construction Permits

VIII. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

VIII. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during preparation of the Draft Environmental Assessment (EA). Agency comments and responses to substantive comments are presented herein.

1. Ranae Ganske-Cerizo
   Natural Resources Conservation Service
   U.S. Department of Agriculture
   77 Hookele Street, Suite 202
   Kahului, Hawaii 96732

2. George Young
   Chief, Regulatory Branch
   U.S. Department of the Army
   U.S. Army Engineer District, Honolulu
   Regulatory Branch
   Building 230
   Fort Shafter, Hawaii 96858-5440

3. Russ K. Saito, State Comptroller
   Department of Accounting and General Services
   1151 Punchbowl Street, #426
   Honolulu, Hawaii 96813

4. Sandra Lee Kunimoto, Chair
   Department of Agriculture
   1428 South King Street
   Honolulu, Hawaii 96814-2512

5. Theodore E. Liu, Director
   State of Hawaii
   Department of Business, Economic Development & Tourism
   P.O. Box 2359
   Honolulu, Hawaii 96804

6. Chiyome Fukino, M.D., Director
   State of Hawaii
   Department of Health
   919 Ala Moana Blvd., Room 300
   Honolulu, Hawaii 96814

7. Alec Wong, P.E., Chief
   Clean Water Branch
   State of Hawaii
   Department of Health
   919 Ala Moana Blvd., Room 300
   Honolulu, Hawaii 96814

8. Patti Kitkowski
   Acting District Environmental Health Program Chief
   State of Hawaii
   Department of Health
   54 High Street
   Wailuku, Hawaii 96793

9. Lene Ichinotsubo
   Environmental Management Division
   State of Hawaii
   Department of Health
   919 Ala Moana Blvd., Room 212
   Honolulu, Hawaii 96814

10. Laura Thielen, Chairperson
    State of Hawaii
    Department of Land and Natural Resources
    P. O. Box 621
    Honolulu, Hawaii 96809

11. Dr. Puaalaokalani Aiu, Administrator
    State of Hawaii
    Department of Land and Natural Resources
    State Historic Preservation Division
    601 Kamokila Blvd., Room 555
    Kapolei, Hawaii 96707

12. Maui Archaeologist
Department of Land and Natural Resources
State Historic Preservation Division
130 Mahalani Street
Wailuku, Hawaii 96793

13. Brennon Morioka, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

cc: Fred Cajigal

14. Major General Robert G.S. Lee, Director
Hawaii State Civil Defense
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

15. Kathleen Ho, Deputy Attorney
State of Hawaii
Department of the Attorney General
Health and Human Services General Division
465 South King Street, Room 200
Honolulu, Hawaii 96813

16. Katherine Kealoha, Director
Office Of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

17. Clyde Nāmuo, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

18. Abbey Seth Mayer, Director
State of Hawaii
Office of Planning
P.O. Box 2359
Honolulu, Hawaii 96804

19. Dan Davidson, Executive Officer
State of Hawaii
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804

20. Charmaine Tavares, Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

21. Deidre Tegarden, Director
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawaii 96793

22. Rebecca Lauricella, Acting Administrator
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawaii 96793

23. Jeffrey A. Murray, Fire Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732

24. Lori Tsuhako, Director
County of Maui
Department of Housing and Human Concerns
One Main Plaza
2200 Main Street, Suite 546
Wailuku, Hawaii 96793

25. Tamara Horcajo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawaii 96793

26. Kathleen Aoki, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

27. Gary Yabuta, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

28. Milton Arakawa, Director
County of Maui **NOTE: SEND 3 COPIES**
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793

29. Cheryl Okuma, Director
County of Maui
Department of Environmental Management
One Main Plaza
2200 Main Street, Suite 100
Wailuku, Hawaii 96793

30. Donald Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

31. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

32. Danny Mateo, Council Chair
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

33. Michael J. Molina, Vice Chair
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

34. Councilmember Gladys Baisa
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

35. Councilmember Jo Anne Johnson
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

36. Councilmember Sol Kahoohalahala
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

37. Councilmember Bill Medeiros
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

38. Councilmember Wayne Nishiki
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

39. Councilmember Joseph Pontanilla
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

40. Councilmember Mike Victorino
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

41. **Hawaiian Telcom**
60 South Church Street
Wailuku, Hawaii 96793

42. Greg Kauhi, Manager, Customer Operations
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733

43. Pamela Tumpap, Executive Director
Maui Chamber of Commerce
313 Ano Street
Kahului, Hawaii 96732

44. Jacob W. Verkerke, Chair
Glenn M. Adolpho, Development Monitoring Committee Chair
Waikapu Community Association
P.O. Box 2106
Wailuku, Hawaii 96793

45. **Wailuku Community Association**
40 Hoauna Street
Wailuku, Hawaii 96793

46. Joseph G. Blackburn II
Waiolani Community Associations
P. O. Box 1067
Wailuku, Hawaii 96793

47. **Waikapu Gardens Homeowners Association**
67 East Waiko Road
Wailuku, Hawaii 96793

48. **Consolidated Baseyard**
c/o Frampton & Ward, LLC
2073 Wells Street, Suite 101
Wailuku, Hawaii 96793

49. **Rojac Trucking**
150 Pakana Street
Wailuku, Hawaii 96793

50. Jocelyn Perreira, Executive Director
Wailuku Main Street Association
1942 Main Street, Unit 101
Wailuku, Hawaii 96793

51. Scott Nunokawa
P. O. Box 946
Wailuku, Hawaii 96793

52. **Maui Tropical Plantation**
1670 Honoapiilani Highway
Wailuku, Hawaii 96793

53. **Spencer Homes**
67 East Waiko Road
Wailuku, Hawaii 96793

54. Mike Atherton
1132 Norman Drive
Mantela, California 95336

55. Grant Chun
A&B Properties, Inc.
11 Puunene Avenue
Kahului, Hawaii 96732

56. Roderick Fong
495 Hukilike Street, Bay 4
Kahului, Hawaii 96732

AUG 2 0 2010

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF:

August 18, 2010

Regulatory Branch

POH-2010-00200

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

We have received your letter requesting early consultation for the proposed development by ABC Development Company, LLC of the Waikapu Light Industrial Project located at TMK (2) 3-8-007:105 in Waikapu, Island of Maui, Hawaii. We have reviewed your letter pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404).

Section 10 requires that a Department of Army (DA) permit be obtained for certain structures or work in or affecting navigable waters of the United States (U.S.), prior to conducting the work (33 U.S.C. 403). Section 404 requires that a DA permit be obtained for the discharge of dredged and/or fill material into waters of the U.S., including wetlands and navigable waters of the U.S, prior to conducting the work (33 U.S.C. 1344). We have determined that the parcel does not contain a water of the United States; therefore, a DA permit is not required for any proposed or future work.

Should you have any questions, please contact Robert Deroche of my staff at (808) 438-2039, by facsimile at (808) 438-4060, or by Email at robert.d.deroche2@usace.army.mil. Please refer to File No. POH-2010-00200 in all future communications with this office regarding this or other projects at this location.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

George P. Young, P.E., Chief
Department of Army
U.S. Army Corps of Engineers
Honolulu District
Fort Shafter, Hawaii 96858-5440

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii (POH-2010-00200)

Dear Mr. Young:

Thank you for your letter, dated August 18, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your letter.

We acknowledge your determination that the parcel does not contain a water of the United States; therefore a Department of Army permit is not required.

We appreciate the input provided by your organization and will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
F:\DATA\ABC Dev\Waikapu LI\DofArmyeclres.doc

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

AUG 17 2010

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

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

AUG 16 2010

(P)1221.0

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawai'i 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the Proposed Waikapū Light Project at TMK (2)3-8-007:105, Waikapū, Maui, Hawai'i

Thank you for the opportunity to provide comments for Early Consultation on the proposed Waikapū Light Industrial Project at Waikapū, Maui. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or have you staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

RUSS K. SAITO
State Comptroller

CKK:mo

AUG 19 2010

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / CWB

08034PDCL.10

August 18, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: Early Consultation Comments for Preparation of a Draft Environmental Assessment for the Proposed Waikapu Light Industrial Project Waikapu, Island of Maui, Hawaii TMK: (2) 3-8-007:105

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated August 4, 2010, requesting comments on the subject project. We have reviewed your letter and offer these comments on your project. Please note that our review is based solely on the information provided in your letter and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

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

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

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

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

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2

State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

b. Hydrotesting effluent.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

4. Your letter indicates that the existing site has undergone three (3) years of cleanup to remove approximately 35,000 to 45,000 tons of material (e.g., discarded automobiles, used appliances, used construction equipment, discarded tires, etc.). If contaminated soil/material will be present during construction and/or post construction, appropriate best management practices (BMPs) must be utilized to prevent non-storm water discharges to State waters. Non-storm water includes, but is not limited to, storm water that has come into contact with contaminated soil/material.

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

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

Sincerely,

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

DCL:ml

c: DOH-EPO # I-3293 [via email only]

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

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

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii (EMD/CWB 08034PDCL.10)

Dear Mr. Wong:

Thank you for your letter, dated August 18, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your letter.

1. We will review the standard comments found on the listed website and provide a discussion within the Draft Environmental Assessment (EA), as applicable.

2. We will review the criteria for Antidegradation Policy, Designated Uses, and Water Quality. The Draft EA will include a discussion on the applicable criteria.

3. We acknowledge that a National Pollutant Discharge Elimination System (NPDES) permit for discharges of stormwater runoff and hydrotesting effluent into State surface waters may be required. Coordination will be carried out with the Department of Health during the project design phase to assess the requirements for the NPDES permit.

4. We also acknowledge that a NPDES individual permit may be required for any discharge into Class 1 or Class AA waters. Again, coordination will be carried out during the project design phase to determine the NPDES permit requirements.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

5. A Site Restoration Report/Site Closure and Restoration Plan (Restoration Plan) was completed for the project site, due to its former use as a scrap metal recycle center. The Restoration Plan for the site includes the consolidation and capping of the soil stockpiles in select areas of the site, referred to as subsurface containment cells, combined with institutional controls. The stockpiled soil will be incorporated into the final design of the site and capped with clean fill and/or pavement to prevent potential future direct contact exposures. A subsurface visual barrier (e.g., orange construction fencing and printed warning tape) will be placed on top of the impacted soil as a conservative measure to warn potential future subsurface workers. The institutional controls (i.e., deed restriction) will limit the use of the site and establish conditions on activities such as construction, excavation, underground utility or sewer maintenance, and the installation and/or use of groundwater wells. The deed restriction will also provide appropriate notice to future purchasers of the site of the institutional controls that must be met. Furthermore, appropriate Best Management Practices will be utilized to prevent non-stormwater discharges to State waters.

6. We further acknowledge that all discharges related to the project construction or operation activities, whether or not NPDES permit(s) is required, must comply with the State's Water Quality Standards.

We appreciate the input provided by your organization and will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Ian Sandison, Esq., Carlsmith Ball LLP
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
F:\DATA\ABC Dev\Waikapu LI\DOH CWBeclres.doc

AUG 2 0 2010

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M. D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M. D., M. P. H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

August 18, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the Proposed Waikapu Light Industrial Project, Waikapu, Maui, Hawaii TMK: (2) 3-8-007:105

Thank you for the opportunity to comment on this project. We have the following comments:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309.

2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work.

It is strongly recommended that the Standard Comments found at the Department's website: http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html be reviewed, and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please call me at 808 984-8230.

Sincerely,

Patti Kitkowski

Patti Kitkowski
Acting District Environmental Health Program Chief

c EPO

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Patti Kitkowski, Environmental Health
Program Chief
Department of Health
Maui District Office
State of Hawaii
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Ms. Kitkowski:

Thank you for your letter, dated August 18, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your letter.

1. The project engineer will coordinate with the Clean Water Branch to determine applicable National Pollutant Discharge Elimination System (NPDES) permit requirements.

2. We understand that a noise permit should be obtained prior to construction if a noise permit is required for the construction phase of the project.

3. Standard comments that apply to the proposed project will be reviewed by the applicant and their project design team.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

We appreciate the input provided by your organization and will include a copy of your letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
F:\DATA\ABC Dev\Waikapu LI\DOHMauieclres.doc

From: Otsu, Lane M [lane.otsu@doh.hawaii.gov]
Sent: Friday, September 10, 2010 2:56 PM
To: Leilani Pulmano
Cc: Ichinotsubo, Lene K; Fujimoto, Janice K; Nichols, Todd D
Subject: 1198 DoH Solid & Hazardous Waste comments - early consultation

Leilani,

Here are comments from the Solid Waste Section (SWS), Solid and Hazardous Waste Branch, Department of Health:

Thank you for giving us the opportunity to provide early comments on the proposed Waikapu Light Industrial Project (tmk: 2-3-8-007:105)

The SWS has recently received a copy of the closure report on the subject site.

DOH is amenable to the development of the former Maui Scrap Metal site pending our review and acceptance of the final closure report for the site. Our review will focus on documentation of cleanup activities that have occurred and evaluation of contamination, if any.

Please contact me with any questions regarding these comments.

Lane Otsu
Solid & Hazardous Waste Branch
Hawaii Department of Health
Ph. (808) 586-4226
Fax (808) 586-8221
Notice: This information and attachments are intended only for the use of the individual(s) or entity to which it is addressed, and may contain information that is privileged and/or confidential. If the reader of this message is not the intended recipient, any dissemination, distribution, or copying of this communication is strictly prohibited and may be punishable under state and federal law. If you have received this communication and/or attachments in error, please notify the sender via e-mail immediately and destroy all electronic and paper copies.

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Lane Otsu
Solid Waste Section
Solid and Hazardous Waste Branch
State of Hawaii
Department of Health
919 Ala Moana Boulevard, Suite 212
Honolulu, Hawaii 96814

SUBJECT: Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Otsu:

Thank you for your email correspondence of September 10, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to your comments.

The final Site Closure Report for the project site, prepared by Bureau Veritas North America, Inc., was submitted and approved by your office.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

We appreciate the input provided by your department and we will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at (808)244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:yp
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Ian Sandison, Esq., Carlsmith Ball LLP
F:\DATA\ABC Dev\Waikapu LI\DOH SWB.ecres.doc

LINDA LINGLE
GOVERNOR OF HAWAII

AUG 25 2010

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 24, 2010

Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Attention: Ms. Leilani Pulmano, Project Manager

Ladies and Gentlemen:

Subject: Early Consultation for the Proposed Waikapu Light Industrial Project

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

Other than the comments from Commission on Water Resource Management, Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unoki

for Morris M. Atta
Acting Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON

WILLIAM D. B[illegible]FOUR, JR.
SUMNER ERDMAN
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIIKE, M.D., J.D.

LENORE N. OHYE
ACTING DEPUTY DIRECTOR

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

August 12, 2010

RECEIVED
LAND DIVISION
2010 AUG 16 P 2:54
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO: Morris Atta, Administrator
Land Division

FROM: Lenore N. Ohye, Acting Deputy Director Lenore N. Ohye
Commission on Water Resource Management

SUBJECT: Waikapu Light Industrial Project Early Consultation

FILE NO.: N/A
TMK NO.: (2) 3-8-007:105

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

Our comments related to water resources are checked off below.

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

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

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

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

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

☒ 6. We recommend the use of alternative water sources, wherever practicable.

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

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/resources_permits.htm.

☐ 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water.

☐ 9. A Well Construction Permit(s) is (are) required any well construction work begins.

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

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

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

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

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

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

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

☒ OTHER:

Existing water service is from a water management area and subject to very limited supply. Maui Department of Water Supply may require alternative non-potable sources, as necessary. Any proposal requiring CWRM action should explore environmental impacts as under HRS Chapter 343.

If there are any questions, please contact Charles Ice at 587-0218.

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2010 AUG 19 P 3:26
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

August 10, 2010

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division –Keith
x Historic Preservation

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Early Consultation for Proposed Waikapu Light Industrial Project
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga on behalf of ABC Development Company, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 20, 2010.

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 my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 8/11/10

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/CharleneUnoki
RE:EarlyConsultationWaikapu
Maui.508

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The Flood Insurance Program does not have any regulations for developments within Flood Zone X.**

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

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

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, ACTING CHIEF ENGINEER

Date: 8/16/10

SEP 02 2010

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 31, 2010

Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Attention: Ms. Leilani Pulmano, Project Manager

Ladies and Gentlemen:

Subject: Early Consultation for the Proposed Waikapu Light Industrial Project

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

The Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene Unoki
Assistant Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DAR3275

August 10, 2010

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__~~Div. of Boating & Ocean~~ Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
_Office of Conservation & Coastal Lands
x Land Division –Keith
x Historic Preservation

RECEIVED
AUG 12 2010
AQUATIC RESOURCES

RECEIVED
LAND DIVISION
2010 AUG 31 P 3:17
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Charlene

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Early Consultation for Proposed Waikapu Light Industrial Project
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga on behalf of ABC Development Company, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 20, 2010.

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 my office at 587-0433. Thank you.

Attachments

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

Signed: F. Ontu Sh
Date: 8/25/10

RECEIVED
Maui
AUG 24 2010
Div. of Aquatic Resources

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

William J. Aila, Jr., Chairperson
Department of Land and
Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Aila:

Thank you for your Department's letter, dated August 24, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments from Commission on Water Resource Management (CWRM) and Engineering Division.

ENGINEERING DIVISION

1. We will coordinate with the County of Maui to ensure that the proposed project is appropriately considered into the County's Water Use and Development Plan.

2. We will coordinate with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan.

3. Water efficient fixtures will be installed and water efficient practices, as appropriate and practicable, will be implemented throughout the development.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

4. To clarify, the proposed project will offer seven (7) light industrial lots under a condominium property regime. Each individual unit owner will be required to provide stormwater management measures. Best Management Practices will be required as part of the building permit process for each unit owner.

5. As practicable, alternative water source will be utilized.

6. The State Department of Health (DOH) is being consulted as part of the Site Restoration Report/Site Closure and Restoration Plan for the previous scrap metal use and proposed project, as well as the Draft Environmental Assessment (EA) process. As such, DOH will be reviewing the Draft EA.

7. The applicant will be seeking to receive water service from the County of Maui, Department of Water Supply. As such, the applicant does not foresee future action by CWRM.

COMMISSION ON WATER RESOURCE MANAGEMENT

8. Thank you for confirming that the project site is located in Flood Zone X, and that there are no regulations for developments within this flood zone.

We appreciate the input provided by your organization and will include a copy of the letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
F:\DATA\ABC Dev\Waikapu LI\DLNRecIres.doc

OCT 01 2010

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

LENORE N. OHYE
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

September 29, 2010

Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

LOG NO: 2010.1223
DOC NO: 1009MD09
Archaeology

Dear Ms. Pulmano:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Request for Early Consultation regarding the Proposed Waikapu Light Industrial Project
Waikapū Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-8-007:105

Thank you for the opportunity to review the aforementioned project, which we received on August 10, 2010. The proposed development at this 8.5-acre parcel – which until recently was used by Maui Scrap Metal, Co., Inc. – will entail a Community Plan Amendment; a County Change of Zone; and a State Land Use District Boundary Amendment.

A review of our files finds that an archaeological inventory survey has not been conducted for this parcel. While we understand that the surface has been extensively compacted and/or altered by previous use as a solid waste site, we note that three in-situ burials have been discovered in the adjacent parcel 104. Without knowing more about the history of this parcel and the prior status (original or imported sand, for example) we are unable to determine whether or not historic properties will be affected. Therefore, we recommend that an archaeological inventory survey be undertaken and a report submitted to SHPD for review and approval.

If you have questions about this letter please contact Morgan Davis at (808) 243-5169 or via email to: morgan.e.davis@hawaii.gov.

Aloha,

Theresa K. Donham
Acting Archaeology Branch Chief
State Historic Preservation Division

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Administrator
Archaeology Branch
State Historic Preservation Division
State of Hawaii
Department of Land and
Natural Resources
601 Kamokila Boulevard, Room 555
Kapolei, Hawaii 96707

SUBJECT: Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii (LOG NO. 2010.1223; DOC NO. 1009MD09

Dear Administrator:

Thank you for your Department's letter, dated September 29, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to your Department's comments.

An Archaeological Assessment Survey Report (AAR) for the proposed project prepared by Aki Sinoto Consulting was approved on February 7, 2011 by your office. This AAR and approval letter will also be included in the Draft Environmental Assessment (EA) for the proposed project.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

We appreciate the input provided by your Department and we will include a copy of your letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at (808)244-2015.

Sincerely,

LP

Leilani Pulmano
Program Manager

LP:yp
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Aki Sinoto, Aki Sinoto Consulting
F:\DATA\ABC Dev\Waikapu LI\SHPD.ecres.doc

SEP 14 2010

LINDA LINGLE
GOVERNOR

BRENNON T. MORIOKA
DIRECTOR

Deputy Directors
MICHAEL D. FORMBY
FRANCIS PAUL KEENO
JIRO A. SUMADA

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

IN REPLY REFER TO:

STP 8.0224

September 8, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Waikapu Light Industrial Project
Early Consultation for Draft Environmental Assessment (DEA)

Thank you for providing the subject project for the State Department of Transportation's (DOT) review and comments. DOT understands that ABC Development Company, LLC (ABC) proposes to develop seven light industrial lots and related improvements that will consist of site grading and grubbing, landscaping, installation of utilties and drainage system, and construction of roadways on an 8.5 acre site. The subject project is located along East Waiko Road. The project will access Honoapiilani Highway and Kuihelani Highway.

Given the location of the subject project, the State highways, Honoapiilani Highway and Kuihelani Highway will be impacted. DOT Highways Division is still conducting its review of the subject project and will provide additional comments as necessary. The following are interim comments for your follow-up.

1. DOT recommends that the DEA discuss and evaluate project impacts to the State highway (Honoapiilani Highway and Kuihelani Highway) facilities, such as, but not limited to: inconvenience to the public; types of construction vehicles and equipment used at the job site; construction hours.

2. Please note that the applicant should work with the DOT Highways Division, Maui District Office, regarding permits for oversized equipment/overweight loads and submission of construction plans for any work done within the State highway right-of-way, which must conform to nationally accepted design standards and completed at no cost to the State.

DOT appreciates the opportunity to provide initial comments on the subject project. When a Draft EA of the project is completed, DOT requests four (4) copies of the document be provided

for staff review and any necessary approvals. If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at telephone number (808) 587-2356.

Very truly yours,

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

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MISH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Glenn Okimoto, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

SUBJECT: Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii (STP 8.0224)

Dear Mr. Okimoto:

We received a letter, dated September 8, 2010, providing comments on the proposed Waikapu Light Industrial Project from your department. On behalf of the applicant, ABC Development Company, LLC (ABC), we offer the following information in response to the comments noted in the letter.

1. A traffic impact analysis report was prepared to address potential impacts associated with the project and included in the Draft Environmental Assessment. General construction impacts may include traffic congestion due to construction and temporary single-lane closures outside of the peak hours of traffic. As part of the design process, ABC will provide a Construction Management Plan that will discuss and make recommendations to lessen the impact of construction activities to the roadway network.

2. The applicant acknowledges that if oversized equipment/overweight loads are required for construction, they will work with the State Department of Transportation, Highway Division, Maui District Office for the required permits.

Four (4) copies of the Draft Environmental Assessment (EA) will be provided for your staff to review and provide comments.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

We appreciate the input provided by your department and will include a copy of the letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:yp
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
F:\DATA\ABC Dev\Waikapu LI\SDOT.ecres.doc

AUG 13 2010

CHARMAINE TAVARES
MAYOR

200 South High Street
Wailuku, Hawaii 96793-2155
Telephone (808) 270-7855
Fax (808) 270-7870
e-mail: mayors.office@mauicounty.gov

OFFICE OF THE MAYOR
County of Maui

August 12, 2010

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano, Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: WAIKAPU LIGHT INDUSTRIAL PROJECT, TMK (2)3-8-007:105

Dear Ms. Pulmano:

Thank you for the opportunity to comment on the proposed Waikapu Light Industrial project Draft Environmental Assessment. It is important that all projects constructed in Maui County comply with all State of Hawaii and County of Maui zoning ordinances including Community plans.

Sincerely,

CHARMAINE TAVARES
Mayor, County of Maui

CT:RS/ec

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Honorable Alan Arakawa, Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mayor Arakawa:

We received a letter from former Mayor Chamaine Tavares, dated August 12, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in her letter.

We acknowledge that the proposed project will need to comply with all State of Hawaii and County of Maui zoning ordinances including the Wailuku-Kahului Community Plan. To that end, the applicant will be requesting a State Land Use District Boundary Amendment to "Urban", Community Plan amendment to "Light Industrial", and County of Maui Change in Zoning to "M-1, Light Industrial".

We appreciate the input provided by the Mayor's office and will include a copy of the letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
F:\DATA\ABC Dev\Waikapu LI\Mayoreclres.doc

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

CHARMAINE TAVARES
MAYOR

AUG 26 2010

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

COUNTY OF MAUI

DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

313 MANEA PLACE • WAILUKU, HAWAII 96793
(808) 244-9161 • FAX (808) 244-1363

August 24, 2010

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High St. Sutie 104
Wailuku, HI 96793

RE: Proposed Waikapu Light Industrial Park TMK (2) 3-8-007: 105
Waikapu, Maui

Dear Leilani,

Thank you for the opportunity to comment on this proposed project. At this time, our office has no comment or objections to the CPA and CIZ.

Please be advised that a light-industrial-use area will be required, at a minimum, to have the following for fire protection and fire apparatus access:

1. Water supply for fire protection shall have a minimum flow of 2000 gallons per minute for a two hour duration with hydrant spacing a maximum of 250 feet between hydrants. Dead-ends shall have a hydrant within 125 ft.

2. Service roads to proposed properties shall have a clear width of 20 feet. Any dead-end roads or cul-de-sacs shall have a clear width of 32 ft., and if greater than 150 ft. in length, shall be provided with an approved fire apparatus turn-around. All turns and required turnarounds shall have an outside turning radius of 35 feet. The maximum grade for the service roads shall not be greater than 12%.

3. Once construction of buildings are planned, there shall be at least one hydrant within 300 feet of any building to be constructed.

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 23.

Sincerely,

Paul Haake
Captain, Fire Prevention Bureau
313 Manea Place
Wailuku, HI 96793

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Paul Haake, Captain
Department of Fire and Public Safety
Fire Prevention Bureau
County of Maui
313 Manea Place
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Captain Haake:

Thank you for your letter, dated August 24, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your letter.

We acknowledge the minimum requirements for light industrial use for fire protection and fire apparatus access. Development of the proposed project will satisfy the applicable requirements of the Fire Code.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

We appreciate the input provided by your organization and will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
F:\DATA\ABC Dev\Waikapu LI\Fireeclres.doc

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

CHARMAINE TAVARES
Mayor

LORI TSUHAKO
Director

JO-ANN T. RIDAO
Deputy Director

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

August 19, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the Proposed Waikapu Light Industrial Project at Waikapu, Maui, Hawaii. TMK (2)3-8-007:105

The Department has reviewed the request for Early Consultation for the above subject project. Based on our review, we have determined that the subject project is not subject to Chapter 2.96, Maui County Code. At the present time, the Department has no additional comments to offer.

Please call Mr. Buddy Almeida of our Housing Division at (808) 270-7356 if you have any questions.

Sincerely,

Wayde T. Oshiro

WAYDE T. OSHIRO
Housing Administrator

cc: Director of Housing and Human Concerns

AUG 24 2010

CHARMAINE TAVARES
Mayor

TAMARA HORCAJO
Director

ZACHARY Z. HELM
Deputy Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

August 18, 2010

Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

**SUBJECT: WAIKAPU LIGHT INDUSTRIAL PROJECT
EARLY CONSULTATION REQUEST
TMK: (2) 3-8-007:105**

Dear Ms. Pulmano:

Our department has reviewed the reference project Early Consultation Request and we have no comment or objection to this project at this time.

Should you have any questions or concerns, please feel free to contact me or Steve Grogan, Capital Improvements Project Coordinator, at 270-6158.

Sincerely,

TAMARA HORCAJO
Director of Parks & Recreation

c: Patrick Matsui, Chief of Planning and Development Division

TH:PTM:sg

S:\PLANNING\Steve G\No Objections -Waikapu Light Indus Project.doc

CHARMAINE TAVARES
Mayor
KATHLEEN ROSS AOKI
Director
ANN T. CUA
Deputy Director

SEP 0 8 2010

COUNTY OF MAUI

DEPARTMENT OF PLANNING

September 1, 2010

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: WAIKAPU LIGHT INDUSTRIAL PROJECT, TMK: (2) 3-8-007:105 (RFC 2010/0114)

The Planning Department (Department) has received your early consultation request letter dated August 4, 2010. At this time, the Department has no comment.

If you have any questions, please contact Staff Planner Paul Fasi at paul.fasi@mauicounty.gov or at 270-7814.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for KATHLEEN ROSS AOKI
Planning Director

xc: Aaron H. Shinmoto, PE, Planning Program Administrator (2)
Paul F. Fasi, Staff Planner
Project File
General File

KRA:CIY:PFF:sg
K:\WP_DOCS\PLANNING\RFC\2010\0114_Waikapu Light Industrial Project\Comment.doc

AUG 13 2010

POLICE DEPARTMENT

COUNTY OF MAUI

CHARMAINE TAVARES
MAYOR

OUR REFERENCE

YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

August 11, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Pulmano:

SUBJECT: Early Consultation Request for the Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105

This is in response to the request for comments on the above subject.

We have reviewed the information submitted for this project and have enclosed a copy of our comments. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

Assistant Chief Danny Matsuura
for: Gary A. Yabuta
Chief of Police

c: Kathleen Ross Aoki, Planning Department

COPY

TO : GARY YABUTA, CHIEF OF POLICE, COUNTY OF MAUI

VIA : CHANNELS AC D. Matsuura 8/11/10

FROM : JODY K.M. SINGSANK, CAPTAIN, WAILUKU PATROL DIVISION

SUBJECT : EARLY CONSULTATION REQUEST FOR THE PROPOSED WAIKAPU LIGHT INDUSTRIAL PROJECT

This communication is submitted as a response to an early consultation request by Leilani Pulmano, Project Manager with Munekiyo & Hiraga, Inc., for the following:

SUBJECT : PROPOSED WAIKAPU LIGHT INDUSTRIAL PROJECT

RESPONSE:

In review of the submitted documents, the concern from the police perspective is the impacts upon vehicular and pedestrian movement, as well as public safety. Upon commencement and duration of this project, normal vehicular movement in the area may be impacted on East Waiko Road, Kuihelani Highway and Honoapiilani Highway.

Flaggers or police officers should be required to help direct traffic through the project area, if necessary.

CONCLUSION:

There are no objections to the progression of this project at this time

Respectfully submitted,

Capt. J. Singsank 8467

Capt. Jody K.M. SINGSANK, E-8467
Wailuku Patrol
08/10/10 1545 hrs.

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Gary A. Yabuta, Chief
Maui Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Chief Yabuta:

Thank you for your memorandum, dated August 11, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your letter.

The Draft Environmental Assessment (EA) will assess traffic impacts due to the proposed project. We acknowledge that you have no objections to the progression of the proposed project at this time.

We appreciate the input provided by your organization and will include a copy of your letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
F:\DATA\ABC Dev\Waikapu LI\MPDeclres.doc

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

SEP 02 2010

CHARMAINE TAVARES
Mayor

MILTON M. ARAKAWA, A.I.C.P.
Director

MICHAEL M. MIYAMOTO
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

August 25, 2010

Ms. Leilani Pulmano, Project Manager
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: EARLY CONSULTATION REQUEST FOR THE PROPOSED WAIKAPU LIGHT INDUSTRIAL PROJECT; TMK: (2) 3-8-007:105

We reviewed the subject request and have no comments to offer at this time.

Please call Michael Miyamoto at 270-7845 if you have any questions regarding this letter.

Sincerely,

MILTON M. ARAKAWA, A.I.C.P.
Director of Public Works

MMA:MMM:ls
xc: Highways Division
Engineering Division
S:\LUCA\CZM\38007105_prop_waikapu_light_industrial_ec_38007105_ls.wpd

CHARMAINE TAVARES
Mayor

CHERYL K. OKUMA, Esq.
Director

GREGG KRESGE
Deputy Director

AUG 17 2010

TRACY TAKAMINE, P.E.
Solid Waste Division

DAVID TAYLOR, P.E.
Wastewater Reclamation
Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2200 MAIN STREET, SUITE 100
WAILUKU, MAUI, HAWAII 96793

August 12, 2010

Ms. Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: **WAIKAPU LIGHT INDUSTRIAL PROJECT**
EARLY CONSULTATION
TMK (2) 3-8-007:105, WAIKAPU

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. Include plans for solid waste disposal, recycling, composting.

2. Wastewater Reclamation Division (WWRD) comments:

   a. Please advise the WWRD on how the wastewater discharge for the property will be discharged. If a connection to the County's wastewater system is proposed by the developer and approved by WWRD, then comments b. thru j. below shall apply. Although wastewater system capacity is currently available as of 8/12/2010, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
   b. Wastewater contribution calculations are required before building permit is issued.
   c. Developer shall pay assessment fees for treatment plant expansion costs in accordance with ordinance setting forth such fees. The property is located in the Wailuku Sewer Service Area.
   d. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.

e. Recommend that plans should show the installation of a single service lateral and advanced riser for each lot.
f. Plans shall show a transition sewer manhole prior to connection to the County's wastewater system.
g. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
h. Commercial kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens etc.)
i. Non-contact cooling water and condensate should not drain to the wastewater system.
j. The proposed wastewater system for the subject project shall remain privately owned and maintained.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

CHERYL K. OKUMA
Director of Environmental Management

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Kyle Ginoza, Director
Department of Environmental Management
County of Maui
2200 Main Street, Suite 100
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Ginoza:

Thank you for your Department's letter, dated August 12, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC, we offer the following information in response to the comments noted in your Department's letter.

1. Solid Waste Division Comments

a. To clarify, the proposed project will offer seven (7) light industrial lots under a condominium property regime. Each individual unit owner will be responsible for providing solid waste disposal, recycling, and composting measures.

2. Wastewater Reclamation Division (WWRD) Comments

a. ABC would like to connect to the County's wastewater system, recognizing that the WWRD cannot ensure wastewater system capacity until building permit issuance.

b. Each individual lot owner will submit wastewater contribution calculations as part of their building permit package, as applicable.

c. The applicant will pay the corresponding assessment fees for the Wailuku Sewer Service Area, as applicable.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

d. The applicant will fund their pro-rata share of any necessary off-site improvements to collection system and wastewater pump stations, as applicable.

e. Plans will show installation of a single service lateral and advance riser for each lot, as applicable.

f. Plans will show a transition sewer manhole prior to connection to the County's wastewater system, as applicable.

g. Plans will indicate the ownership of each easement in favor of which party. It is understood that the County will not accept sewer easements that traverse private property.

h. Commercial kitchen facilities will comply with pre-treatment requirements, as applicable.

i. Non-contact cooling water and condensate will not drain to the wastewater system.

j. The wastewater system within the proposed project site will remain privately owned and maintained.

We appreciate the input provided by your department and will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
F:\DATA\ABC Dev\Waikapu LI\DEMecIres.doc

AUG 09 2010

CHARMAINE TAVARES
MAYOR

DON A. MEDEIROS
Director
WAYNE A. BOTEILHO
Deputy Director
Telephone (808) 270-7511
Facsimile (808) 270-7505

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

August 5, 2010

Ms. Leilani Pulmano
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: Proposed Waikapu Light Industrial Project

Dear Ms. Pulmano,

Thank you for the opportunity to comment on this project. We have no comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

Don Medeiros
Director

SEP 07 2010

CHARMAINE TAVARES
Mayor

JEFFREY K. ENG
Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

September 1, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo and Hiraga, Inc.
300 High Street, Suite 104
Wailuku, Hawaii 96793

Re: Project Name: Waikapu Light Industrial Project Early EA Consultation Letter

Dear Ms. Pulmano:

Thank you for the opportunity for early consultation on this Environmental Assessment (EA).

Source Availability and Consumption
The project area is served by the Central Maui System. The main sources of water for this system are the designated Iao aquifer, Waihee aquifer, the Iao Tunnel and the Iao Waikapu Ditch in the designated Na Wai Eha. New source development projects include Waikapu South Well and upgrades to the Iao Water Treatment Facility. There is currently no additional source available according to system standards on the Central Maui System. The Department may delay issuance of meters until new sources are on line.

System Infrastructure
An 18-inch waterline runs along the eastern boundary of the project site. A 12" line and a 1 ½ -inch line are located approximately 500 feet to the west, and a 1 ½ -inch line is located approximately 500 feet to the west. The nearest hydrants are approximately 230 feet to the west (56) and 390 feet to the west (57). System improvements will be determined in the subdivision process. Required fire flow for light industrial subdivisions is 2000 gpm for 2 hours duration at 250 feet spacing.

Pollution Prevention
The proposed project lies within 185 feet of the modeled wellhead protection area of three municipal wells. The EA should include Best Management Practices (BMPs) to be implemented for proposed industrial uses. For your reference, please find attached "BMPs for Industrial and Commercial Facilities."

Conservation And Landscaping
The EA should discuss the project's landscaping and irrigation plans, if applicable. To alleviate demand on the Central Maui system, we suggest that the following conservation measures be included in the EA and implement in project design and construction:

1. Dust Control: Reclaimed water for dust control is available from the Kihei and Kahului sewage treatment plants, and it should be considered as an alternative source of water for dust control during construction.
2. Use climate-adapted native plants where applicable: Please consider the use of native Hawaiian plants adapted to the natural rainfall of the area for decorative borders and other landscape features. Native plants adapted to the natural rainfall of the area conserve water and protect the watershed from degradation due to the spread of invasive alien species. The subject project borders Plant Zones 3 and 4. We have attached a native plant brochure to assist with appropriate plant selection.
3. Prevent Over Watering:
   a. Equip all irrigated areas with smart controllers capable of self-adjusting to account for moisture conditions.
   b. Arrange irrigation valves and circuits such that plants with different water requirements are watered separately and appropriately (hydrozones).
   c. Provide rain sensors and shut-offs on all automated irrigation controllers.
   d. If weather or moisture sensing controllers are not used, at the very minimum check and reset controllers at least once a month to reflect the monthly changes in evapo-transpiration rates at the site.

For your reference, please find attached "A Checklist of Water Conservation Ideas for Industrial and Large Landscapes."

Again, thank you for the opportunity to provide input. Should you have any questions, please contact our Water Resources and Planning Division at 244-8550.

Sincerely,

Jeffrey K. Eng, Director
Department of Water Supply
bab

cc: engineering division

Attachments:

1. BMPs for Industrial and Commercial Facilities
2. A Checklist of Water Conservation Ideas for Industrial and Large Landscapes
3. Plant Brochure: "Saving Water in the Yard"

September 1999

Alameda Countywide
Clean Water Program
A Consortium of Local Agencies

Industrial and Commercial Facilities

In response to recent Federal and State water quality regulations and requirements, municipalities in Alameda County have joined to form the Alameda Countywide Clean Water Program (ACCWP).

The ACCWP *consists of the Cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, Union City, Alameda County, the Alameda County Flood Control and Water Conservation District, and Zone 7 of the District.*

The Goal of the ACCWP *is to control discharges of pollutants to municipal storm drain systems (and local creeks and the San Francisco Bay). The ACCWP encourages using Best Management Practices to effectively eliminate illegal discharges and connections.*

The Storm Drain System *was built to collect and transport rain to prevent flooding in urban areas. Anything that flows or is discharged into the storm drain system goes directly into local creeks or San Francisco Bay without any treatment.*

The Sanitary Sewer System *collects and transports sanitary wastes from interior building plumbing systems to the wastewater treatment plant where the wastewater is treated.*

Best Management Practices (BMPs) *are methods and practices such as good housekeeping, spill prevention, or treatment measures to prevent or minimize pollutant discharges to municipal storm drain systems.*

Illegal Discharges or Illicit Connections *discharge non-storm water to municipal storm drain systems and contribute to water pollution.*

Urban Runoff *is rain and any other water that passes through and out of developed areas (streets, parking lots, roof tops, etc.) into the storm drain system and eventually to creeks and other waters.*

Keeping pollutants out of our storm drain system protects our local creeks, reservoirs, and the San Francisco Bay. Materials swept, blown, or washed into the storm drains end up in these open waters where they degrade water quality and harm aquatic life. In general, wastewater discharged to the storm drains is illegal.

In addition to reviewing their own practices, municipalities participating in the Alameda Countywide Clean Water Program (ACCWP) have instituted a business education campaign and inspection program. Inspectors work with contractors and businesses to identify and control potential discharge of pollutants to the storm drain system. *Property and business owners are responsible for their contractors' practices.*

Stormwater runoff from industrial and commercial businesses is one of the major contributors to stormwater pollution. Automotive fluids, paints, solvents, food wastes, grease, pesticides, herbicides, litter, cement and yard wastes are some of the pollutants that get into the storm drain system.

All businesses can conduct common-sense practices that require modest changes to routine operations or maintenance activities to reduce or eliminate their contribution to stormwater pollution. The table on the reverse side of this page identifies activities of industrial and commercial businesses which contribute to urban runoff pollution and provides alternatives to control or eliminate these discharges.

If you need additional information concerning stormwater pollution and its prevention contact your local program representatives at **1-888-BAY-WISE**.

Best Management Practices

Follow these BMPs to control pollutant discharges. The objectives are: 1) to keep pollutants from contacting rain, and 2) to keep pollutants from being dumped or poured into the storm drains. The goal is "only rain in the storm drain."

Activities	Best Management Practices
Good Housekeeping Practices	• Keep work areas clean. • Sweep parking lots and pick up litter regularly.
Process/Equipment Areas	• Identify all areas with outdoor equipment and storage of raw or waste materials that are exposed to stormwater and have potential to discharge pollutants to the storm drain system. When possible, bring work process areas, equipment, and transfer stations inside a building or under a roof. • Inspect equipment and vehicles often for leaks. Follow preventive maintenance practices. • Use drip trays and splash guards around and under vehicles and process equipment to contain leaks. • Eliminate illegal connections to the storm drain system.
Washing	• All wash water with detergent must be collected and discharged to the sanitary sewer. • Wash equipment/vehicles in a designated and/or covered area where the wash water is collected to be recycled or discharged to the sanitary sewer. Contact your local wastewater treatment agency. • If wet cleaning is required for small spills, use a 3-step process; 1) soak up with rags, 2) use absorbents, and 3) mop and collect water to dispose of in sink or sanitary sewer drain. Contact your local wastewater treatment agency.
Storage*	• Store materials such as grease, paints, detergents, metals, and raw materials in appropriate, labeled containers. • Store stock-piled materials and equipment inside a building or "doghouse," under a roof, or covered with a tarp to prevent contact with rain. Contact your local hazardous materials/fire authorities and building department to determine if specific requirements on storage sheds apply. • Use secondary containment measures for liquids stored outside and for liquids stored inside near a storm drain.
Material Use/ Waste Disposal*	• Handle materials carefully to avoid spills. Clean up any spills immediately. • Establish a clean-up plan for minor and major spills, post it in the work area, and have clean-up kits in well-marked, accessible locations. • Repair dumpsters that leak. Keep dumpster lids closed. • Properly dispose or recycle all wastes. Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste. • When ordering materials, practice source reduction and minimize waste. Do not order more than can be used within the shelf life of the product.
Training	• Train and assign responsibility to specific employees on BMPs, good housekeeping practices, and what to do in the event of a spill. • Inform your customers of the proper methods for disposing of fluids and wastes on your property. • Label storm drain inlets so that employees and customers do not dispose of waste there.

*Hazardous Materials must comply with hazardous materials storage and disposal requirements.

A Checklist of Water Conservation Ideas For

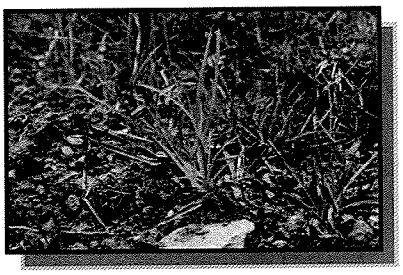
This checklist provides water conservation tips successfully implemented by industrial and commercial users. This list has been revised from the original copy first published and distributed by the Los Angeles Department of Water and Power and the Water Efficiency Manual by the North Carolina Department of Environment and Natural Resources.

START A WATER CONSERVATION PROGRAM

- Increase employee awareness of water conservation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Seek employee suggestions on water conservation; put suggestion boxes in prominent areas.
- Determine the quantity and purpose of water being used.
- Determine other methods of water conservation.
- Conduct contests for employees (e.g., posters, slogans, or conservation ideas).

PLANNING AND DESIGN

- Consider the following:
  - Physical conditions (drainage, soil type, sun/shade, etc.) and the use of the site (foot traffic, recreation, viewing, etc.)
  - Creating shade areas, which can be 20 degrees cooler than non-shaded areas, decreasing evaporation.
  - Grass areas only where needed; avoid small areas under 10 feet wide.
  - Permeable materials such as porous concrete or permeable paving methods.



  - Grading and directing surface run-off and rainfall gutters to landscaped areas as opposed to drainageways that exit the property.
- Incorporate high water demanding plants at the bottom of slopes, and maintain the use of existing trees, plants, and wildlife in the area during planning.
- Minimize the use of impermeable surfaces to lessen runoff and resulting stormwater pollution.
- Identify water source points.
- Develop a schematic of all water entry points (know where your faucets, time clocks, solenoids, booster pumps, sprinklers and bubblers are located).

- Identify capacity of each water-carrying unit and frequency of use.
- Determine specific use for each entry source.

ANALYZE AND IMPROVE SOIL CONDITIONS

- Test the soil quality, nutrients and absorptive capacity, and then select plants based on findings. Adjust the pH level if necessary.
- Use organic matter (compost, mulch or manure) to increase the soil's water holding capacity. This helps improve water distribution and lowers levels of evaporation.
- When improving the soil of a given area, remember to treat a larger area around the planting to allow ample space for root systems.
- Prevent heavy construction equipment from compacting soil in areas around trees or other sensitive habitats.

PLANT SELECTION

- Choose native, climate-appropriate species.
- Consider plants' water demand, pest tolerance, soil nutrient and drainage requirements.

INTERIOR AREAS

- Discontinue continuous flow.
- Use ponded water where available.
- Adjust flows to reduce discharge of water.
- Install water-saving devices to decrease water consumption – restrooms (toilet dams and flappers), faucets (aerators), cooling systems.

  - Retrofit toilets with high efficiency models that use 1.28 gallons per flush or less.
  - Retrofit urinals with high efficiency models that use 0.5 gallons per flush.
  - Install showerheads with a flow rate of 1.5 gpm at 60 psi or less in all units.
  - Retrofit bathroom sink faucets with fixtures that do not exceed 1 gpm at 60 psi.
- Use recycling systems for chillers and cooling towers.
- Consider installing energy-and-water-efficient air conditioning equipment.

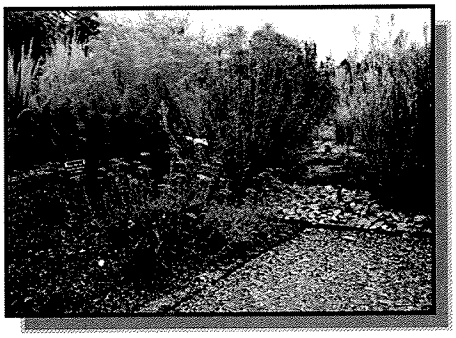
MAINTENANCE PROCEDURES

- Sweep materials from floor instead of washing down whenever possible.
- Instruct clean-up crews to use less water where appropriate.
- Check water supply system for leaks.
- Repair dripping faucets and continuously-running or leaking toilets.

DESIGN CRITERIA FOR TURF AND LANDSCAPE AREAS

- Contact the Department of Water Resources or your local water supplier about possible landscape water auditor classes for managers.
- Hire a landscape architect with water conservation and xeriscape experience.
- Use turf only where actually necessary: Immediate picnic areas/outside lunch areas and gold course target areas (greens, tees, landing areas).
- Turfgrass should be cut to the maximum recommended height for its type (generally a minimum of two inches to a maximum of four inches) for most efficient water use.
- Use only low-water use plant material in non-turf areas.

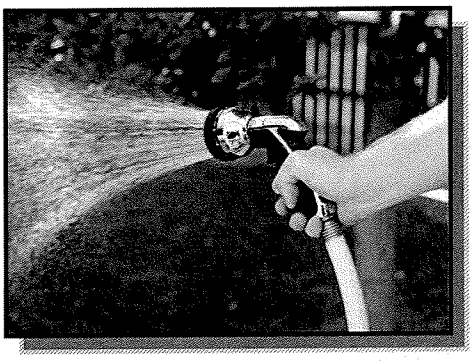
- Drip irrigation and microsprays place water at the base of the plant. This reduces evaporation and saves water by not soaking the entire ground surface. This works for trees, shrubs, and groundcovers.



- Use automatic irrigation systems monitored by moisture probes (i.e. tensiometers), and rain shut-off devices to cut power off during rain.
- Design dual watering systems with sprinklers for turf and low-volume irrigation for plants, trees, and shrubs. Operate sprinkler system before sunrise and after sunset. Amount of irrigation can be determined by the evapotranspiration rate, which DWR can help you determine.
- Use properly-treated waste water for irrigation where available.

EXTERIOR AREAS

- Regular aeration of clay soils will improve water holding capabilities and prevent runoff.
- Discontinue using water to clean sidewalks, tennis courts, pool decks, driveways, and parking lots.
- Make sure irrigation water does not run onto streets or into alleys. Adjust sprinklers to water only plants and not sidewalks or roads.
- Use the same size nozzle when replacement is needed. Sprinklers should be replaced with the same brand of sprinklers. Spray heads are aligned with grade.



- Replace worn spray nozzles.
- Regulate pressure properly for system demands.
- Make sure rotors or spray heads are mounted correctly. Replace with proper unit for the job.
- Post a current controller schedule inside the door of the controller.
- Check for leaking valves.
- Adjust the operating time (runtimes) of the sprinklers to meet appropriate seasonal or monthly requirements.
- Check plant leaves and take soil samples to confirm proper system functioning.
- Look into alternative sources for irrigation water (i.e. the use of wells as opposed to city water, water reuse operations from air conditioning condensate, storm water retention ponds, or cisterns, non-contact cooling water).
- Use dedicated water meters to monitor landscaping water use.
- Have a catchment/distribution uniformity test performed on-site to determine how evenly water is applied when sprinklers are in use.

For more information, contact:
Maui County Department of Water Supply
Water Resources and Planning Division
59 Kanoa Street Wailuku, HI 96793
Telephone: (808) 244-8550
FAX: (808) 244-6701

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

David Taylor, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Taylor:

Thank you for your Department's letter, dated September 1, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC (ABC), we offer the following information in response to the comments noted in your Department's letter.

Source Availability and Consumption

We acknowledge that the system standards on the Central Maui System indicate that there is no additional source available to accommodate new customers. ABC will be coordinating with your department to identify alternative solutions for water source availability.

System Infrastructure

Thank you for the information on the Central Maui Water System infrastructure near the project area. We acknowledge that system improvements will be determined during the building permit review process. We further acknowledge the fire flow requirements for light industrial subdivisions.

Pollution Prevention

The Draft Environmental Assessment (EA) will include Best Management Practices (BMPs) to be implemented for the proposed project.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

Conservation and Landscaping

To clarify, the proposed project will offer seven (7) light industrial lots under a condominium property regime. Individual purchasers of the units will be encouraged to develop conservation-minded landscape plans for their respective unit areas.

We appreciate the input provided by your Department and will include a copy of the letter in the Draft EA for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
F:\DATA\ABC Dev\Waikapu LI\DWSeclres.doc

AUG 27 2010

Council Chair
Danny A. Mateo

Vice-Chair
Michael J. Molina

Council Members
Gladys C. Baisa
Jo Anne Johnson
Sol P. Kaho'ohalahala
Bill Kauakea Medeiros
Wayne K. Nishiki
Joseph Pontanilla
Michael P. Victorino

Director of Council Services
Ken Fukuoka

COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.mauicounty.gov/council

August 25, 2010

Munekiyo and Hiraga, Inc.
Attention:Leilani Pulmano, Project Manager
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation Request for the Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Ms. Pulmano:

Thank you for the opportunity to provide early review and comments for the Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

After review of the information presented, I am submitting the following comments:

1. Provide address to water source and how water requirements will be fulfilled.

2. What is the timeline for the project.

3. State Department of Transportation/STIP Program indicates improvements to Waiko Road in Fiscal Year 2013. What are the project's road improvement plans for the old landfill road and East Waiko Road?

Thank you again for this opportunity to review and provide comments.

Sincerely,

Joseph Pontanilla

JOSEPH PONTANILLA,
COUNCIL MEMBER

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Councilmember Don Guzman
Maui County Council
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Councilmember Guzman:

We received the attached letter from former Councilmember Pontanilla, dated August 25, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC (ABC), we offer the following information in response to the comments noted in the letter.

1. Department of Water Supply (DWS) noted that the system standards on the Central Maui System indicate that there is no additional source available to accommodate new customers. ABC will continue its coordination with the DWS to identify alternative solutions for water source availability.

2. The timeline for the proposed project is as follows:

Entitlement Permitting and Processing:	anticipated completion in Spring 2014
Site Design and Planning:	anticipated completion in mid-2014
Construction:	project site infrastructure and grading anticipated to start late 2014

3. ABC and their design consultant will be coordinating with Department of Public Works to determine the required road improvements that will be necessary on East Waiko Road fronting the project site. Notwithstanding further discussions, the northern side of East Waiko Road that abuts the project site will be improved to include pavement widening, installation of curbs and gutters, and a 10-feet

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

shoulder area. The shoulder area will consist of a 6-foot wide concrete sidewalk and a 4-foot wide grass strip to match the improvements of the adjacent Waiko Baseyard.

The old landfill road is not within or adjacent to the project. There are no plans by the applicant to complete road improvements to the old landfill road and East Waiko Road.

We appreciate Councilmember Pontanilla's input and will include a copy of his letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:lh
Enclosure
cc: Albert Kanno, ABC Development Company, LLC (w/out enclosure)
Carol Matsunaga, Realty Factors (w/out enclosure)
Kirk Tanaka, R.T. Tanaka Engineering, Inc. (w/out enclosure)
K:\DATA\ABC Dev\Waikapu LI\Guzmaneclres.doc

AUG 27 2010

Council Chair
Danny A. Mateo

Vice-Chair
Michael J. Molina

Council Members
Gladys C. Baisa
Jo Anne Johnson
Sol P. Kaho'ohalahala
Bill Kauakea Medeiros
Wayne K. Nishiki
Joseph Pontanilla
Michael P. Victorino

Director of Council Services
Ken Fukuoka

COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.mauicounty.gov/council

August 25, 2010

Munekiyo and Hiraga, Inc.
Attention:Leilani Pulmano, Project Manager
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation Request for the Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Ms. Pulmano:

Thank you for the opportunity to provide early review and comments for the Proposed Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

After review of the information presented, I am submitting the following comments:

1. Provide address to water source and how water requirements will be fulfilled.

2. What is the timeline for the project.

3. State Department of Transportation/STIP Program indicates improvements to Waiko Road in Fiscal Year 2013. What are the project's road improvement plans for the old landfill road and East Waiko Road?

Thank you again for this opportunity to review and provide comments.

Sincerely,

Joseph Pontanilla

JOSEPH PONTANILLA,
COUNCIL MEMBER

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

AUG 10 2010

August 9, 2010

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii, 96793

Subject: Early Consultation Request for the Proposed Waikapu Light Industrial Project
Tax Map Key: (2) 3-8-007:105
Off East Waiko Road
Waikapu, Maui, Hawaii

Dear Ms. Pulmano,

Thank you for allowing us to comment on the Early Consultation for the subject project.

In reviewing our records and the information received, Maui Electric Company has no objection to the subject project at this time. We highly encourage the customer to submit survey and civil plans to us as soon as practical to address any possible relocations or conversions of our facilities.

Should you have any questions or concerns, please call me at 871-2341.

Sincerely,

Kyle Tamori
Staff Engineer

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 16, 2010

Kyle Tamori, Staff Director
Maui Electric Company, Ltd.
210 West Kamehameha Avenue
P.O. Box 398
Kahului, Hawaii 96733

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Tamori:

Thank you for your letter, dated August 9, 2010, providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC (ABC), we offer the following information in response to the comments noted in your letter.

The applicant will submit a survey and civil plans to Maui Electric Company, Ltd. during the engineering phase of the proposed development.

We appreciate the input provided by your organization and will include a copy of your letter in the Draft Environmental Assessment for the project. Should you have any questions or further comments, please contact me at 244-2015.

Very truly yours,

Leilani Pulmano
Project Manager

LP:lh
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
F:\DATA\ABC Dev\Waikapu LI\MECOeclres.doc

OCT 04 2010

Waikapū Community Association

To enhance the quality of life for the residents of Waikapū through the preservation and appreciation of its history, natural environment, and values of its rural tradition.

Ms. Leilani Pulmano,
Project Manager
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, HI 96793

September 29, 2010

SUBJECT: Early Consultation Request for the proposed Waikapū Light Industrial Project at TMK (2)3-8-007:105, Waikapū, Maui, Hawaii

Dear Ms. Pulmano,

The Waikapū Community Association appreciates this opportunity to provide early comments on this proposed Project.

The WCA Development Monitoring Committee met on September 22, 2010 to discuss the materials provided in your letter of August 4, 2010. We hope to be able to respond faster in the future, now that you have our current address.

The Committee has the following comments, based on the Waikapū Community Association's Statement of Values (attached):

1) At the intersections of the proposed new roadways within and to the east of the proposed lots, stop signs should provide the right of way to traffic on Waiko Road.
2) The roadways proposed in this Project should be provided with landscaping of drought resistant groundcover and suitable shade providing trees, preferably using species native to the Hawaii.
3) The roadways should be designed to include sidewalks on both sides.
4) Structures to be constructed in the Project, should reflect a sense of place in their architectural style, respectful of and appropriate for the rural and residential area of Waikapū, to avoid the appearance of boxy concrete blocks, such as are being placed in nearby developments of a similar nature.
5) Noise limitations, respectful of and appropriate for the rural and residential area of Waikapū, should be included as conditions of approval for the entitlements requested.

Waikapū Community Association
P.O. Box 3046, Wailuku, Hawaii 96793 WaikapuCA@hawaii.rr.com

6) Height limitations, respectful of and appropriate for the rural and residential area of Waikapū, should be included as conditions of approval for the entitlements requested.
7) Structures in the project should be placed on the respective lots in such a way, as to permit mauka to makai view corridors, to maintain the open character of the rural and residential area of Waikapū.
8) The Committee requests a copy of the cleanup report submitted in connection with the efforts to restore the subject property to the requirements of the State Department of Health.

The Waikapū Community Association looks forward to continuing dialogue regarding this project. Please provide us with a copy of the Draft Environmental Assessment for additional review. The Development Monitoring Committee requests to be informed of any meetings regarding this project, scheduled before the various approving bodies in the current land use entitlements phase.

Thank you again for this opportunity to provide early comments on this project.

Sincerely,

Jacob W. Verkerke
Waikapū Community Association Chair

OCT 04 2010

Waikapū Community Association

To enhance the quality of life for the residents of Waikapū through the preservation and appreciation of its history, natural environment, and values of its rural tradition.

Ms. Leilani Pulmano,
Project Manager
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, HI 96793

September 29, 2010

SUBJECT: Early Consultation Request for the proposed Waikapū Light Industrial Project at TMK (2)3-8-007:105, Waikapū, Maui, Hawaii

Dear Ms. Pulmano,

The Waikapū Community Association appreciates this opportunity to provide early comments on this proposed Project.

The WCA Development Monitoring Committee met on September 22, 2010 to discuss the materials provided in your letter of August 4, 2010. We hope to be able to respond faster in the future, now that you have our current address.

The Committee has the following comments, based on the Waikapū Community Association's Statement of Values (attached):

1) At the intersections of the proposed new roadways within and to the east of the proposed lots, stop signs should provide the right of way to traffic on Waiko Road.
2) The roadways proposed in this Project should be provided with landscaping of drought resistant groundcover and suitable shade providing trees, preferably using species native to the Hawaii.
3) The roadways should be designed to include sidewalks on both sides.
4) Structures to be constructed in the Project, should reflect a sense of place in their architectural style, respectful of and appropriate for the rural and residential area of Waikapū, to avoid the appearance of boxy concrete blocks, such as are being placed in nearby developments of a similar nature.
5) Noise limitations, respectful of and appropriate for the rural and residential area of Waikapū, should be included as conditions of approval for the entitlements requested.

Waikapū Community Association
P.O. Box 3046, Wailuku, Hawaii 96793 WaikapuCA@hawaii.rr.com

6) Height limitations, respectful of and appropriate for the rural and residential area of Waikapū, should be included as conditions of approval for the entitlements requested.
7) Structures in the project should be placed on the respective lots in such a way, as to permit mauka to makai view corridors, to maintain the open character of the rural and residential area of Waikapū.
8) The Committee requests a copy of the cleanup report submitted in connection with the efforts to restore the subject property to the requirements of the State Department of Health.

The Waikapū Community Association looks forward to continuing dialogue regarding this project. Please provide us with a copy of the Draft Environmental Assessment for additional review. The Development Monitoring Committee requests to be informed of any meetings regarding this project, scheduled before the various approving bodies in the current land use entitlements phase.

Thank you again for this opportunity to provide early comments on this project.

Sincerely,

Jacob W. Verkerke
Waikapū Community Association Chair

Waikapū Community Association
P.O. Box 3046, Wailuku, Hawaii 96793 WaikapuCA@hawaii.rr.com

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

August 23, 2013

Randy Piltz, Chair
Waikapu Community Association
P.O. Box 3046
Wailuku, Hawaii 96793

SUBJECT: Waikapu Light Industrial Project at TMK (2) 3-8-007:105, Waikapu, Maui, Hawaii

Dear Mr. Piltz:

We received the attached letter, dated September 29, 2010, from the Waikapu Community Association providing comments on the proposed Waikapu Light Industrial Project. On behalf of the applicant, ABC Development Company, LLC (ABC), we offer the following information in response to these comments.

1. Stop signs posted at the intersections of the project access road and entry driveways will provide the right-of-way to traffic traveling on East Waiko Road.

2. Roadway improvements will include the provision of a 10-foot shoulder area along the northern side of East Waiko Road. This shoulder area will include a 6-foot wide sidewalk and 4-foot grassed strip to match the frontage of the adjacent Waiko Baseyard. Within the project site, shade trees will be planted within parking areas, as per the provisions of the Maui County Code. To the extent practicable, native trees and plants will be utilized in the landscaped areas.

3. As mentioned above, the northern side of East Waiko Road will be improved with a 6-foot sidewalk and 4-foot grassed area, consistent with the adjacent Waiko Baseyard subdivision.

4. We appreciate the comment that the structures within the project should be respectful of the rural, residential character of Waikapu. To clarify, the proposed project is limited to site work and related improvements towards the creation of seven (7) light industrial lots in a condominium regime. The structures built within the project site will be designed and constructed by the future unit owners to suit the needs of their respective light industrial operations. By virtue of these uses, structures may include prefabricated metal buildings, tilt-up concrete buildings, and the like.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
PH: (808)244-2015 FAX: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: (808)983-1233
WWW.MHPLANNING.COM

excellence in process management

Printed on Recycled Paper

5. As stated by Section 19.24.010, Maui County Code, the "M-1, Light Industrial" district is mainly intended to contain warehousing and distribution types of uses. In this context, noise generated by the proposed project would be associated with delivery vehicles, related machinery, and other vehicular traffic. Noise generated by these sources are not anticipated to be significant, nor are they anticipated to impact the ambient noise conditions of the residential areas located to the west of the project. In addition, noise levels will be maintained in compliance with the State Department of Health (DOH) standards for community noise control.

6. The height limit for the Light Industrial zoning district, as set forth by the Maui County Code, is four (4) stories or 48 feet. Meanwhile, it is noted that there is a substantial grade difference of 10 to 30 feet between the project site and the adjacent Waiko Baseyard, which is immediately west of the project site.

7. We recognize the desire to maintain mauka to makai view corridors and the open character of the rural and residential area of Waikapu. In comparison to the previous use of the project site which created substantial piles of approximately 40,000 pounds of scrap metal debris, the proposed project is seen as an improvement to the visual resources of the area on the northern side of East Waiko Road. Landscaping within the site and landscaping along the East Waiko Road frontage will soften the appearance of the built environment. While the structures erected within the project site will be visible from East Waiko Road, views of the West Maui Mountains, Haleakala, South Maui and Maalaea will not be affected given the projects limited number of units.

8. A copy of the site clean up and restoration plan was completed in coordination with the DOH. A copy of the plan will be provided under separate cover.

We appreciate the input provided by your organization and we will include a copy of your letter in the Draft Environmental Assessment (EA) for the project. As requested, a copy of the Draft EA will be provided for your review. Additionally, your organization will be notified of the public hearings held for each of the requested land use entitlements. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Program Manager

LP:yp
cc: Albert Kanno, ABC Development Company, LLC
Carol Matsunaga, Realty Factors
Ian Sandison, Esq., Carlsmith Ball LLP
F:\DATA\ABC Dev\Waikapu LI\WCA.ecres.doc

IX. REFERENCES

IX. REFERENCES

Bureau Veritas, 2010a. Site Investigation/Site Closure and Restoration Plan, Former Maui Scrap Metal Company, Inc., Waikapu, Maui, Hawaii, September 3, 2010.

Bureau Veritas, 2010b. Analysis of Remedial Alternatives (Revised), Former Maui Scrap Metal Company, Inc., Waikapu, Maui, Hawaii, November 29, 2010.

County of Maui, 2030 General Plan, Countywide Policy Plan, March 2010.

County of Maui, Office of Economic Development, Maui County Data Book 2011, March 2012.

County of Maui, Planning Department, Socio-Economic Forecast: The Economic Projections for Maui County General Plan 2030, June 2006.

County of Maui, Wailuku-Kahului Community Plan, December 1987.

Federal Emergency Management Agency, Flood Insurance Rate Map, Community Panel No. 150003 0393E, September 2009.

Hawaii Cooperative Park Unit, Western Region Natural Resources and Research Division, National Park Service, Hawaii Stream Assessment, A Preliminary Appraisal of Hawaii's Stream Resources, prepared for Commission on Water Management, State of Hawaii, December 1990.

Hobdy, Robert, Biological Resources Survey for the Consolidated Baseyards LLC, March 2004.

Scorecard, *Criteria Air Pollutant Report: Maui County, HI,* Available at http://www.scorecard.org/env-releases/cap/county.tel?fips_County_Code=15009#air_rankings. Accessed February 2013 .

State of Hawaii, Department of Health (HDOH), Letter from Lawrence K. Lau, Deputy Director, Environmental Health Administration to Mr. Ian Sandison, Carlsmith Ball LLP re: the Site Investigation/Site Closure and Restoration Plan for Maui Scrap Metal. November 30, 2010.

State of Hawaii, Department of Labor and Industrial Relations (DLIR), http://www.hiwi.org, April 2013.

State of Hawaii, Land Use Commission, Title 15, Chapter 15, Hawaii Administrative Rules, 1997, as amended 2000.

State of Hawaii, Office of State Planning, The Hawaii State Plan, 1991.

University of Hawaii (UH), Land Study Bureau, Detailed Land Classification Island of Maui, May 1967.

University of Hawaii at Hilo, Department of Geography, Atlas of Hawaii, Third Edition, 1998.

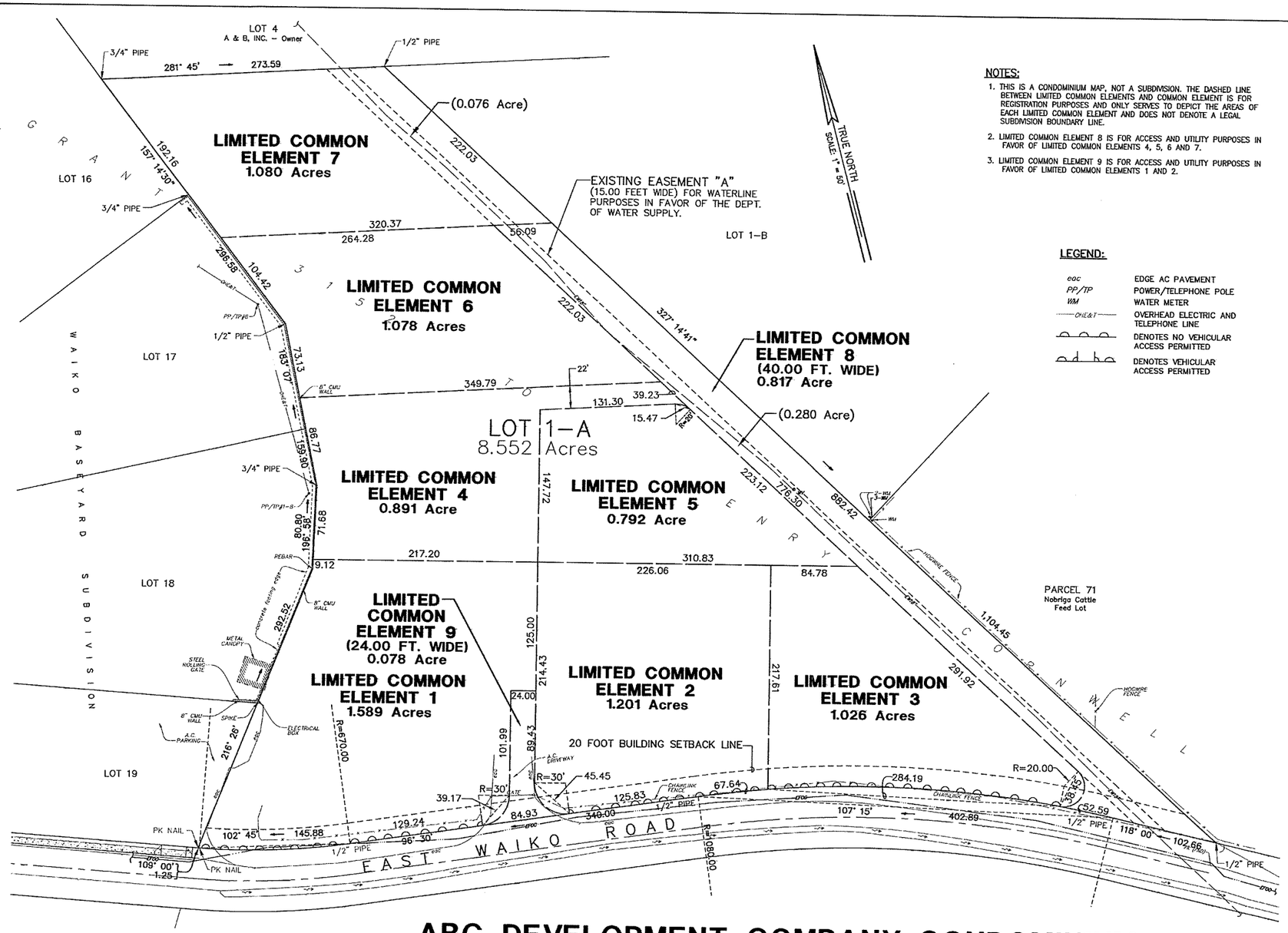
U.S. Census Bureau, 2000 Census Summary File 1, accessed March 2010.

U.S. Census Bureau, 2010 Redistricting Data, accessed March 2010.

U.S. Department of Agriculture (USDA), Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Moloka`i and Lanai, State of Hawaii, August 1972.

APPENDIX A.

Preliminary Development Plans

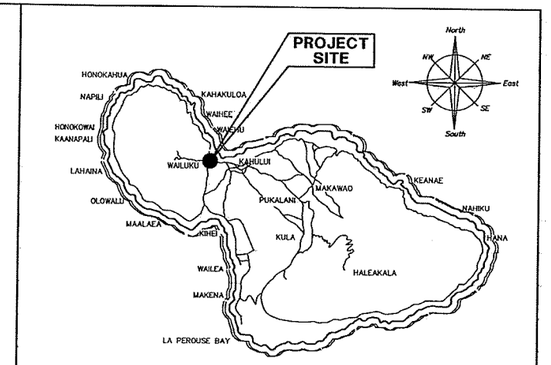


NOTES:

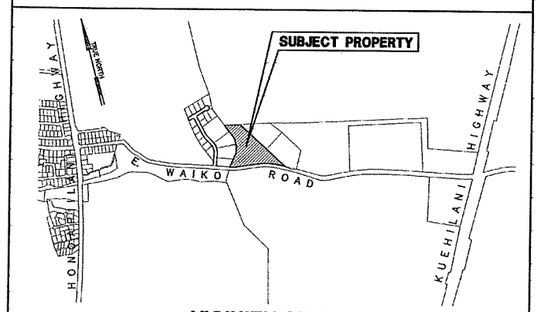
1. THIS IS A CONDOMINIUM MAP, NOT A SUBDIVISION. THE DASHED LINE BETWEEN LIMITED COMMON ELEMENTS AND COMMON ELEMENT IS FOR REGISTRATION PURPOSES AND ONLY SERVES TO DEPICT THE AREAS OF EACH LIMITED COMMON ELEMENT AND DOES NOT DENOTE A LEGAL SUBDIVISION BOUNDARY LINE.
2. LIMITED COMMON ELEMENT 8 IS FOR ACCESS AND UTILITY PURPOSES IN FAVOR OF LIMITED COMMON ELEMENTS 4, 5, 6 AND 7.
3. LIMITED COMMON ELEMENT 9 IS FOR ACCESS AND UTILITY PURPOSES IN FAVOR OF LIMITED COMMON ELEMENTS 1 AND 2.

LEGEND:

eac	EDGE AC PAVEMENT
PP/TP	POWER/TELEPHONE POLE
WM	WATER METER
OHE&T	OVERHEAD ELECTRIC AND TELEPHONE LINE
	DENOTES NO VEHICULAR ACCESS PERMITTED
	DENOTES VEHICULAR ACCESS PERMITTED



LOCATION MAP
ISLAND OF MAUI



VICINITY MAP
NOT TO SCALE

PROJECT AREA SUMMARY

A. LIMITED COMMON ELEMENT 1 AREA = 1.589 ACRES
B. LIMITED COMMON ELEMENT 2 AREA = 1.201 ACRES
C. LIMITED COMMON ELEMENT 3 AREA = 1.026 ACRES
D. LIMITED COMMON ELEMENT 4 AREA = 0.891 ACRE
E. LIMITED COMMON ELEMENT 5 AREA = 0.792 ACRE
F. LIMITED COMMON ELEMENT 6 AREA = 1.078 ACRES
G. LIMITED COMMON ELEMENT 7 AREA = 1.080 ACRES
H. LIMITED COMMON ELEMENT 8 AREA = 0.817 ACRE
I. LIMITED COMMON ELEMENT 9 AREA = 0.078 ACRE

TOTAL AREA = 8.552 ACRES

NOTE: AREAS SHOWN FOR LIMITED COMMON ELEMENTS ARE APPROXIMATE.

DEVELOPERS
ABC DEVELOPMENT COMPANY, L.L.C.

ABC DEVELOPMENT COMPANY CONDOMINIUM

DESIGNATION OF LIMITED COMMON ELEMENTS 1 TO 9, INCLUSIVE

Being all of Lot 1–A. Kopaa Subdivision No. 2.
Being, also, a portion of R.P. 3152 to Henry Cornwell.

AT WAIKAPU, WAILUKU, MAUI, HAWAII

CONDOMINIUM FILE PLAN

50 25 0 50 100
GRAPHIC SCALE IN FEET

Tax Map Key (2) 3–8–07: 105

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793
PHONE: (808) 242-6861

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

SHEET 1 OF 1 SHEET

Revised: DECEMBER 15, 2010
Revised: AUGUST 13, 2010
Revised: AUGUST 11, 2010
Revised: JULY 12, 2010
SEPTEMBER 08, 2009
JOB NO. 06–075

Z:\DRAWI\2006\06-075\12-2010_ABCDEV_REVISED.dwg 14-DEC-2010 : Revised BYNancy

APPENDIX B.

Preliminary Civil Engineering and Drainage Report

PRELIMINARY

CIVIL ENGINEERING AND DRAINAGE REPORT

FOR

PROPOSED DEVELOPMENT OF LOT 1-A KOPAA SUBDIVISION NO. 2

109 EAST WAIKO ROAD
WAILUKU, MAUI, HAWAII

TAX MAP KEY: (2) 3-8-07:105

PREPARED FOR:

ABC DEVELOPMENT COMPANY, LLC
815 WAIAKAMILO ROAD
HONOLULU, HI 96817

PREPARED BY:

Tanaka
ENGINEERS, INC.
CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION MANAGEMENT & INSPECTIONAL SERVICES

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII - 96793
JOB 06-075

JULY 2010
Revised: DECEMBER 2012

TABLE OF CONTENTS

I. INTRODUCTION

II. PROJECT DESCRIPTION

III. SITE LOCATION AND AREA

IV. SOILS AND TOPOGRAPHY

- A. SOILS
- B. TOPOGRAPHY

V. ACCESS

- A. EXISTING
- B. ANTICIPATED IMPROVEMENTS

VI. WATER SYSTEM

- A. EXISTING
- B. ANTICIPATED WATER REQUIREMENTS
- C. ANTICIPATED IMPROVEMENTS

VII. WASTEWATER SYSTEM

- A. EXISTING
- B. ANTICIPATED WASTEWATER FLOW
- C. ANTICIPATED IMPROVEMENTS

VIII. DRAINAGE

- A. GENERAL
- B. FLOODING HAZARD
- C. EXISTING DRAINAGE CONDITIONS
- D. STORM RUNOFF DISCHARGES

E. ANTICIPATED IMPROVEMENTS

F. OPERATION AND MAINTENANCE PLAN

G. CONCLUSION

IX. GRADING REQUIREMENTS AND BEST MANAGEMENT PRACTICES

A. GRADING REQUIREMENTS

B. GRADING PLAN

C. BEST MANAGEMENT PRACTICES (BMPs)

X. ELECTRICITY/TELEPHONE/CATV SYSTEMS

A. EXISTING

B. FUTURE SERVICES

XI. CONSTRUCTION PLAN APPROVALS

XII. REFERENCES

X. EXHIBITS

EXHIBIT A - PRELIMINARY WASTEWATER FLOWS AND WATER REQUIREMENTS

EXHIBIT B - DRAINAGE CALCULATIONS

XI. FIGURES

FIGURE 1 - LOCATION MAP

FIGURE 2 - VICINITY MAP

FIGURE 3 - SITE MAP

FIGURE 4 - FLOOD INSURANCE RATE MAP

FIGURE 5 - SOILS MAP

FIGURE 6 - EXISTING TOPOGRAPHIC MAP

FIGURE 7 - CONCEPTUAL CONDOMINIUM SITE MAP

FIGURE 8 - CONCEPTUAL EAST WAIKO ROAD AND ACCESS IMPROVEMENTS

FIGURE 9 - EXISTING WATER SYSTEM

FIGURE 9A - CONCEPTUAL WATER SYSTEM PLAN

FIGURE 10 - CONCEPTUAL SEWER SYSTEM PLAN

FIGURE 10A - CONCEPTUAL SEWER SYSTEM PLAN (ONSITE)

XII. ATTACHMENT - CONSTRUCTION PLANS FOR GRADING OF LOT 1-A, KOPAA SUBDIVISION NO. 2

I. INTRODUCTION:

The purpose of this preliminary report is to assess and discuss the existing and anticipated infrastructural requirements for the development of Lot 1-A of the Kopaa Subdivision No. 2 in support of an Environmental Assessment that is needed for applying for a Community Plan Amendment, County Change in Zoning and State Land Use District Boundary Amendment. This report will also define the expected requirements for grading and Best Management Practices during site development.

II. PROJECT DESCRIPTION:

The proposed project consists of a seven (7) unit condominium with two (2) limited common elements for access and utilities that would be used for light industrial uses such as storage yards and building, warehouses, equipment rental and sales yards, etc. The conceptual site map is shown on Figure 7.

Onsite improvements are anticipated to include buildings, paved parking, access, roadway, landscaping, etc. The proposed parking stalls, loading zones and aisles shall meet the minimum dimensions as set forth by Section 19.36A., Size or Dimensions and Section 19.36A.060, Access and Specifications of the Maui County Code.

Other civil works are improvements to roadway, water, sewer and drainage systems. Anticipated requirements are discussed in their respective sections of the report.

III. SITE LOCATION AND AREA:

The project site is located on the north side of East Waiko Road about midway between Honoapiilani and Kuihelani Highways. Refer to Figures 1 and 2. The project site (Lot 1-A) has an area of about 8.55 acres. Refer to Figure 3.

IV. SOILS AND TOPOGRAPHY:

A. SOILS:

According to the Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii [2], soils at the project area are classified as Puuone Sand, 7 to 30 percent slopes (PZUE) and Jaucas Sand, 0 to 15 percent slopes (JAC). See Figure 5. PZUE that covers almost all of the project site is on sand hills near the ocean and is characterized by slow runoff, moderate to severe wind erosion hazard and rapid permeability.

JaC which occupies only the southwest corner of the project site occurs at narrow strips on coastal plains. This soil is sandy and has rapid permeability, very slow to slow runoff, slight water erosion hazard and severe wind erosion hazard where there is no vegetation.

B. TOPOGRAPHY:

The existing topography of the project site is shown on Figure 6. The site contains numerous dirt piles and few concrete slabs. A cut slope as high as 20 feet straddles the western boundary that abuts the Waiko Baseyard Subdivision.

Setting aside the cut slope and dirt piles, the ground is relatively flat, sloping down from west to east at an average slope ranging from about 2.0 to 2.5 percent. Ground elevation ranges from 281 to 297 feet above mean sea level.

V. ACCESS:

A. EXISTING:

The site is presently accessed from East Waiko Road as shown on Figure 2. East Waiko Road connects to both Kuihelani and Honoapiilani Highways which are the main thoroughfares that connect Central Maui to the western and southern part of the island.

B. ANTICIPATED IMPROVEMENTS:

The northern side of Waiko Road that abuts the project site will be improved to include pavement widening, curb and gutter and 10-foot shoulder area. The shoulder area would consist of 6 feet wide concrete sidewalk and 4 feet wide grassed strip. The proposed curb and gutter and sidewalk is an extension of the existing facilities fronting Waiko Baseyard Subdivision. The conceptual improvements on E. Waiko Road is shown on Figure 8.

Proposed access to the interior limited common elements is also shown on Figure 8. The access will have a 20 feet wide minimum pavement to accommodate fire trucks.

VI. WATER SYSTEM:

A. EXISTING:

The existing County water system in the vicinity of the project site is shown on Figure 9. It consists of a 12-inch waterline along E. Waiko Road which was installed for the Waiko Baseyard Subdivision that lies on the west side of the project site. The 12-inch waterline is interconnected to the existing 18-inch waterline that runs along the east boundary of the project site. The existing water system is part of the Central Maui Water System that draws its water from the Iao Aquifer under the West Maui mountains.

B. ANTICIPATED WATER REQUIREMENTS:

Determination of anticipated water requirements for the proposed project is presented on Exhibit A. The expected water demands are as follows:

1.	Average Domestic Daily Demand	= 51,312 gals./day
2.	Maximum Daily Demand	= 76,968 gals./day = 54 gals./min.
3.	Peak Hour Demand	= 153,936 gals./day = 107 gals./min.
4.	Fire Flow Demand	= 2,000 gals./min.

C. NEWLY CONSTRUCTED IMPROVEMENTS:

The size of the distribution line is based upon simultaneous delivery of the needed fire flow and maximum daily demand. The anticipated fire flow plus the maximum daily demand for the proposed project is 2,107 gals./min. (gpm). This combined flow can be sufficiently delivered by the existing and newly constructed

12-inch waterline along E. Waiko Road which has a flow capacity of about 3,500 gpm at a velocity of 10 feet per second.

Fire protection, domestic and irrigation services will be connected to the new 12-inch waterline on E. Waiko Road. Refer to Figure 9A.

Fire hydrants, spaced at no more than 250 feet apart, were installed along E. Waiko Road and will be installed along the access road for common elements 5, 6 and 7. The onsite fire protection system will be privately owned, hence, a 10-inch double check detector assembly would be required for tie-in to the County system.

Two (2) 2-inch water meters are anticipated for the proposed project based on the peak hour domestic demand of 107 gpm and future irrigation demand. A 2" water meter has a rated capacity of 160 gpm.

Irrigation water requirements for the proposed project cannot be determined at this time.

VII. WASTEWATER SYSTEM:

A. EXISTING:

There is no existing County sewer system in the immediate vicinity of the project site. The nearest County sewerline is about 1,700 feet west of the project site. Refer to Figure 10.

B. ANTICIPATED WASTEWATER FLOW:

The preliminary average wastewater flow for the proposed project as determined in Exhibit A is about 36,774 gallons per day (gpd).

C. ANTICIPATED IMPROVEMENTS:

In the absence of a nearby County sewer collection system, the following options are to be considered for the disposal of wastewater flows that will be generated by the proposed project.

Option 1:

Provide individual wastewater system (IWS) for each limited common element in accordance with the requirements of th State Department of Health's Administrative Rules Chapter 11-62, "Wastewater". Upon development of each future common element, the design wastewater flow and details of the IWS will have to be submitted to the State Department of Health, Wastewater Branch, for review and approval.

Option 2:

Collect onsite wastewater flows and pump to the nearest County sewer system on E. Waiko Road, about 1,700 feet west of the project site. This option is shown on Figures 10 and 10A. This system will consist of onsite collection system, a factory-built duplex wastewater pump station and a 4-inch force main (FM) along the south side of E. Waiko Road. Based on preliminary investigation, the proposed 4" FM will be crossing several drainage structures and waterline.

Option 3:

Collect onsite wastewater flows and pump to the existing wastewater pump station (WWPS) serving the adjacent Waiko Baseyard Subdivision. This option will have to be negotiated with the owner of the existing WWPS and may require upgrading the existing pumps and enlarging the 4-inch force main. Easements for this sewer force main would also have to be negotiated with and obtained from adjacent land owners. The location of the existing WWPS and 4" FM is shown on Figure 10.

Option 4:

Collect onsite wastewater flows and convey via gravity sewerlines to the existing treatment plant serving the Consolidated Baseyard's Light Industrial Subdivision that is located east of the project site. Refer to Figure 10. This option will have to be negotiated with the operator of the

treatment plant. This may require increasing the capacity of the plant to accommodate the flow from the proposed project.

VIII. DRAINAGE:

A. GENERAL:

The preliminary Drainage Study, in general, is based on the requirements, formulas, charts and tables of the Rules of the Design of Storm Drainage Facilities of the County of Maui [1] hereinafter referred to as County Drainage Standards.

B. FLOODING HAZARD:

The site is located within Zone X as plotted on Map No. 1500030393E of the Flood Insurance Rate Map for the County of Maui as shown on Figure 4. Zone X is designated as areas of minimal flooding or areas determined to be outside the 0.2% annual chance flood plain. Hence the proposed grading work is not subject to chapter 19.62, Flood Hazard Areas, of the Maui County Code

C. EXISTING DRAINAGE CONDITIONS:

There is no offsite storm runoff that affects the project area. Runoff from the adjacent lots of Waiko Baseyard Subdivision to the west is collected by drainage swales and grated drain inlets and then conveyed to a retention basin further north of the project area (reference: Construction Plans of Waiko Baseyard Subdivision).

Existing onsite runoff generally flows in an easterly direction originating from the west boundary. Approximately, the northern half of the project site drains into the lower adjacent lot (Lot 1-B, Figure 6); while the runoff from the southern half flows to the easterly boundary where it will be blocked by an existing earth berm, diverted to the southeast corner of the lot and eventually flows out onto Waiko Road.

D. STORM RUNOFF DISCHARGES:

Based on the preliminary calculations (Exhibit A), the project area, encompassing about 8.55 acres could generate the 1-hour storm discharges as follows:

10-year runoff peak rate:

Existing	= 3.8 cfs
Developed	= 30.8 cfs
Increase	= 27.0 cfs

50-year runoff peak rate:

Existing	= 4.8 cfs
Developed	= 38.3 cfs
Increase	= 33.5 cfs

50-year runoff volume:

Existing	= 11,640 cf (1,361 cf/ac.)
Developed	= 62,075 cf (7,260 cf/ac.)
Increase	= 50,435 cf (5,899 cf/ac.)

E. ANTICIPATED IMPROVEMENTS:

The Maui County Drainage Standards allows onsite retention of the additional runoff generated by the development when there is no existing drainage system or adequate outlet to connect the development's drainage system. Onsite impoundment of the storm runoff could be done by means of open-cut drainage ponds or subsurface retention basins consisting of perforated pipes with crushed rock envelopes. The storage capacity of the retention basins must be at least equal to the 50-year, 1-hour runoff volume increase in accordance with the Maui County Drainage Standards.

The retention of the runoff volume could be implemented separately for each limited common element when it is developed.

F. OPERATION AND MAINTENANCE PLAN:

The operation and maintenance of the onsite drainage system will be handled by the owner. The recommended operation and maintenance activities will include, but not limited to:

1. Inspection of the drainage facilities annually and after major storms. Repair damages, if any. Remove debris, if any, at grated drain inlets to permit unimpeded flow.

2. Periodic inspection of the drainage system. Remove debris and sediment build-up, as required, specifically inside grated drain inlets, if any, upstream of the retention basins.

3. Preventing grass and landscape cuttings from entering the drainage system.

4. Cleaning of parking areas as often as possible to minimize the entry of debris and sediments into the drainage system.

5. Maintaining healthy growth of grass lawns and landscaping to prevent soil erosion; thereby, reducing sediments that might enter the drainage system.

G. CONCLUSION:

The proposed development will increase the existing storm runoff due to addition of impervious surfaces such as building roofs, pavement and concrete walkways. Despite the increase in runoff, the proposed development is not anticipated to create any adverse drainage effects on downstream properties and roadways. The recommended drainage improvements call for the impoundment of all the 50-year, 1-hour storm runoff volume anticipated to be generated by the proposed development; thereby reducing the present storm runoff into the downstream properties. The proposed retention basins will also have the effect of reducing the potential for sediments contained in the runoff from entering neighboring properties and eventually the ocean.

IX. GRADING REQUIREMENTS AND BEST MANAGEMENT PRACTICES:

A. GRADING REQUIREMENTS:

Ongoing grading for the proposed project will be in conformance with the applicable requirements of the Maui County's Grading Ordinance No. 2684 or Chapter 20.08 of the Maui County Code. A grubbing and grading permit was obtained from the Development Services Administration (DSA) of the Department of Public Works. Associated submittals for the permit application are grading plan; soil erosion control plan or Best Management Practices Plan; drainage plan; and drainage report. Additionally, since the grading area is over one (1) acre, a National Pollutant Discharge Elimination System (NPDES) Permit was obtained from the Clean Water Branch of the State Department of Health.

B. GRADING PLAN:

The project site is planned to be graded prior to development for light industrial uses. The proposed mass grading plan is shown on Sheet 3 of the attached construction plans.

C. BEST MANAGEMENT PRACTICES (BMPs):

The proposed plan for temporary control of soil erosion and dust during grading operations is shown on Sheet 2 of the attached construction plans. The BMPs will include the following:

1. Control dust by means of water trucks.

2. Graded areas shall be thoroughly watered after construction activity has ceased for the day and for weekends and holidays.

3. All exposed areas shall be grassed as soon as finished grading is completed.

4. Minimize time of grading operations.

5. Construction of temporary sediment basin(s) prior to mass grading of project site. Construct temporary swale to direct storm runoff to temporary basin(s).

6. Installation of dust control fence surrounding the project site, as required.

7. Installation of silt fence, gravel bag berms or other approved sediment trapping devices along the makai limits of the grading area and sediment pit.

8. Temporary control measures shall be in place and functional prior to grading and shall remain operational throughout the grading operations period or until permanent controls, such as grassing, are in place.

Best Management Practices shall be in compliance with Section 20.08.035 of the Maui County Code (Ord. No. 2684) and "Construction Best Management Practices (BMPs) for the County of Maui" of the Department of Public Works & Waste Management, May 2001.

X. ELECTRICITY/TELEPHONE/CATV SYSTEMS:

A. EXISTING:

There are existing overhead electrical/telephone facilities that are strung across the rear portion of Waiko Baseyard Subdivision along the western boundary of the project site. These existing facilities currently service adjacent and nearby existing developments.

B. FUTURE SERVICES:

It is anticipated that services for the future development will come off from nearby existing overhead facilities. It is also anticipated that onsite facilities will be installed underground.

XI. CONSTRUCTION PLAN APPROVALS:

Approval of construction plans and appropriate permits for the infrastructure improvements of the proposed project will be obtained from the Department of Public Works; Department of Environmental Management; Department of Water Supply; Fire Prevention Bureau; and State Department of Health, Wastewater and Clean Water Branches. The various infrastructures will be designed in compliance with the applicable requirements of these governmental agencies.

Electrical/telephone/CATV improvements will need to be approved by their respective utility company.

XII. REFERENCES:

1. Rules for the Design of Storm Drainage Facilities in the County of Maui, Title MC-15, Department of Public Works and Waste Management, County of Maui, Chapter 4.

2. Construction Best Management Practices (BMPs) for the County of Maui, Department of Public Works and Waste Management, May 2001.

3. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii, prepared by U. S. Department of Agriculture, Soil Conservation Service, August 1972.

4. Erosion and Sediment Control Guide for Hawaii, prepared by U. S. Department of Agriculture, Soil Conservation Service, March 1981.

5. Rainfall-Frequency Atlas of the Hawaiian Islands, Technical Paper No. 43, U. S. Department of Commerce, Weather Bureau, 1962.

6. Flood Insurance Rate Maps for the County of Maui, June 1981.

7. Water System Standards, Department of Water Supply, County of Maui, 2002.

8. Sewerage Master Plan for the County of Maui, October 1971.

EXHIBIT "A"

PRELIMINARY WASTEWATER FLOWS AND WATER REQUIREMENTS

I. WASTEWATER FLOWS:

(Reference: Sewerage Master Plan for the County of Maui, 1971

A. Average Daily Flow:

(Table III-1)

Average Daily Flow = 4,300 gallons per acre per day (gpad)

B. Anticipated Average Flow:

Anticipated Average Flow = gpad x area (acres)

= 4,300 x 8.252

= 36,774 gals./day

Note: The 1971 Sewerage Master is used to determined the anticipated average flow in the absence of specific development plans for the property. The flows must be recomputed during the design stage for the development of the property using the current wastewater flow standards of the Wastewater Reclamation Division of the Department of Environmental Management.

II. DOMESTIC AND FIRE FLOW REQUIREMENTS:
(Reference: Water System Standards, 2002). Table as noted are found in the Standards.

A. Domestic Consumption:

Lot 1-A Area = 8.552 Acres

Zoning = M-1 (Light Industrial)

Average Demand = 6,000 gals./acre/day (Table 100-18)

1. Anticipated Average Daily Domestic Demand:

= 6,000 x 8.552

= 51,312 gals./day

2. Anticipated Max. Daily Demand:

= Ave. Daily Demand x 1.5 (Table 100-20)

= 51,312 x 1.5

= 76,968 gals./day

= 54 gpm

3. Anticipated Peak Hour Demand:

= Ave. Daily Demand x 3.0 (Table 100-20)

= 51,312 x 3.0

= 153,936 gals./day

= 107 gpm

B. Fire Flow:

(Table 100-19)

The required fire flow for Light Industrial uses is 2,000 gpm.

EXHIBIT "B"

DRAINAGE CALCULATIONS

I. REFERENCE:

"Rules for the Design of Storm Drainage Facilities in the County of Maui" [1], referred to as Maui County Drainage Standards.

II. METHODOLOGY:

Note: Assume that at existing condition, mass grading of the project site is completed.

A. Rational Method:

For drainage areas that have areas less than 100 acres, the peak discharge based on 1-hour storm will be determined by the Rational Method, Q = CIA, in which:

Q = flow rate in cubic feet per second (cfs)

C = runoff coefficient for the drainage basin

I = rainfall intensity in inches per hour for a duration equal to the time of concentration

A = drainage basin in acres

= 8.55 Acs. (Project Site)

The factors used in the application of the formula were taken from applicable tables and charts of the Maui Storm Drainage Standards.

1. Rainfall Value:

10-year, 1-hour rainfall = 2.0" (Plate 3)

50-year, 1-hour rainfall = 2.5" (Plate 4)

2. Runoff Coefficient, C: The runoff coefficients for the project area are as follows:

Existing Condition: C = 0.15 (Lawn, Sandy Soil, 2-7%) (Table 2)

Developed Condition: C = 0.80 (Industrial Area) (Table 3)

3. Time of Concentration, Tc: As determined from Plate 1.

Overall Project Site:

Length of Flow = 570 Ft. (Existing/Developed)

Average Slope = 2.0% (Existing/Developed)

T_c = 25 min. (Existing - Grassed)

= 8 min. (Developed - Paved)

4. Rainfall Intensity, I: As determined from Plate 2

10-Year Storm: I = 3.00" (Existing)

= 4.50" (Developed)

50-Year Storm: I = 3.75" (Graded)

= 5.60" (Developed)

III. STORM RUNOFF RATE CALCULATIONS:
(Overall Site)

A. 10-Year, 1-Hour Storm

Existing	= 0.15 x 3.00 x 8.55	= 3.8 cfs
Developed	= 0.80 x 4.50 x 8.55	= 30.8 cfs
Increase	= 30.8 - 3.8	= 27.0 cfs

B. 50-Year, 1-Hour Storm

Existing	= 0.15 x 3.75 x 8.55	= 4.8 cfs
Developed	= 0.80 x 5.60 x 8.55	= 38.3 cfs
Increase	= 38.3 - 4.8	= 33.5 cfs

IV. <u>STORM RUNOFF VOLUME</u>:
(50-Year, 1-Hour Storm)

$$V = \frac{\text{Rainfall } (''')}{12} \times C \times \text{Area}$$

$$\text{Existing} = \frac{2.5''}{12} \times 0.15 \times 8.55 = 0.2672 \text{ Ac.-Ft.}$$

$$= 11{,}640 \text{ cf}$$

$$\text{Developed} = \frac{2.5''}{12} \times 0.80 \times 8.55 = 1.425 \text{ Ac.-Ft.}$$

$$= 62{,}075 \text{ cf}$$

Increase = 62,075 - 11,640 = 50,435 cf

Table 1

GUIDE FOR THE DETERMINATION OF RUNOFF COEFFICIENTS FOR BUILT-UP AREAS*

WATERSHED CHARACTERISTICS	EXTREME	HIGH	MODERATE	LOW
INFILTRATION	NEGLIGIBLE 0.20	SLOW 0.14	MEDIUM 0.07	HIGH 0.0
RELIEF	STEEP (> 25%) 0.08	HILLY (15 - 25%) 0.06	ROLLING (5 - 15%) 0.03	FLAT (0 - 5%) 0.0
VEGETAL COVER	NONE 0.07	POOR (< 10%) 0.05	GOOD (10 - 50%) 0.03	HIGH (50 - 90%) 0.0
DEVELOPMENT TYPE	INDUSTRIAL & BUSINESS 0.55	HOTEL - APARTMENT 0.45	RESIDENTIAL 0.40	AGRICULTURAL 0.15

**NOTE: The design coefficient "c" must result from a total of the values for all four watershed characteristics of the site.*

Table 2

RUNOFF COEFFICIENTS

Type of Drainage Area	Runoff Coefficient C
Parks, cemeteries	0.25
Playgrounds	0.35
Railroad yard areas	0.40
Unimproved areas	0.30
Streets:	
Asphaltic	0.95
Concrete	0.95
Brick	0.85
Driveway and walks	0.85
Roofs	0.95
Lawns:	
Sandy soil, flat, 2%	0.10
Sandy soil, avg., 2-7%	0.15
Sandy soil, steep, 7%	0.20
Heavy soil, flat, 2%	0.17
Heavy soil, avg., 2-7%	0.22
Heavy soil, steep, 7%	0.35

Table 3

MINIMUM RUNOFF COEFFICIENTS FOR BUILT-UP AREAS

Residential areas	C=0.55
Hotel, apartment areas	C=0.70
Business areas	C=0.80
Industrial areas	C=0.80

The type of soil, the type of open space and ground cover and the slope of the ground shall be considered in arriving at reasonable and acceptable runoff coefficients.

Table 4

APPROXIMATE AVERAGE VELOCITIES OF RUNOFF FOR CALCULATING TIME OF CONCENTRATION

TYPE OF FLOW	VELOCITY IN FPS FOR SLOPES (in percent) INDICATED			
OVERLAND FLOW:	0–3%	4–7%	8–11%	12–15%
Woodlands	1.0	2.0	3.0	3.5
Pastures	1.5	3.0	4.0	4.5
Cultivated	2.0	4.0	5.0	6.0
Pavements	5.0	12.0	15.0	18.0
OPEN CHANNEL FLOW:				
Improved Channels	Determine Velocity by Manning's Formula			
Natural Channel* (not well defined)	1.0	3.0	5.0	8.0

**These values vary with the channel size and other conditions so that the ones given are the averages of a wide range. Wherever possible, more accurate determinations should be made for particular conditions by Manning's formula.*

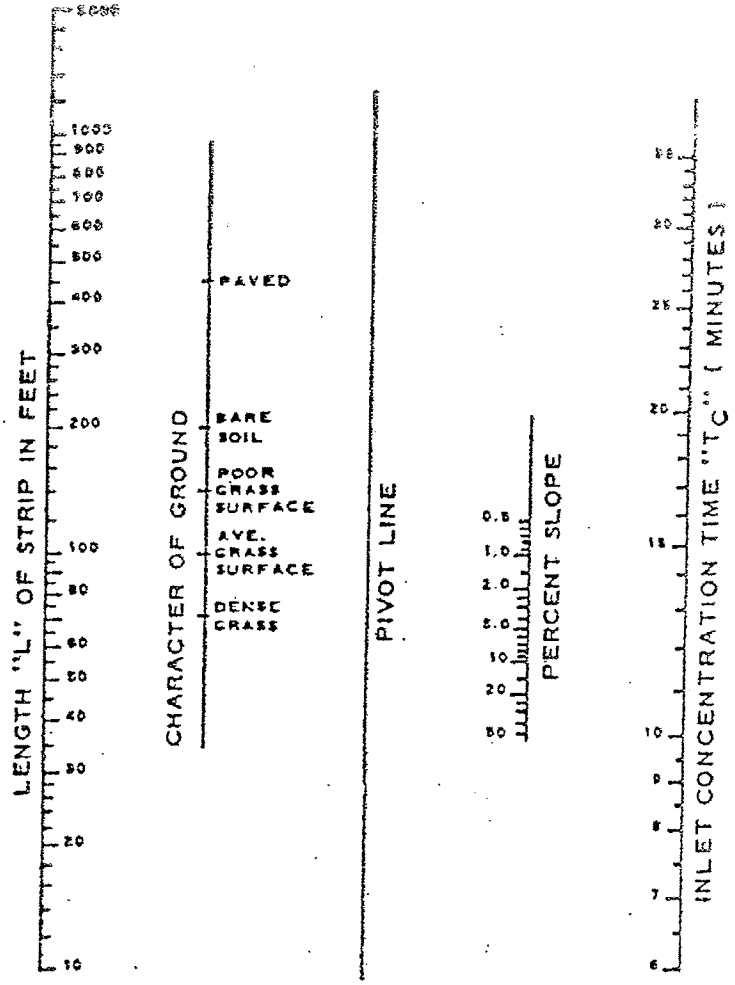
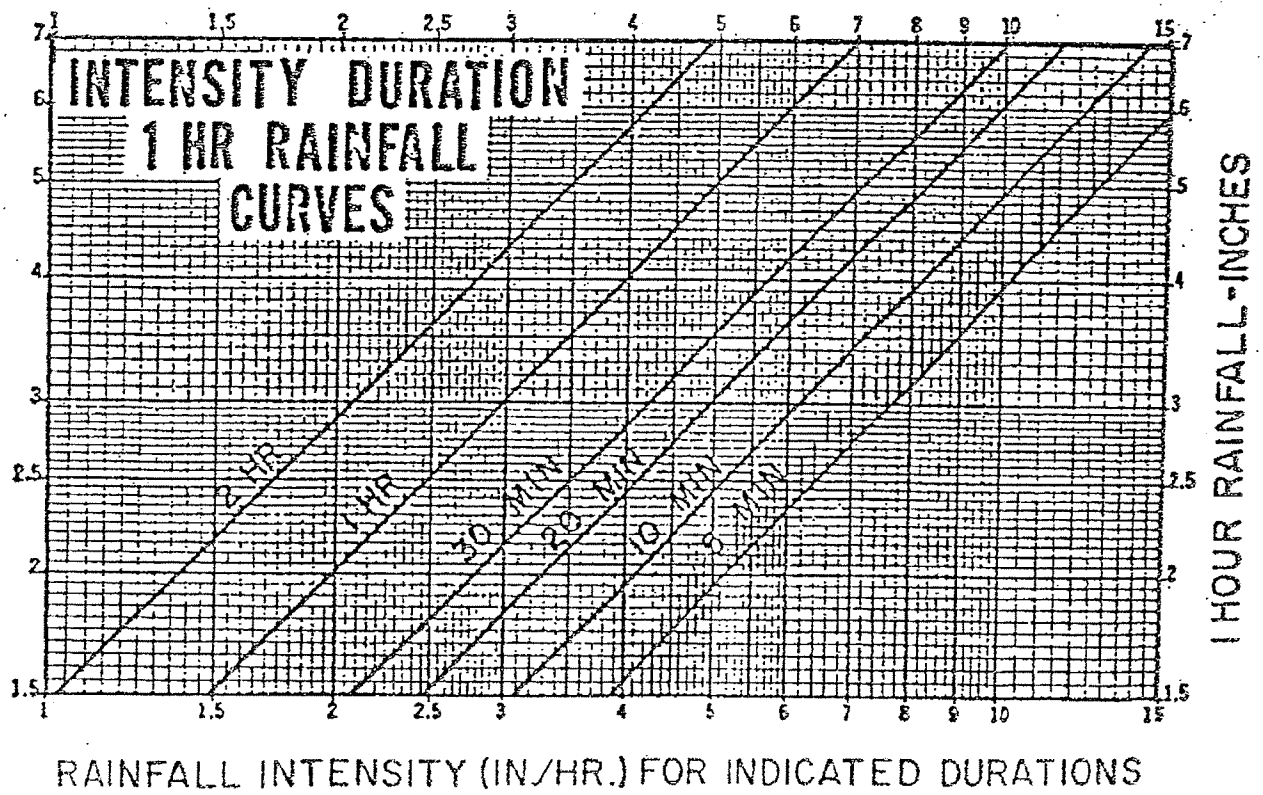


Plate 1

Overland Flow Chart

Plate 2



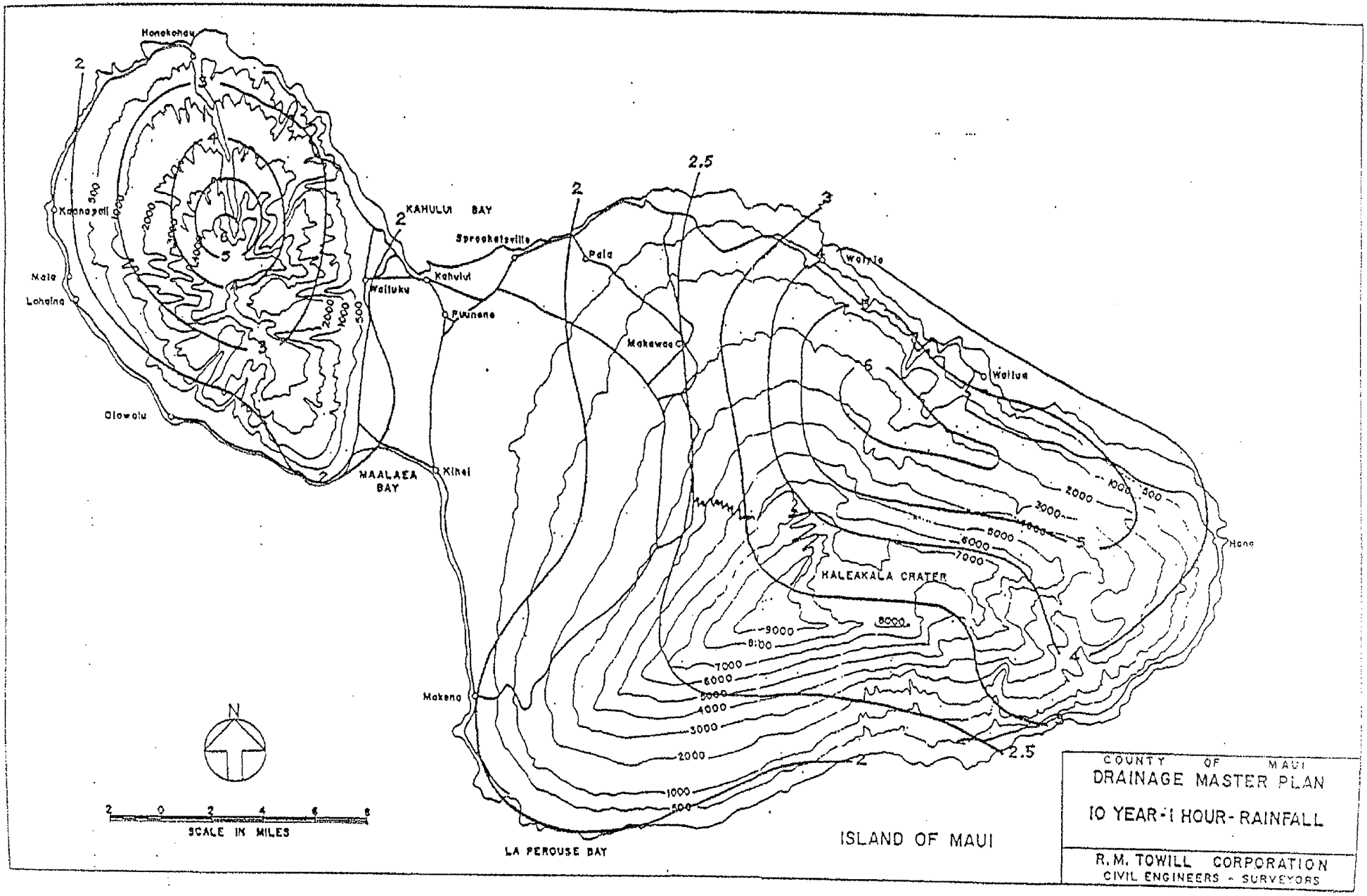

Honokohau
Kaanapali
Mala
Lahaina
Olowalu
KAHULUI BAY
Sprockatsville
Kahului
Waituku
Puunene
Pala
Makawao
Waiyio
Waitua
Hana
MAALAEA BAY
Kihei
Makena
HALEAKALA CRATER
LA PEROUSE BAY
ISLAND OF MAUI
N
SCALE IN MILES
COUNTY OF MAUI
DRAINAGE MASTER PLAN
10 YEAR-1 HOUR-RAINFALL
R.M. TOWILL CORPORATION
CIVIL ENGINEERS - SURVEYORS

Plate 3

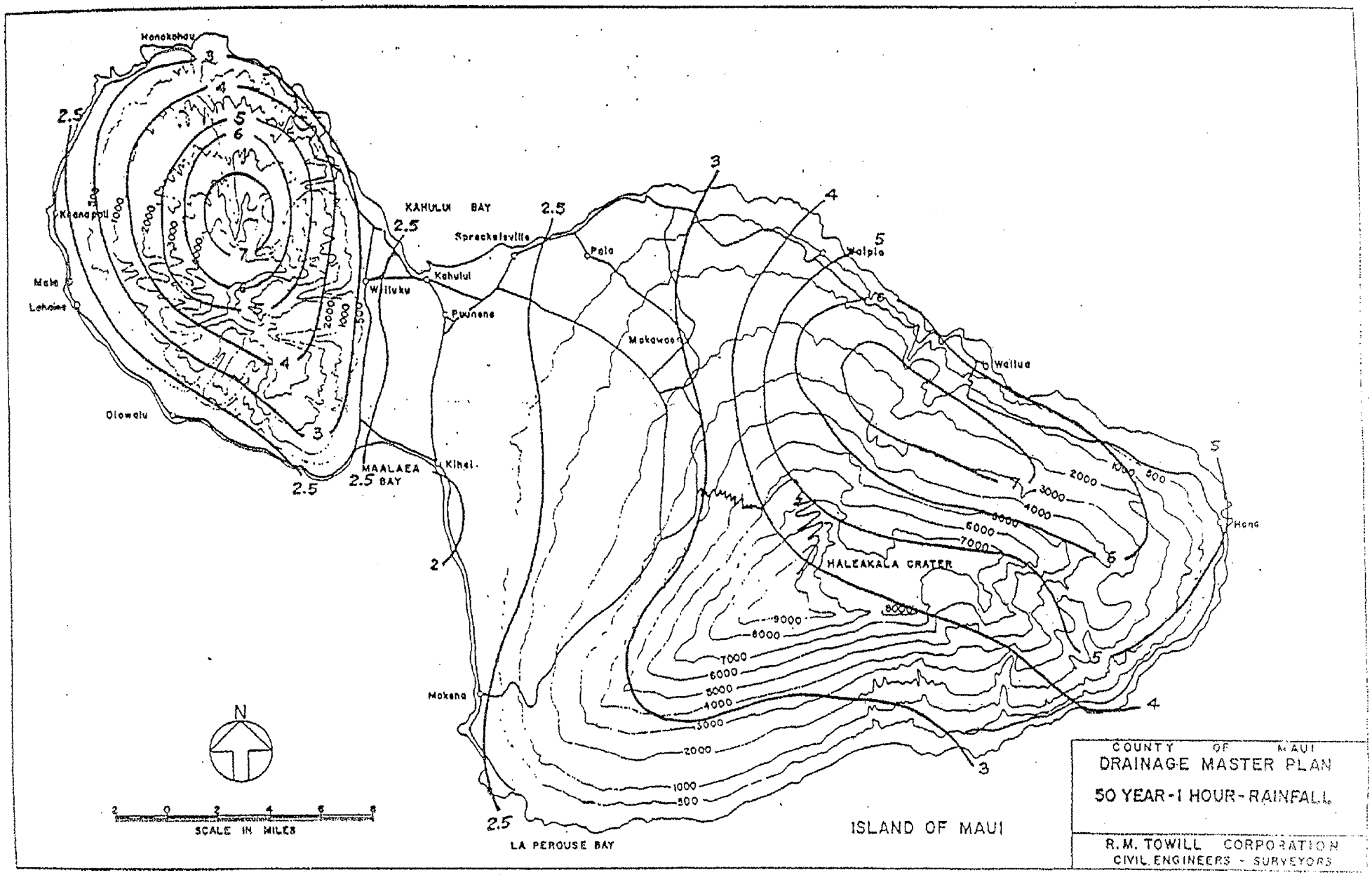
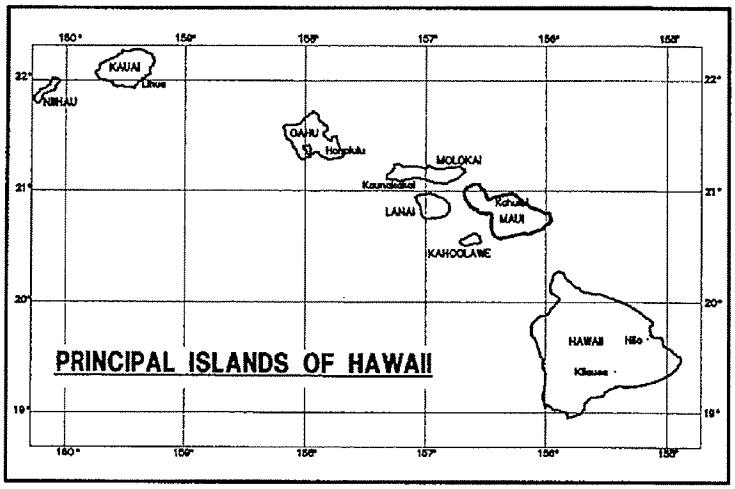
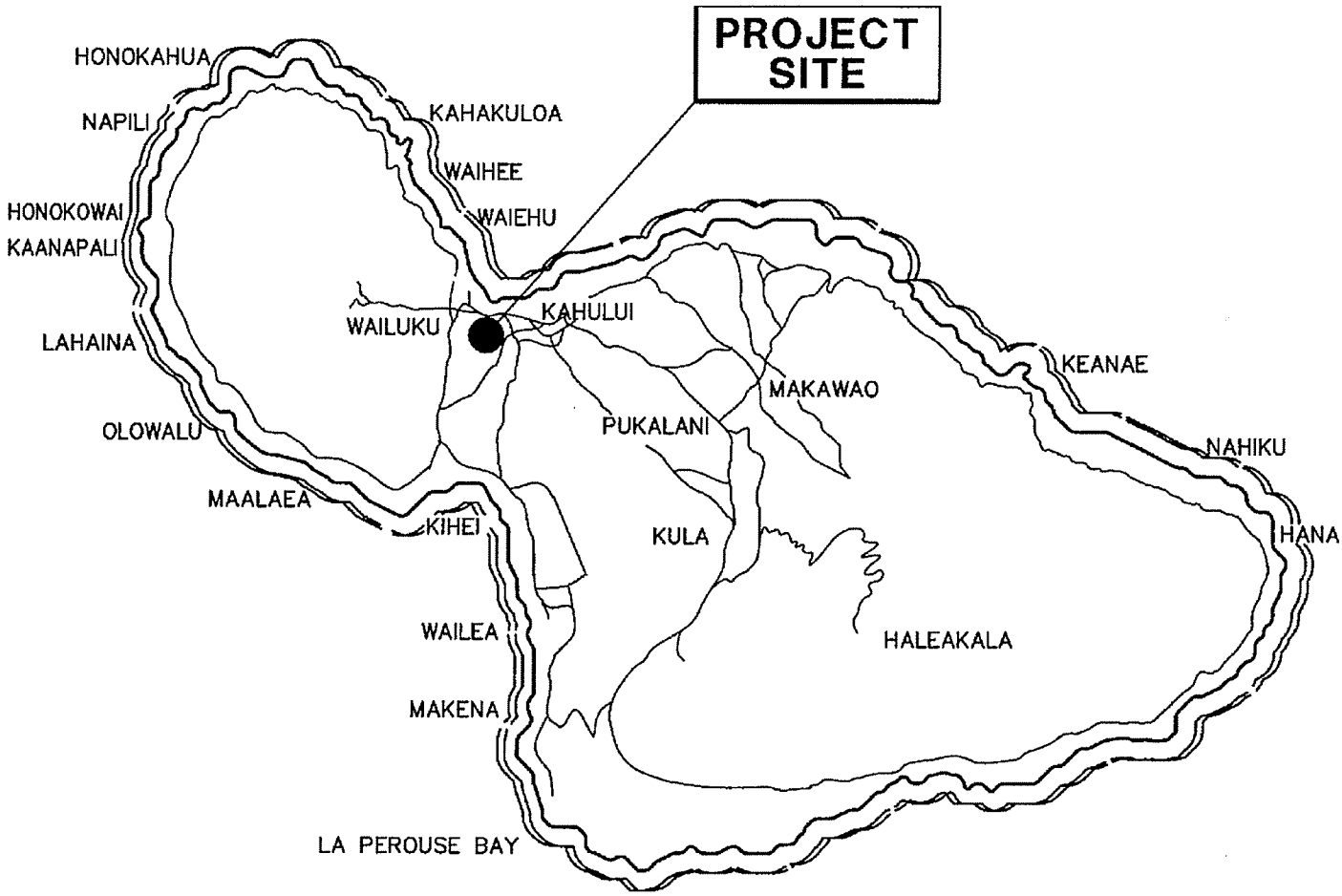

Honokohau
Kaanapali
Mala
Lahaina
Olowalu
KAHULUI BAY
Spreckelsville
Kahului
Wailuku
Puunene
Pala
Makawao
Waipio
Wailua
Hana
MAALAEA BAY
Kihei
Makena
HALEAKALA CRATER
LA PEROUSE BAY
ISLAND OF MAUI
N
SCALE IN MILES
COUNTY OF MAUI
DRAINAGE MASTER PLAN
50 YEAR-1 HOUR-RAINFALL
R.M. TOWILL CORPORATION
CIVIL ENGINEERS - SURVEYORS

Plate 4





N

LOCATION MAP

ISLAND OF MAUI

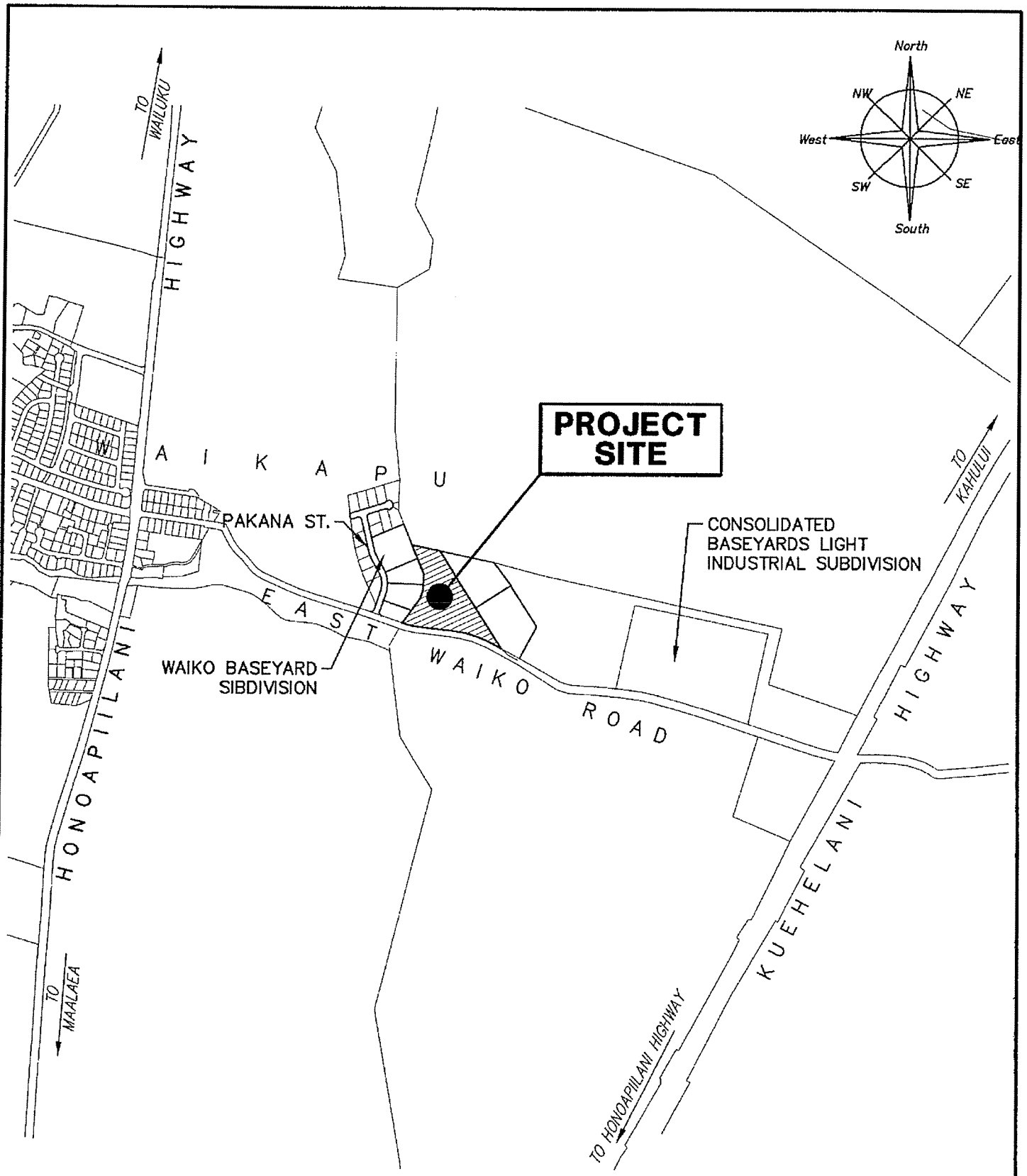
FIGURE 1

(FIG.1) Z:\DRAW1\2006\06-075\EXHIBIT MAPS\ABCDEV EXIST TOPO.dwg 07-MAY-2010 : Revised BY:Nancy

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-075



VICINITY MAP

NOT TO SCALE

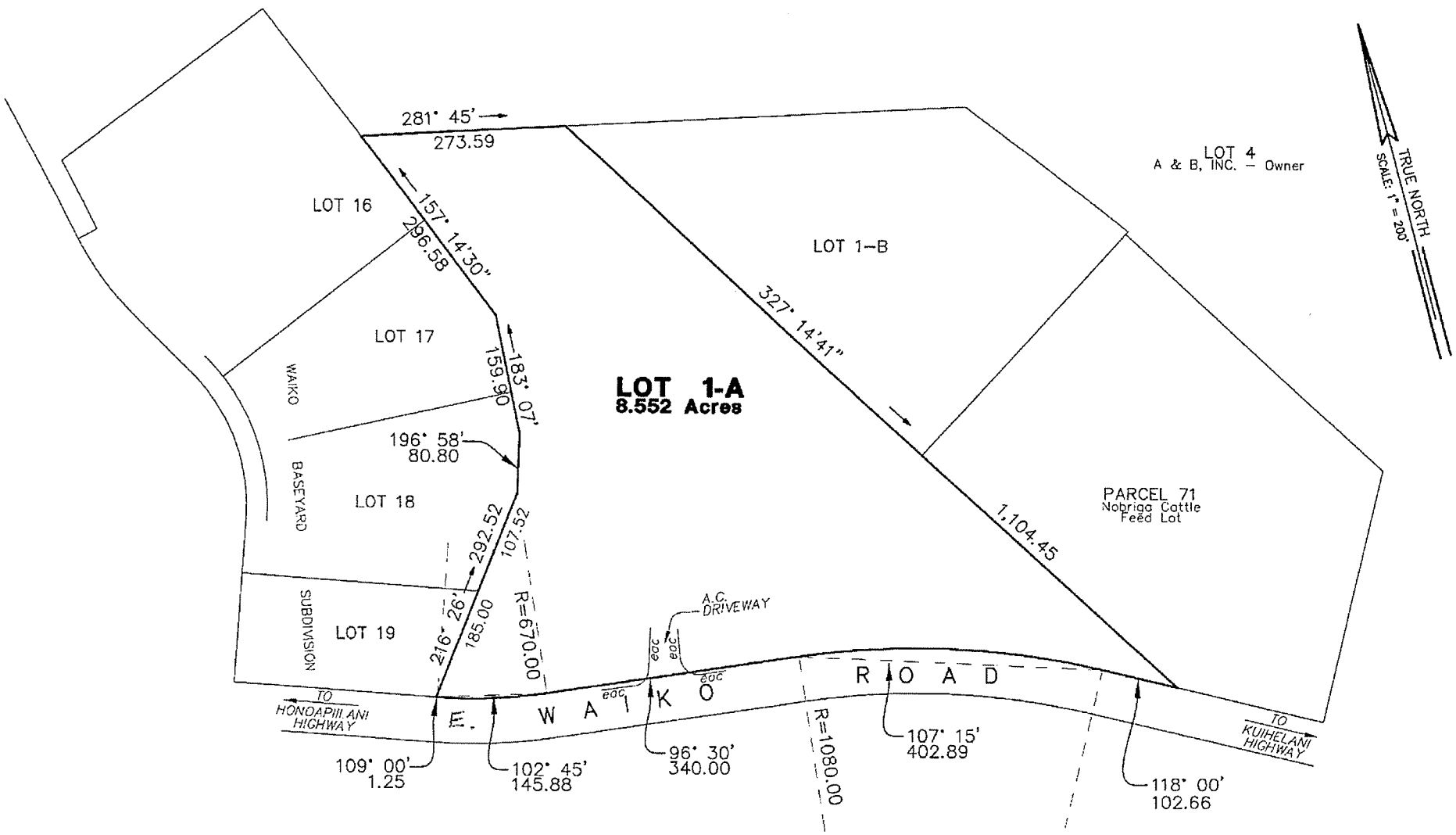
FIGURE 2

(FIG.2)
Z:\DRAW1\2006\06-075\EXHIBIT MAPS\ABCDEV EXIST TOPO.dwg 16-JUL-2010 : Revised BY:Nancy

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-075



SITE MAP
LOT 1-A, KOPAA SUBDIVISION NO. 2

Being a Portion of R.P. 3152 To Henry Cornwell

AT WAIKAPU, WAILUKU, MAUI, HAWAII

200 100 0 200 400
GRAPHIC SCALE IN FEET

Tax Map Key (2) 3-8-07 : 105

JUNE 2010

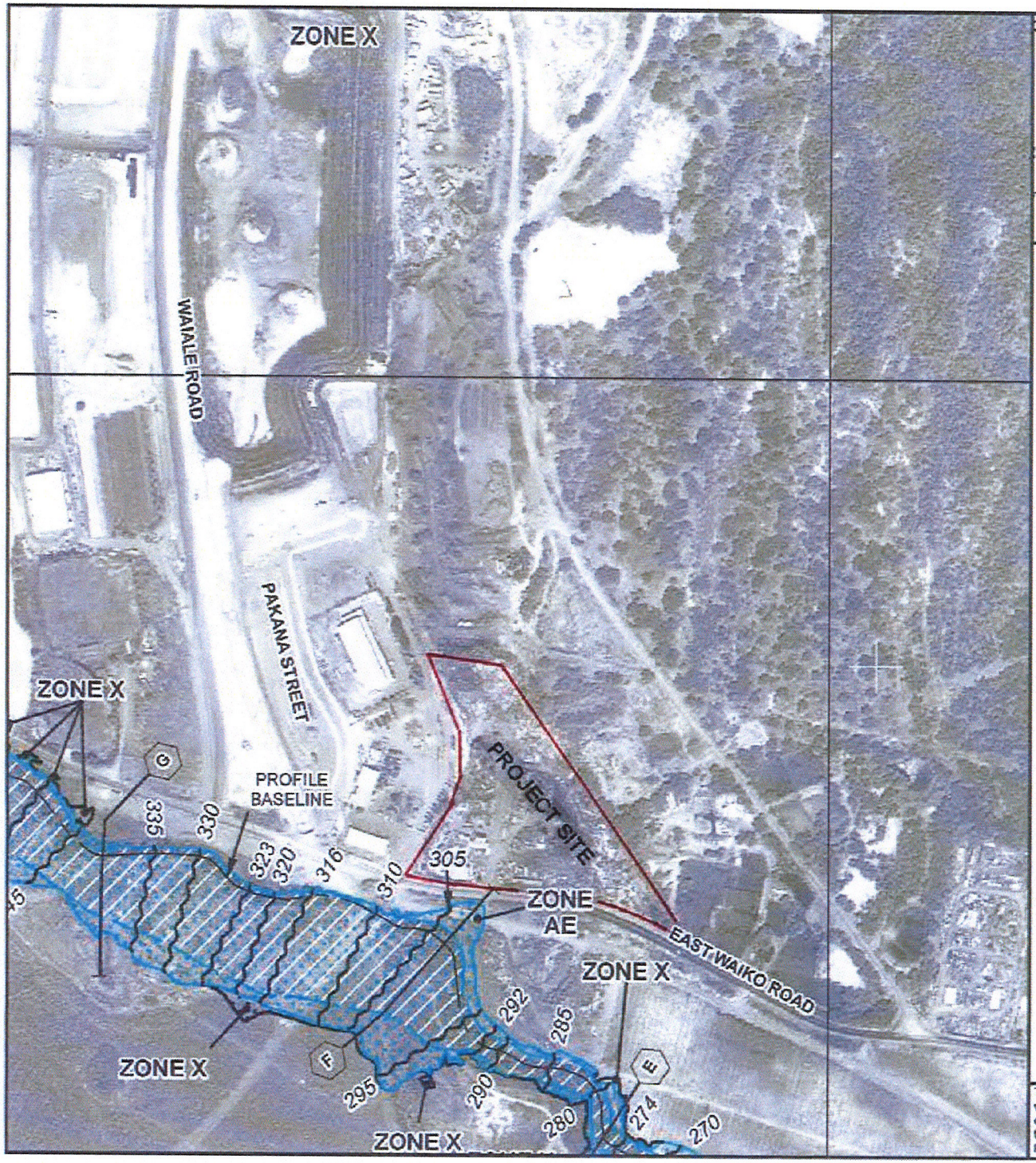
FIGURE 3

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-075

Z:\2006\06-075\EXHIBIT MAPS\SITE MAP.dwg : 04-JUN-2010 : Drawn BY: JOY E.



od Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0393E

FIRM

FLOOD INSURANCE RATE MAP

MAUI COUNTY, HAWAII

PANEL 393 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MAUI COUNTY	150003	0393	E

Notice to User. The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
1500030393E

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 4

Soil Map—Island of Maui, Hawaii

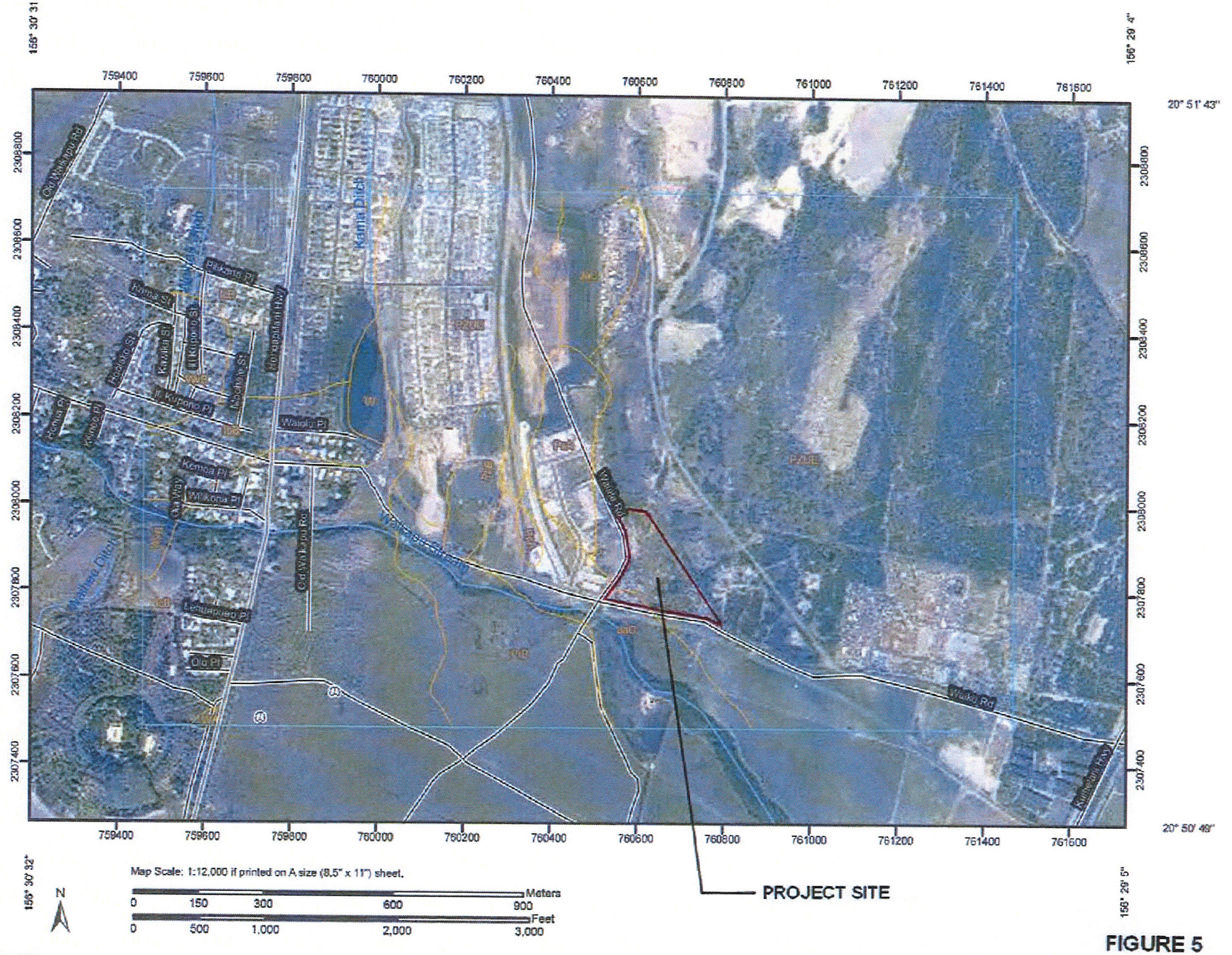
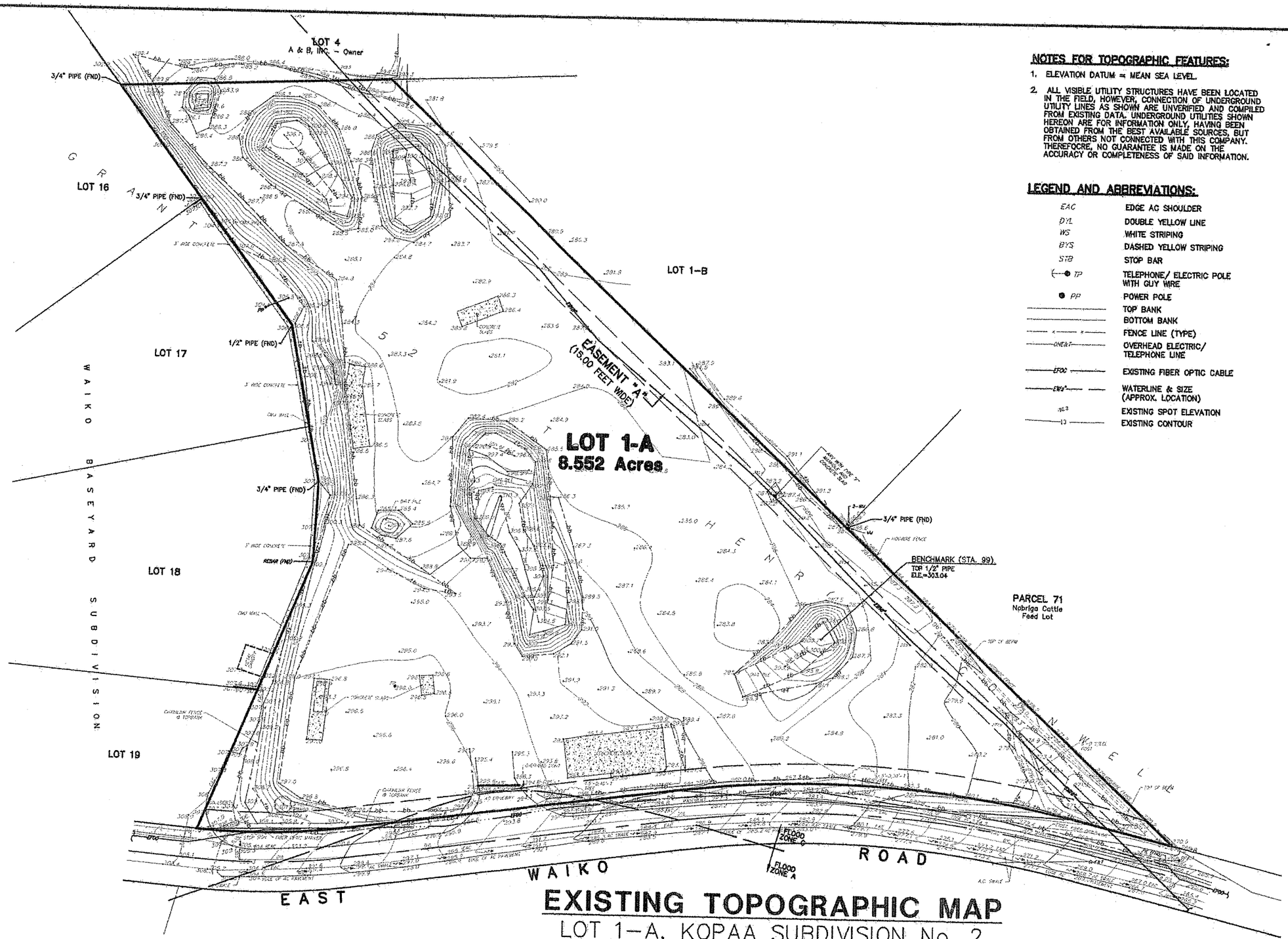


FIGURE 5

5/28/2010

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey



NOTES FOR TOPOGRAPHIC FEATURES:

1. ELEVATION DATUM = MEAN SEA LEVEL.
2. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED IN THE FIELD, HOWEVER, CONNECTION OF UNDERGROUND UTILITY LINES AS SHOWN ARE UNVERIFIED AND COMPILED FROM EXISTING DATA. UNDERGROUND UTILITIES SHOWN HEREON ARE FOR INFORMATION ONLY, HAVING BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES, BUT FROM OTHERS NOT CONNECTED WITH THIS COMPANY. THEREFORE, NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INFORMATION.

LEGEND AND ABBREVIATIONS:

EAC	EDGE AC SHOULDER
DYL	DOUBLE YELLOW LINE
WS	WHITE STRIPING
BYS	DASHED YELLOW STRIPING
STB	STOP BAR
TP	TELEPHONE/ ELECTRIC POLE WITH GUY WIRE
PP	POWER POLE
	TOP BANK
	BOTTOM BANK
	FENCE LINE (TYPE)
OHE&T	OVERHEAD ELECTRIC/ TELEPHONE LINE
EFOC	EXISTING FIBER OPTIC CABLE
EW2"	WATERLINE & SIZE (APPROX. LOCATION)
363	EXISTING SPOT ELEVATION
13	EXISTING CONTOUR

EXISTING TOPOGRAPHIC MAP

LOT 1-A, KOPAA SUBDIVISION No. 2
WAIKAPU, WAILUKU, MAUI, HAWAII

SCALE: 1 in. = 100 ft.

100 50 0 100 200
GRAPHIC SCALE IN FEET

Tax Map Key: (2) 3-8-07: 105

JUNE 2010

FIGURE 6

JOB NO. 06-075

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS - CIVIL & STRUCTURAL ENGINEERS

(FIG.6) Z:\DRAW\2006\06-075\EXHIBIT MAPS\ABCDEV EXIST TOPO.dwg 21-JUL-2010 : Revised BY:Nancy

PROJECT AREA SUMMARY

A. LIMITED COMMON ELEMENT 1 AREA = 1.522 ACRES
B. LIMITED COMMON ELEMENT 2 AREA = 1.204 ACRES
C. LIMITED COMMON ELEMENT 3 AREA = 1.026 ACRES
D. LIMITED COMMON ELEMENT 4 AREA = 0.826 ACRE
E. LIMITED COMMON ELEMENT 5 AREA = 0.857 ACRE
F. LIMITED COMMON ELEMENT 6 AREA = 1.078 ACRES
G. LIMITED COMMON ELEMENT 7 AREA = 1.080 ACRES
H. LIMITED COMMON ELEMENT 8 AREA = 0.142 ACRE
I. LIMITED COMMON ELEMENT 9 AREA = 0.817 ACRE

TOTAL AREA = 8.552 ACRES

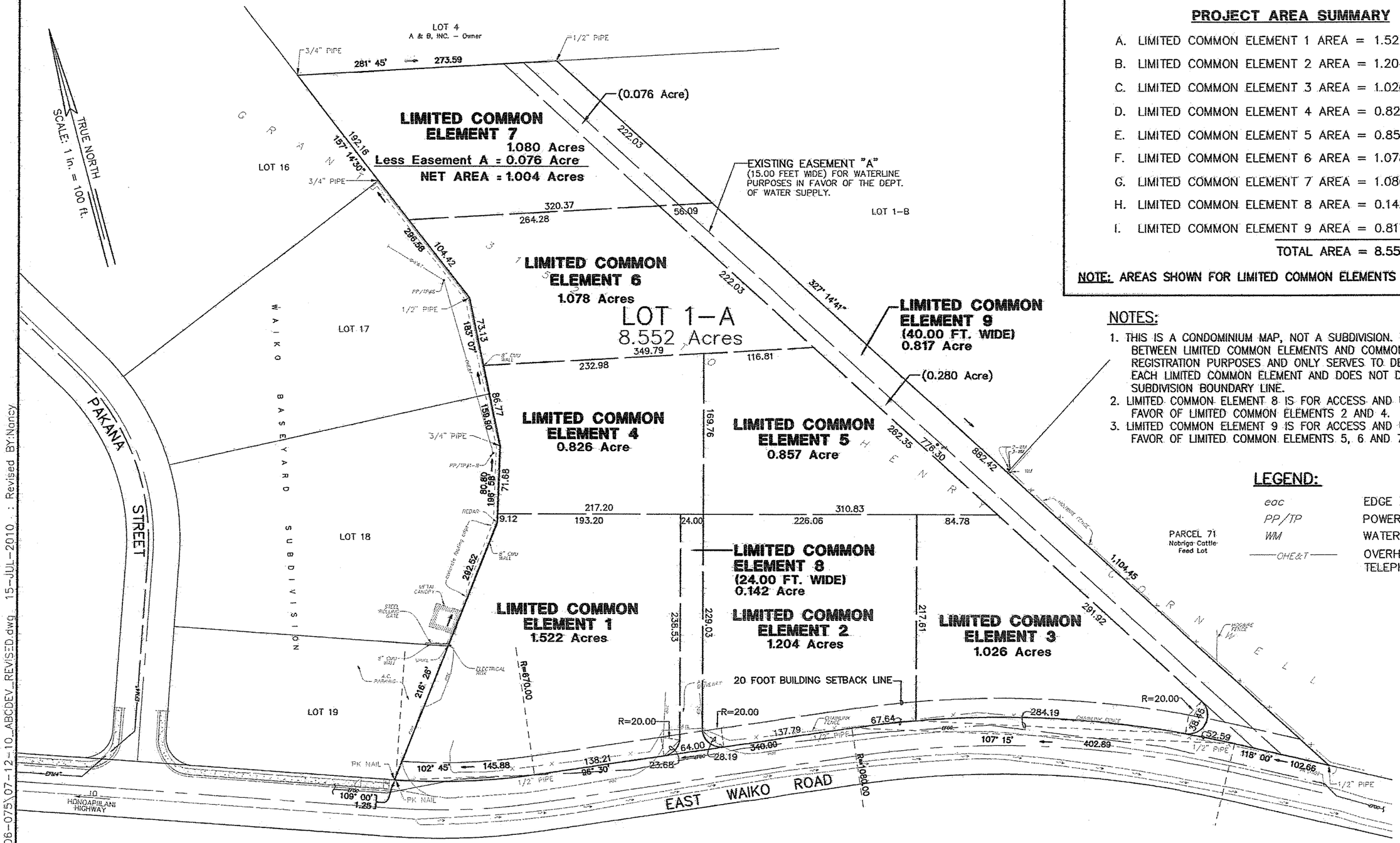
NOTE: AREAS SHOWN FOR LIMITED COMMON ELEMENTS ARE APPROXIMATE.

NOTES:

1. THIS IS A CONDOMINIUM MAP, NOT A SUBDIVISION. THE DASHED LINE BETWEEN LIMITED COMMON ELEMENTS AND COMMON ELEMENT IS FOR REGISTRATION PURPOSES AND ONLY SERVES TO DEPICT THE AREAS OF EACH LIMITED COMMON ELEMENT AND DOES NOT DENOTE A LEGAL SUBDIVISION BOUNDARY LINE.
2. LIMITED COMMON ELEMENT 8 IS FOR ACCESS AND UTILITY PURPOSES IN FAVOR OF LIMITED COMMON ELEMENTS 2 AND 4.
3. LIMITED COMMON ELEMENT 9 IS FOR ACCESS AND UTILITY PURPOSES IN FAVOR OF LIMITED COMMON ELEMENTS 5, 6 AND 7.

LEGEND:

eac	EDGE AC PAVEMENT
PP/TP	POWER/TELEPHONE POLE
WM	WATER METER
—OHE&T—	OVERHEAD ELECTRIC AND TELEPHONE LINE



CONCEPTUAL CONDOMINIUM SITE MAP

SCALE: 1 in. = 100 ft.

100 50 0 100 200
GRAPHIC SCALE IN FEET

Tax Map Key: (2) 3-8-07: 105

JULY 14, 2010

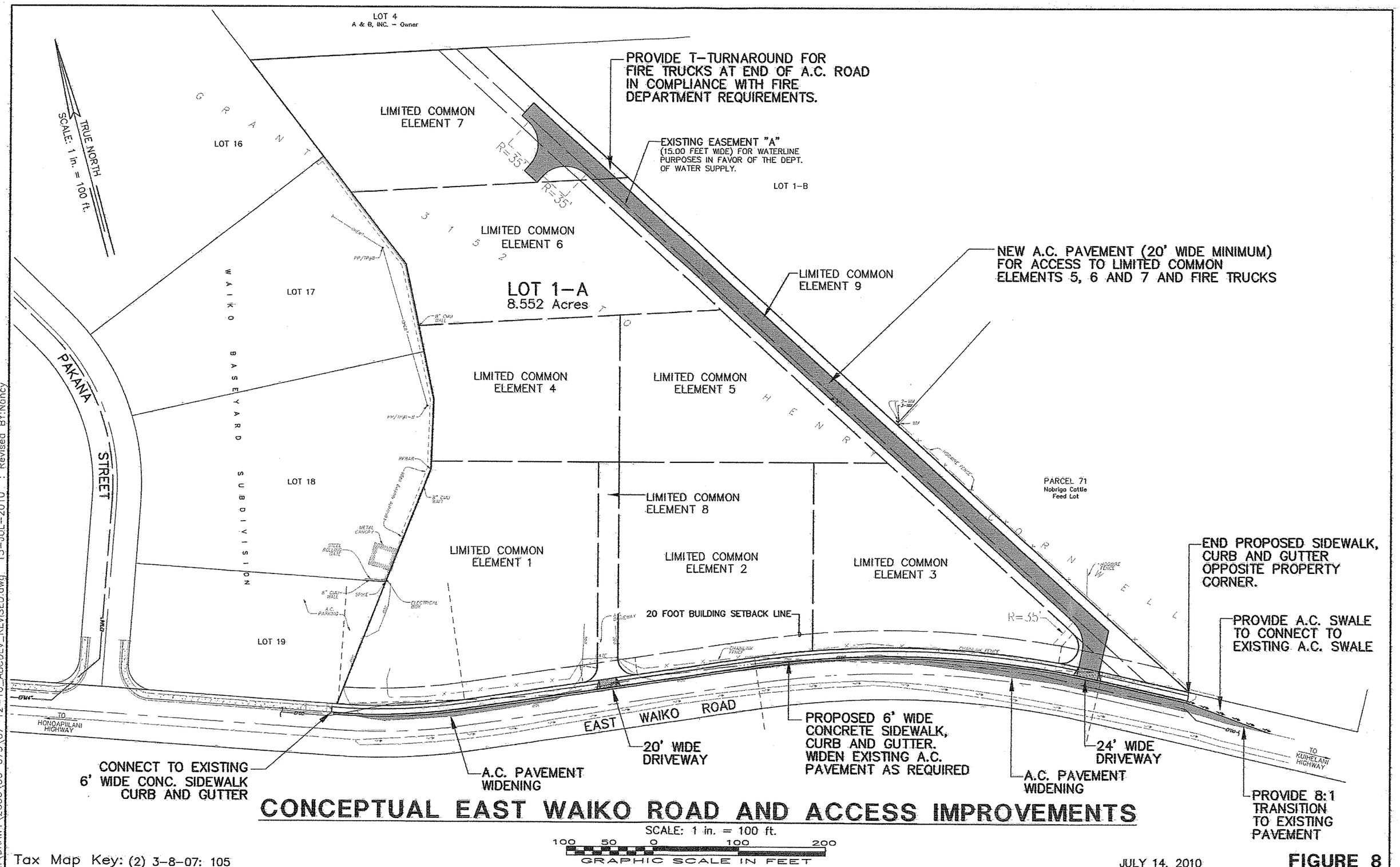
FIGURE 7

(FIG.7)
Z:\DRAW1\2006\06-075\07-12-10_ABCDEV_REVISED.dwg 15-JUL-2010 : Revised BY:Nancy

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS ~ CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-75



CONCEPTUAL EAST WAIKO ROAD AND ACCESS IMPROVEMENTS

Tax Map Key: (2) 3-8-07: 105

JULY 14, 2010

FIGURE 8

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-75

(FIG.8)
Z:\DRAW1\2006\06-075\07-12-10_ABCDEV_REVISED.dwg, 15-JUL-2010 : Revised BY:Nancy

EXISTING WATER SYSTEM

REFERENCE:
DEPARTMENT OF WATER SUPPLY
FIRE PROTECTION DISTRIBUTION MAP
WAIKAPU
REVISED JUNE 2010

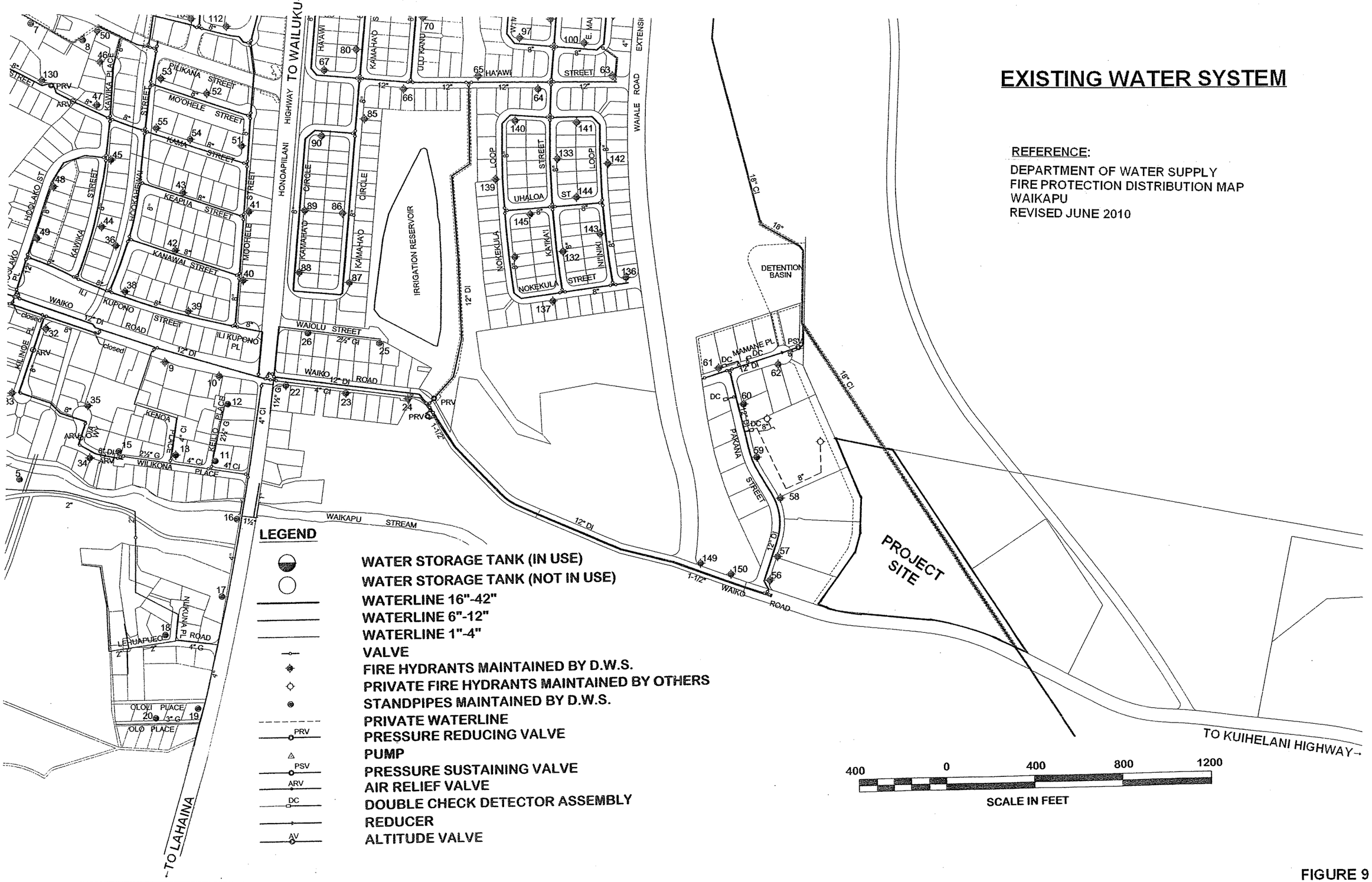
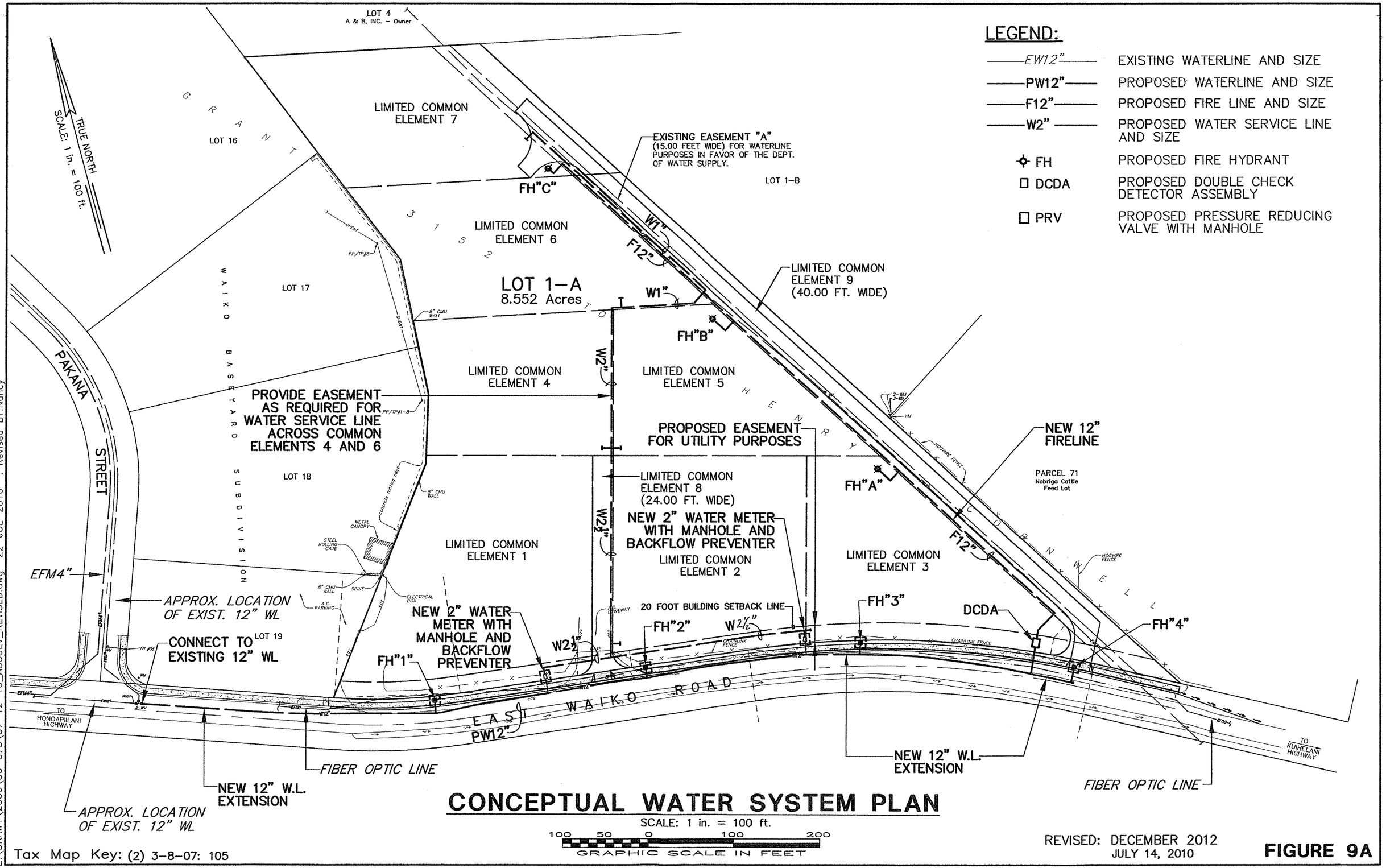


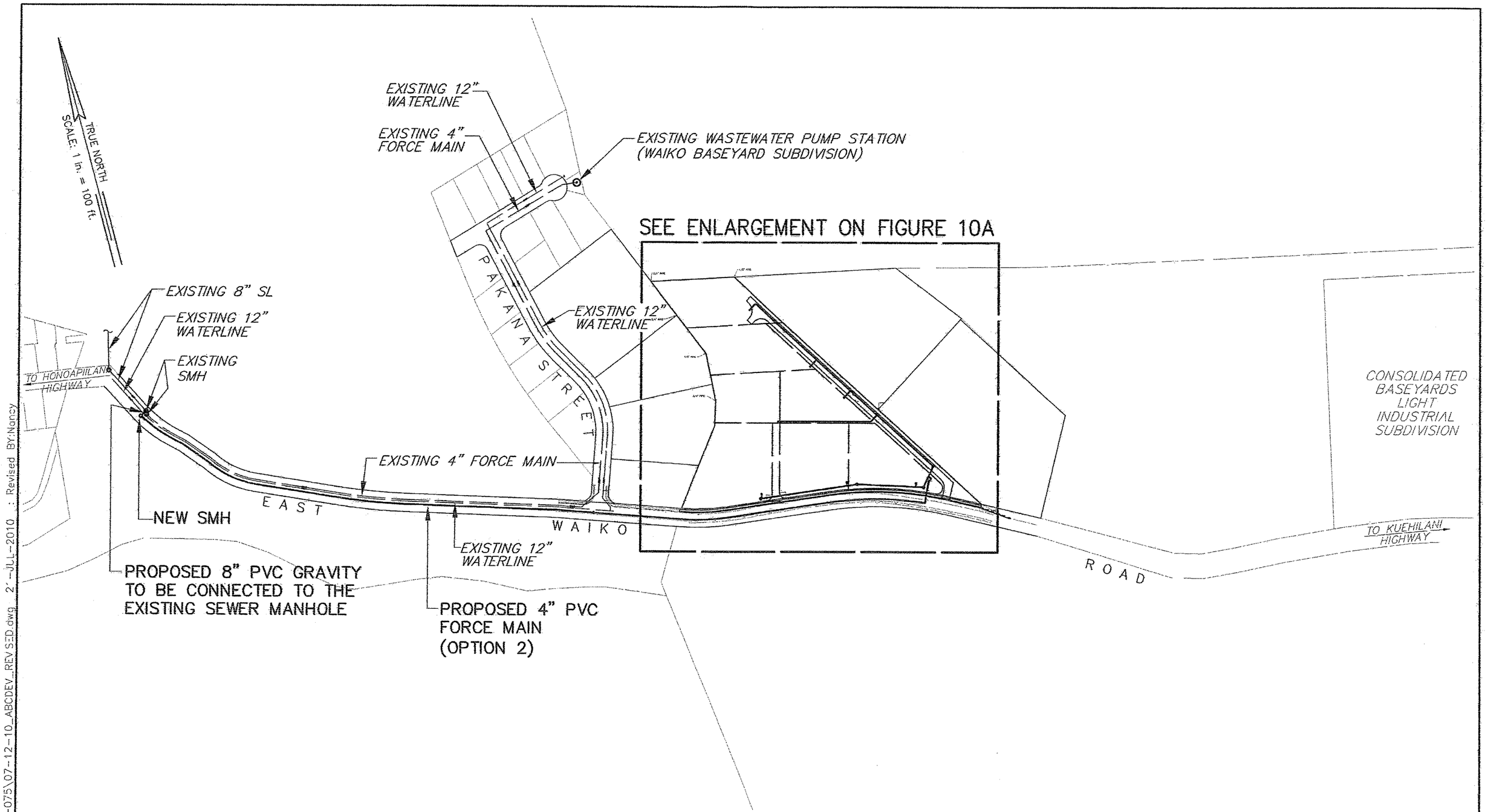
FIGURE 9



871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06–75



CONCEPTUAL SEWER SYSTEM PLAN

SCALE: 1 in. = 300 ft.

300 150 0 300 600

GRAPHIC SCALE IN FEET

Tax Map Key: (2) 3-8-07: 105

JULY 14, 2010

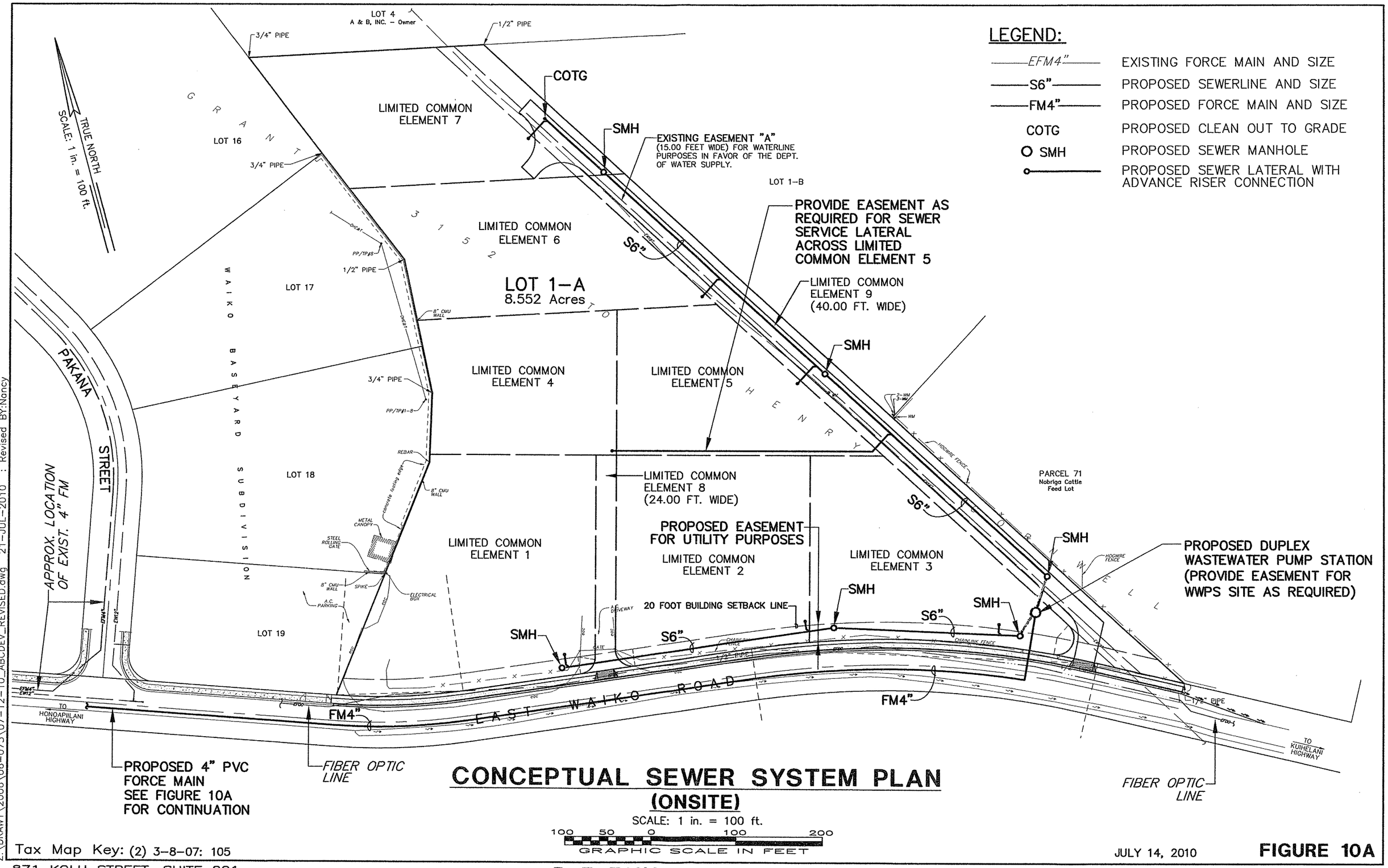
FIGURE 10

(FIG.10) Z:\DRAW1\2006\06-075\07-12-10_ABCDEV_REVISED.dwg 2'-JUL-2010 : Revised BY:Nancy

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS - CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06-75



CONCEPTUAL SEWER SYSTEM PLAN
(ONSITE)

SCALE: 1 in. = 100 ft.

Tax Map Key: (2) 3–8–07: 105

JULY 14, 2010

FIGURE 10A

(FIG.10A)
Z:\DRAW1\2006\06-075\07-12-10_ABCDEV_REVISED.dwg 21-JUL-2010 : Revised BY:Nancy

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 06–75

CONSTRUCTION PLANS

FOR

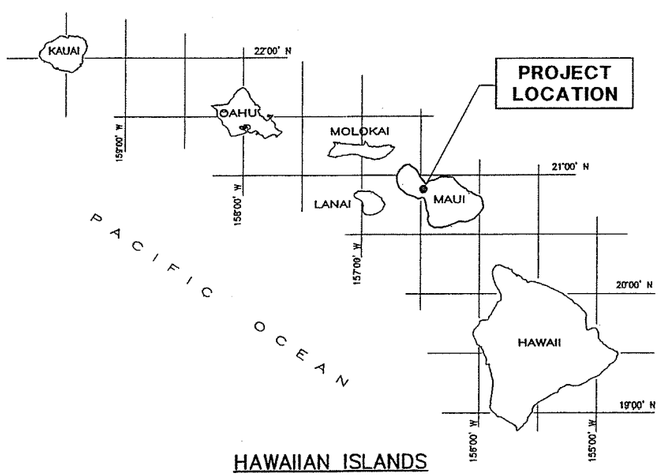
GRADING OF LOT 1-A
KOPAA SUBDIVISION No. 2

AT WAIKAPU, MAUI, HAWAII

TAX MAP KEY: (2) 3-8-07: 105

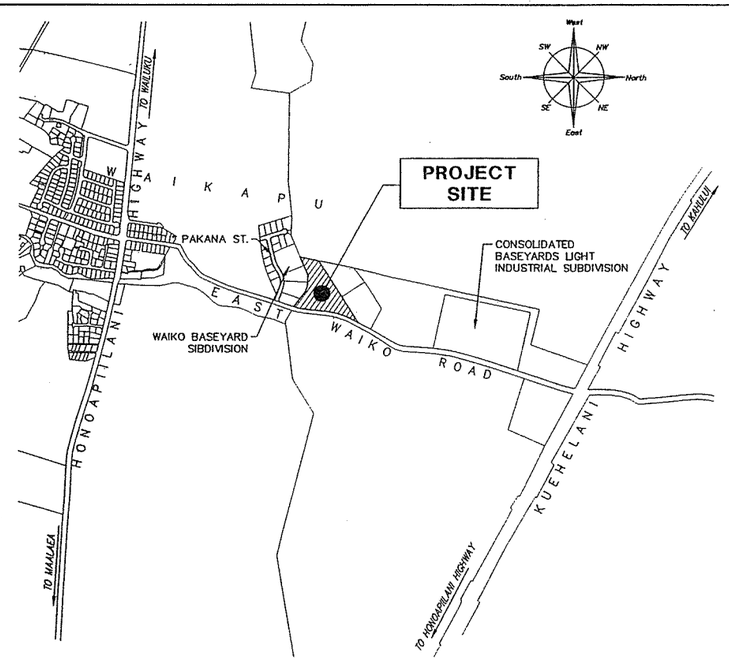
PREPARED FOR: ABC DEVELOPMENT COMPANY, LLC.
815 Waiakamilo Road
Honolulu, Hawaii 96817

PREPARED BY: R. T. TANAKA ENGINEERS, INC.
871 Kolu Street, Suite 201
Wailuku, Maui, Hawaii 96793



HAWAIIAN ISLANDS

LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

INDEX TO DRAWINGS:

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	BMP PLAN AND MISCELLANEOUS NOTES
3	GRADING PLAN

DATE: JUNE 07, 2010
JOB No.: 06-075
SHEET 1 OF 3 SHEETS

(Layout1) Z:\DRAW1\2008\06-075\ABCDEV_TITLE SHT.dwg 16-JUL-2010 : Revised BY:Nancy

SOIL EROSION AND DUST CONTROL NOTES:

A. PERMITTEE NOTES TO CONTROL DRAINAGE AND SOIL EROSION:

1. CONTROL DUST BY MEANS OF WATER TRUCKS OR BY INSTALLING TEMPORARY SPRINKLER SYSTEMS OR BOTH IF NECESSARY.
2. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND FOR THE WEEKEND AND HOLIDAYS.
3. ALL EXPOSED AREAS SHALL BE PAVED, GRASSED, OR PERMANENTLY LANDSCAPED AS SOON AS FINISHED GRADING IS COMPLETED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND PAY FOR THE WATER NECESSARY FOR DUST CONTROL AND IRRIGATION PURPOSES.
5. CONTRACTOR TO CONSTRUCT TEMPORARY DIVERSION DITCHES OR SWALES AWAY FROM GRADED AREAS TO NATURAL GROUND OR DRAINAGEWAYS DURING CONSTRUCTION.
6. CONTRACTOR SHALL SUBMIT A SATISFACTORY SOIL EROSION CONTROL PLAN TO MINIMIZE SOIL EROSION PRIOR TO AN ISSUANCE OF A GRADING PERMIT. EROSION CONTROL MEASURES SHALL BE IN COMPLIANCE WITH SECTION 20.08.035 OF THE MAUI COUNTY CODE (ORD. NO. 2684). SEE ALSO GRADING NOTES NO. 2.
7. THE FOLLOWING ADDITIONAL MEASURES SHALL BE TAKEN TO CONTROL SOIL EROSION DURING THE SITE DEVELOPMENT PERIOD:
   a. MINIMIZE TIME OF CONSTRUCTION.
   b. RETAIN EXISTING GROUND COVER UNTIL LATEST DATE TO COMPLETE CONSTRUCTION.
   c. EARLY CONSTRUCTION OF DRAINAGE CONTROL FEATURES.
   d. USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.
   e. STATION WATER TRUCK(S) ON SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION ZONES (WEEKENDS AND HOLIDAYS INCLUDED).
   f. ALL GRADED AREAS, UNLESS TO PAVED, BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED. PROVIDE BIODEGRADABLE SOIL EROSION CONTROL MATTING ON STEEP SLOPES (4:1 OR STEEPER)
   g. INSTALLATION OF SILT AND DUST CONTROL FENCE. SILT FENCE CAN BE SUBSTITUTED BY PROVIDING GRAVEL BAGS.
8. THE CONTRACTOR IS THE SOLE PARTY RESPONSIBLE FOR THE ADEQUACY OF ALL TEMPORARY CONTROL MEASURES TO PROTECT THE WORK FROM THE EFFECTS OF DUST AND EROSION. HE SHALL BE RESPONSIBLE FOR RESPONDING TO COMPLAINTS FROM NEIGHBORING PROPERTIES AND WILL PROVIDE ADDITIONAL MITIGATION MEASURES AS NECESSARY AT NO ADDITIONAL COST TO OWNER.
9. OIL OR PETROLEUM-BASED PRODUCTS SHALL NOT BE USED FOR DUST CONTROL.
10. STORM WATER CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO CONSTRUCTION AND SHALL REMAIN OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD OR UNTIL PERMANENT CONTROLS ARE IN PLACE.
11. DISCHARGES ASSOCIATED WITH THE OPERATION AND MAINTENANCE OF EQUIPMENT SHALL BE FIELD MONITORED BY THE CONTRACTOR. ANY MECHANICAL AND HYDRAULICS FLUID LEAKAGE SHALL BE REPAIRED AS SOON AS IT IS IDENTIFIED AND LOCATED. LEAKAGE OF MECHANICAL FLUIDS SHALL BE CONTAINED, PROPERLY DISPOSED AND NOT ALLOWED TO IMPACT THE OCEAN.
12. PRIOR TO ISSUANCE OF THE GRADING PERMIT, THE CONTRACTOR SHALL MEET WITH THE DEVELOPMENT SERVICES ADMINISTRATION AND PROVIDE INFORMATION ON THE SOURCE OF WATER FOR DUST CONTROL, AND JUSTIFY THE NUMBER OF WATER TRUCKS TO BE USED FOR THE CLEARING, GRUBBING AND LOADING OPERATIONS.
13. IF THE CONTRACTOR IS NOT ABLE TO SATISFACTORILY CONTROL DUST EMISSIONS FROM THE PROJECT SITE, ALL CONSTRUCTION WORK SHALL CEASE EXCEPT FOR WATERING AND OTHER STABILIZATION EFFORTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY CLEANING THE ROADWAY OF MUD OR SILT TRACKED FROM THE PROJECT SITE.

B. NOTES FOR BMP's:

THE CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE "CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP's) FOR THE COUNTY TO MAUI" MAY 2001 (STD. BMP's) TO EXTENT POSSIBLE DURING THE CONSTRUCTION OF THIS PROJECT. CONTROL OF EROSION, SEDIMENT AND CONSTRUCTION WASTE MANAGEMENT WILL BE IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE FOLLOWING SECTIONS OF THE STANDARD BMP's.

SECTION 6.06 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT.
SECTION 6.10 SEEDING
SECTION 6.30 MATS, NETS AND BLANKETS
SECTION 6.31 MULCHING
SECTION 6.32 PRESERVATION OF EXISTING VEGETATION
SECTION 6.33 PROTECTION OF STOCKPILES
SECTION 6.40 CONSTRUCTION ROAD STABILIZATION
SECTION 6.62 SEDIMENT FENCE (SILT FENCE)
SECTION 6.70 DUST CONTROL
SECTION 6.71 GOOD NEIGHBOR BARRIERS
SECTION 6.91 SOLID WASTE MANAGEMENT
SECTION 6.92 CONCRETE WASTE MANAGEMENT
SECTION 6.93 VEHICLE FUEL AND MAINTENANCE MANAGEMENT

C. RECOMMENDED GENERAL SCHEDULE FOR IMPLEMENTING BMP's:

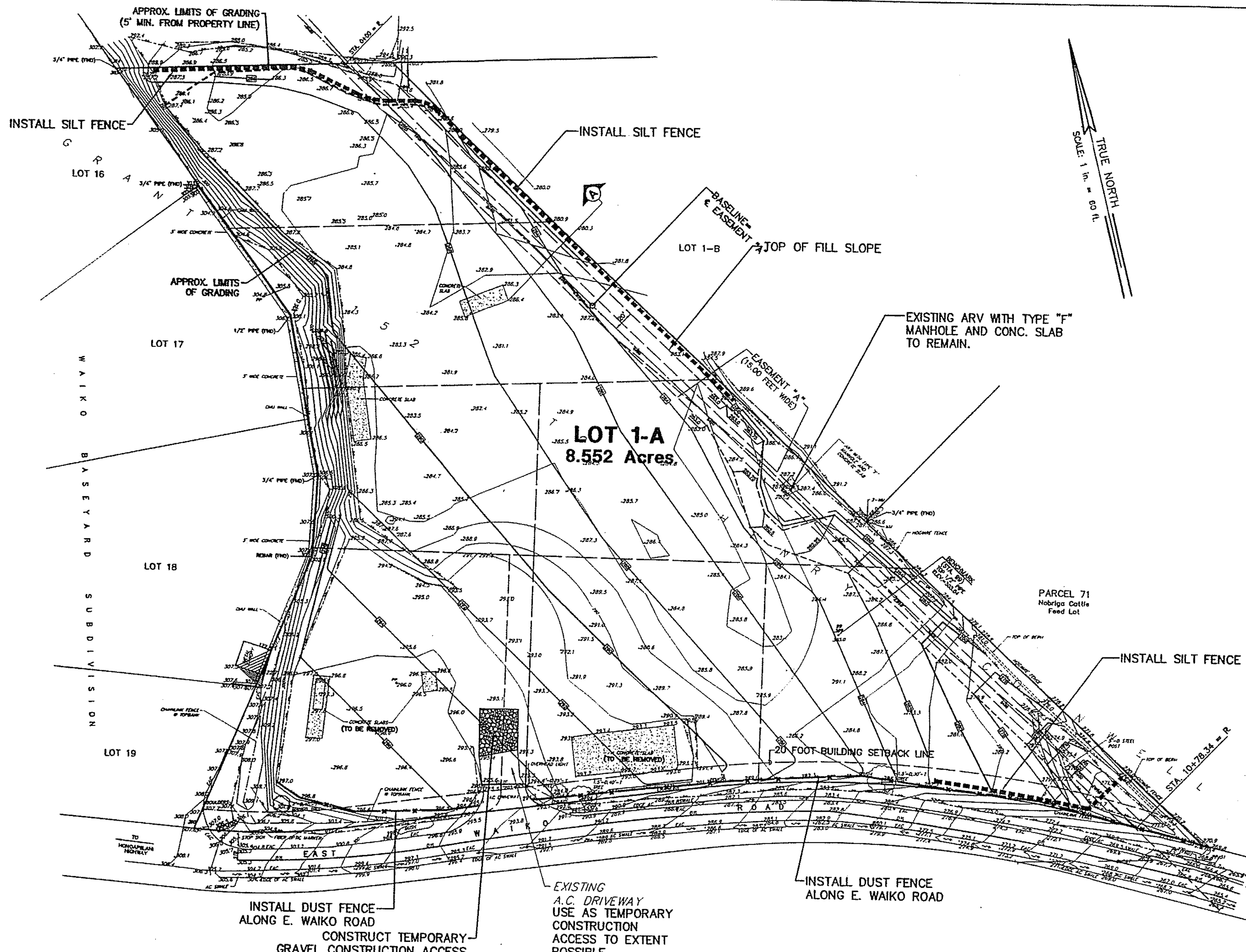
1. CONSTRUCT TEMPORARY GRAVEL ACCESS.
2. INSTALL/CONSTRUCT EROSION CONTROL MEASURES, INCLUDING TEMPORARY SEDIMENT BASIN(S) AS REQUIRED.
3. GRADE PROJECT AREA AS PLANNED. FLAG APPROXIMATE LIMITS OF GRADING AREA TO PREVENT UNNECESSARY REMOVAL OF EXISTING VEGETATIONS OUTSIDE OF THE GRADING AREA.
4. GRASS GRADED AREAS AS SOON AS FINISHED GRADING IS COMPLETED. PROVIDE BIODEGRADABLE SOIL EROSION CONTROL MATTING, AS REQUIRED ON STEEP SLOPES.

NOTES FOR TOPOGRAPHIC FEATURES:

1. ELEVATION DATUM = MEAN SEA LEVEL.
2. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED IN THE FIELD, HOWEVER, CONNECTION OF UNDERGROUND UTILITY LINES AS SHOWN ARE UNVERIFIED AND COMPILED FROM EXISTING DATA. UNDERGROUND UTILITIES SHOWN HEREON ARE FOR INFORMATION ONLY, HAVING BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES, BUT FROM OTHERS NOT CONNECTED WITH THIS COMPANY. THEREFORE, NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INFORMATION.

NOTE REGARDING DISCOVERIES OF ARCHAEOLOGICAL INTEREST:

SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR AND/OR LANDOWNER SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (243-5169 ON MAUI OR 692-8023 ON OAHU) WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.



BMP PLAN

60 30 0 60 120
GRAPHIC SCALE IN FEET

NOTE : LOCATION OF EROSION CONTROL MEASURES AS SHOWN ARE SCHEMATIC. THE CONTRACTOR SHALL LOCATE THESE CONTROL MEASURES IN THE FIELD TO PROVIDE MAXIMUM PROTECTION DURING CONSTRUCTION.

GRADING NOTES:

1. CONTRACTOR SHALL OBTAIN A GRADING AND GRUBBING PERMIT FROM THE THE DEPARTMENT OF PUBLIC WORKS, DEVELOPMENT SERVICES ADMINISTRATION (DSA) TWO (2) WEEKS PRIOR TO COMMENCEMENT OF ANY GRADING OR GRUBBING.
2. CONTRACTOR SHALL BE REQUIRED TO SUBMIT A SATISFACTORY GRADING WORK METHOD TO MINIMIZE DUST POLLUTION BEFORE A GRADING PERMIT IS ISSUED.
3. ALL GRADING OPERATIONS SHALL CONFORM WITH APPLICABLE PROVISIONS OF THE "WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS" CONTAINED IN THE STATE OF HAWAII PUBLIC HEALTH REGULATIONS, STATE DEPT. OF HEALTH ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS AND THE COUNTY GRADING ORDINANCE.
4. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE AT ALL TIMES, INCLUDING WEEKEND AND HOLIDAYS. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATION OF THE STATE DEPARTMENT OF HEALTH AND GRADING ORDINANCE.
5. THE CONTRACTOR SHALL REMOVE ALL SILTS AND DEBRIS RESULTING FROM HIS WORK. THE COST INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE DIRECTOR OF PUBLIC WORKS (COUNTY OF MAUI) SHALL BE MADE PAYABLE BY THE CONTRACTOR.
6. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS AND EN-INVRONMENTAL MANAGEMENT OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SHALL ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
7. APPROXIMATE:

EXCAVATION	= 23,120	C.Y.	FOR GRADING PERMIT
EMBANKMENT	= 17,830	C.Y.	PURPOSES
AREA	= 8.0	ACRES	ONLY

EARTHWORK QUANTITIES SHOWN ARE APPROXIMATE AND ARE TO BE USED ONLY FOR OBTAINING GRADING PERMIT. NO ADJUSTMENTS HAVE BEEN MADE FOR LOSSES DUE TO GRUBBING AND SHRINKAGE NOR FOR DIFFERING TOPOGRAPHIC CONDITIONS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PREPARE HIS OWN ESTIMATE AND BID ACCORDINGLY.

LEGEND AND ABBREVIATIONS:

Symbol	Description
EAC	EDGE AC SHOULDER
DYL	DOUBLE YELLOW LINE
WS	WHITE STRIPING
BYS	DASHED YELLOW STRIPING
STB	STOP BAR
TP	TELEPHONE/ ELECTRIC POLE WITH GUY WIRE
PP	POWER POLE
— tb —	TOP BANK
— bb —	BOTTOM BANK
— · — · —	FENCE LINE (TYPE)
— OHE&T —	OVERHEAD ELECTRIC/ TELEPHONE LINE
— EW2" —	WATERLINE & SIZE (APPROX. LOCATION)
82.2	EXISTING SPOT ELEVATION
— 10 —	EXISTING CONTOUR
— 290 —	FINISH CONTOUR
289.9	FINISH SPOT ELEVATION

Tanaka ENGINEERS, INC.
CIVIL & STRUCTURAL ENGINEERS LAND SURVEYORS
871 KOLU STREET SUITE 201 WAILUKU, MAUI, HAWAII PHONE No.: 242-6861

CONSTRUCTION PLANS FOR
GRADING OF LOT 1-A
KOPAA SUBDIVISION No. 2
AT WAIKAPU, WAILUKU, MAUI, HAWAII

BMP PLAN & MISCELLANEOUS NOTES

KIRK T. TANAKA LICENSED PROFESSIONAL ENGINEER No. 6646-C HAWAII, U.S.A.
LICENSE EXPIRES: 04-30-12

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

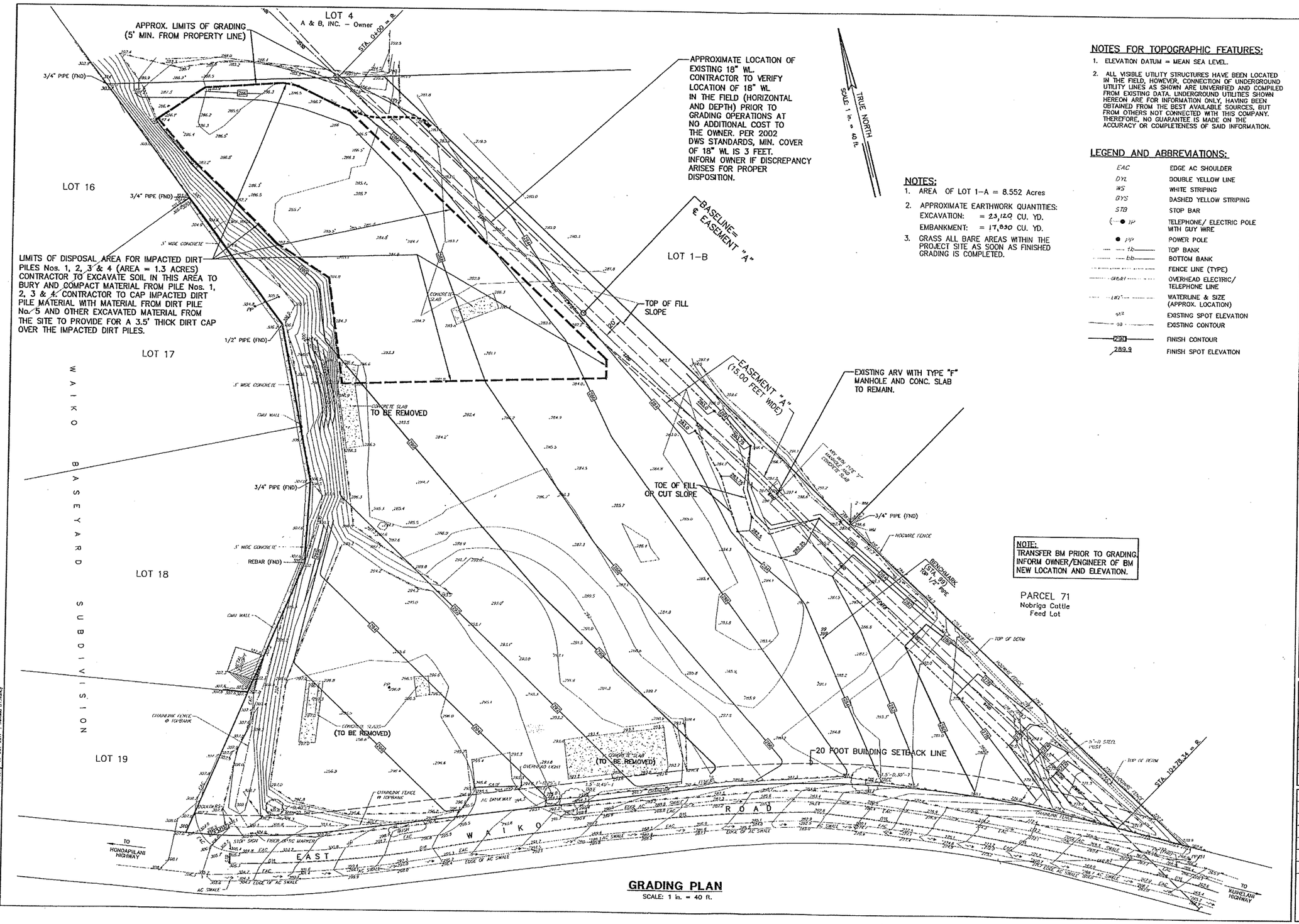
DATE : 10/19/11

REVISIONS:	
01/11/11	MISC. REVISIONS
10/19/11	REVISIONS PER DSA

T.M.K.: (2) 3-8-07: 105
SCALE: AS NOTED
DESIGNED BY: K.T.
CHECKED BY: K.T.
DRAWN BY: J.E./N.D.
DATE: JUNE 07, 2010
JOB No.: 06-075

SHEET 2 OF 3 SHEETS

XREF: Z:\DRAW\2008\06-075\01-06-11_ABCDEV_GRADING PLAN.dwg
Z:\DRAW\2008\06-075\ABCDEV_SOIL EROSION CONTROL PLAN.dwg 19-OCT-2011 : Revised BY:Nancy



NOTE:
TRANSFER BM PRIOR TO GRADING. INFORM OWNER/ENGINEER OF BM NEW LOCATION AND ELEVATION.

GRADING PLAN

SCALE: 1 in. = 40 ft.

NOTES:

1. AREA OF LOT 1-A = 8.552 Acres
2. APPROXIMATE EARTHWORK QUANTITIES:
   EXCAVATION: = 23,120 CU. YD.
   EMBANKMENT: = 17,850 CU. YD.
3. GRASS ALL BARE AREAS WITHIN THE PROJECT SITE AS SOON AS FINISHED GRADING IS COMPLETED.

NOTES FOR TOPOGRAPHIC FEATURES:

1. ELEVATION DATUM = MEAN SEA LEVEL.
2. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED IN THE FIELD, HOWEVER, CONNECTION OF UNDERGROUND UTILITY LINES AS SHOWN ARE UNVERIFIED AND COMPILED FROM EXISTING DATA. UNDERGROUND UTILITIES SHOWN HEREON ARE FOR INFORMATION ONLY, HAVING BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES, BUT FROM OTHERS NOT CONNECTED WITH THIS COMPANY. THEREFORE, NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INFORMATION.

LEGEND AND ABBREVIATIONS:

EAC	EDGE AC SHOULDER
DYL	DOUBLE YELLOW LINE
WS	WHITE STRIPING
DYS	DASHED YELLOW STRIPING
STB	STOP BAR
TP	TELEPHONE/ ELECTRIC POLE WITH GUY WIRE
PP	POWER POLE
tb	TOP BANK
bb	BOTTOM BANK
	FENCE LINE (TYPE)
OHE&T	OVERHEAD ELECTRIC/ TELEPHONE LINE
12"	WATERLINE & SIZE (APPROX. LOCATION)
92	EXISTING SPOT ELEVATION
90	EXISTING CONTOUR
291	FINISH CONTOUR
289.9	FINISH SPOT ELEVATION

Tanaka ENGINEERS, INC.
CIVIL & STRUCTURAL ENGINEERS
LAND SURVEYORS
871 KOLU STREET
SUITE 201
WAILUKU, MAUI, HAWAII
PHONE No.: 242-6861

CONSTRUCTION PLANS FOR
GRADING OF LOT 1-A
KOPAA SUBDIVISION No. 2
AT WAIKAPU, WAILUKU, MAUI, HAWAII

GRADING PLAN

KIRK T. TANAKA
LICENSED PROFESSIONAL ENGINEER
No. 6646-C
HAWAII, U.S.A.
LICENSE EXPIRES: 04-30-12

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

DATE: 10/19/11

REVISIONS:

01/10/11	REVISED GRADING PER OWNER
09/06/11	REVISED PER OWNER
10/19/11	REVISIONS PER DSA

T.M.K.:	(2) 3-8-07: 105
SCALE:	AS NOTED
DESIGNED BY:	K.T.
CHECKED BY:	K.T.
DRAWN BY:	J.E./N.D.
DATE:	JUNE 07, 2010
JOB No.:	06-075

SHEET 3 OF 3 SHEETS

(Layout1A)
XREF: Z:\DRAWN\2006\06-075\ABSDEV.dwg and Z:\DRAWN\2006\06-075\06-075-TOPO.dwg
Z:\DRAWN\2006\06-075\06-11-ASDEV-GRADING PLAN_10-2011 : Revised BY:Nancy

APPENDIX C.

Archaeological Assessment Survey Report

ASC082510

FINAL

Archaeological Assessment Survey:
Lot 1-A, Kopa`a Subdivision No. 2
Waikapu, Wailuku District, Maui Island
TMK: (2) 3-8-07:105

for:

ABC Development Company, LLC
815 Waiakamilo Road
Honolulu, Hawai`i 96817

by:

Paul Titchenal
and
Aki Sinoto

August 2010

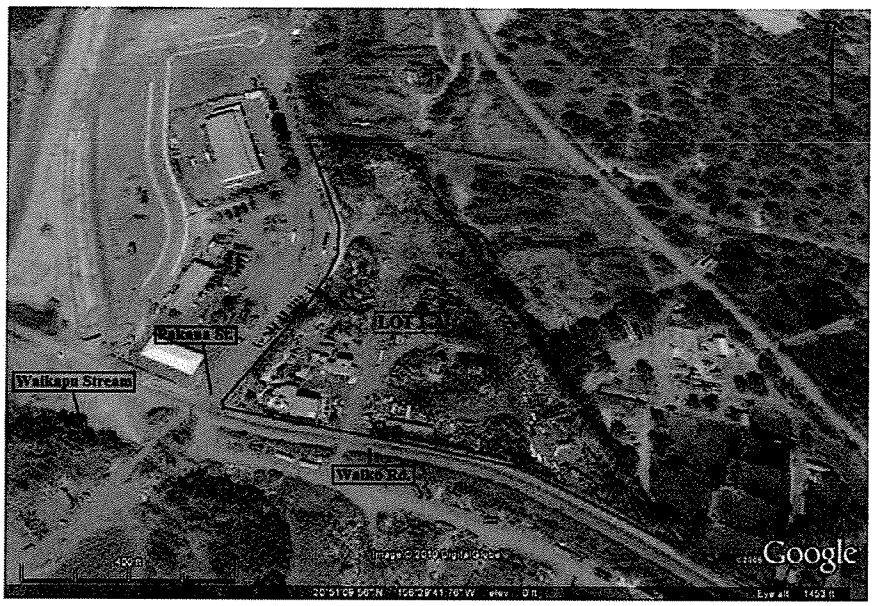
Revised
December 2010

Aki Sinoto Consulting, LLC
2333 Kapiolani Blvd., No. 2704
Honolulu, Hawai`i 96826

ASC082510

FINAL

Archaeological Assessment Survey: Lot 1-A, Kopa`a Subdivision No. 2 Waikapu, Wailuku District, Maui Island TMK: (2) 3-8-07:105



August 2010

Revised December 2010

Aki Sinoto Consulting
2333 Kapiolani Blvd., No. 2704
Honolulu, Hawai`i 96826

ABSTRACT

At the request of Carlsmith Ball LLP, representing the owner, ABC Development Company, LLC of Honolulu; Aki Sinoto Consulting of Honolulu conducted an archaeological inventory-level survey in conjunction with the planning for the proposed development of a light industrial subdivision in Waikapu, Wailuku, Maui Island. The roughly triangular project parcel, encompassing 8.552 acres (TMK: (2) 3-8-07:105), is located adjacent to the junction of Waiko Road and Pakana Street. This parcel was formerly the location of Maui Scrap-metal (Apana scrap-yard),

The surface survey encountered no evidence of surface structural or other remains of significant past cultural activities. In addition, nine backhoe, subsurface test trenches and eleven subsurface inspection units, totaling twenty localities excavated to depths ranging between 1.5 to 2.6 meters, produced a complete absence of subsurface cultural remains. No surface or subsurface structural remains or any other features indicative of prehistoric or historic period cultural activities were encountered during the course of the current fieldwork. Extensive physical evidence of compounded previous ground disturbances was observed within the subject area. First-hand oral accounts from a former foreman for the Apana scrap-yard, confirmed that the area had previously been mined for sand and the area was leveled and built up with imported fill prior to the commencement of the scrap-yard operation in the 1990s.

The negative results of the fieldwork warranted the preparation of this archaeological assessment survey report in accordance to HAR 13-284-5(A). Although the current procedure did not encounter any significant remains, based on the presence of some significant remains that were discovered in the past in the vicinity, archaeological monitoring is recommended, especially during the initial stages of construction related excavation activities. An archaeological monitoring plan shall be prepared for review by SHPD. Construction activities cannot commence until the plan receives approval from SHPD.

TABLE OF CONTENTS

page

ABSTRACT iii

TABLE OF CONTENTS iv
LIST OF FIGURES iv
LIST OF TABLES v

INTRODUCTION 1
PROJECT AREA 1
ENVIRONMENTAL SETTING 1
METHODS 7

RESULTS OF FIELDWORK 7
TEST TRENCH DESCRIPTIONS 8
Trench 1 8
Trench 2 15
Trench 3 15
Trench 4 18
Trench 5 20
Trench 6 20
Trench 7 23
Trench 8 23
Trench 9 26

DISCUSSION 26

RECOMMENDATIONS 26

BIBLIOGRAPHY 28

LIST OF FIGURES

page

Figure 1. Location of Project Area on USGS Wailuku Quadrangle 2

Figure 2. Location of Project Parcel on TMK 3

Figure 3. Topographic Survey Map of Lot 1-A 4

Figure 4. Overview Photos of Project Area 6

Figure 5. Map Showing Test Trenches and Inspection Units 9

Figure 6. Stratigraphic Column Profiles of Backhoe Trenches 1 -9 10

Figure 7. Overview of T-1 to East and South Trench Face 14

Figure 8. Overview of T-2 to East and South Trench Face 16

Figure 9. Overview of T-3 to Northwest and East Trench Face 17

LIST OF FIGURES (cont'd)

page

Figure 10. Overview of T-4 to East and South Trench Face 19
Figure 11. Overview of T-5 to East and South Trench Face 21
Figure 12. Overview of T-6 to West and South Trench Face 22
Figure 13. Overview of T-7 to North and West Trench Face 24
Figure 14. Overview of T-8 to West and South Trench Face 25
Figure 15. Overview of T-9 to Northwest and Northeast Trench Face 27

LIST OF TABLES

page

Table 1. Stratigraphic Descriptions of T-1 through T-3 11
Table 2. Stratigraphic Descriptions of T-4 through T-6 12
Table 3. Stratigraphic Descriptions of T-7 through T-9 13

INTRODUCTION

At the request of Carlsmith Ball LLP, representing the owner, ABC Development Company, LLC of Honolulu; Aki Sinoto Consulting of Honolulu conducted an archaeological inventory-level survey in conjunction with the planning for the proposed development of a light industrial subdivision in Wailuku, Maui. The negative results of the fieldwork warranted the preparation of this archaeological assessment survey report in accordance to HAR 13-284-5(A).

PROJECT AREA

The roughly triangular project parcel, encompassing 8.552 acres (TMK: (2) 3-8-07:105), is located adjacent to the junction of Waiko Road and Pakana Street (Fig. 1 & 2). The subject parcel, formerly the location of Maui Scrap-metal (Apana scrap-yard), is located around the 300-foot amsl elevation, roughly 3.2 miles from Kahului Bay, within the southern marginal portions of the Pu`uone region, in Waikapu *ahupua`a*, Wailuku District, Maui Island (Figs. 3 & 4). The parcel is bounded on the south by Waiko Road, west by Pakana Street and existing light industrial facilities, and northeast by cattle feedlot paddocks and open land. Paralleling the northeastern boundary within the subject property is a County of Maui easement (15 feet in width) for an existing 42" water transmission line.

ENVIRONMENTAL SETTING

A scrap yard was already in existence prior to the Maui Scrapmetal (Apana) tenure which started in 1991, in the subject project area. The sand-hills region was used for cattle pasture and during the period following WWII, many areas within the dunes were mined for sand. According to Mr. Lawrence Koki, the foreman for Maui Scrapmetal, portions of the subject parcel had also previously been mined and necessitated importing of fill materials before the most recent scrap yard operations could commence. He recalled that crusher waste from Hawaiian Cement and also river spoils from Waikapu Stream were used as some of the fill material. He estimates that about 2 to 3 feet of fill was imported (Mr. Lawrence Koki, pers. comm.). Till today, a substantial elevation difference is evident, especially along the western boundary between the subject property and those adjoining to the west, with the subject parcel situated lower ranging in depth from 10 feet at the southern end and almost 30 feet towards the northern end (Fig. 5).

The environment at the time of the current fieldwork consisted of large sorted piles of metal scrap together with dirt and boulders that had been pushed using heavy equipment for the cleanup operation. Aside from a few existing concrete slabs, all surface structures had already been

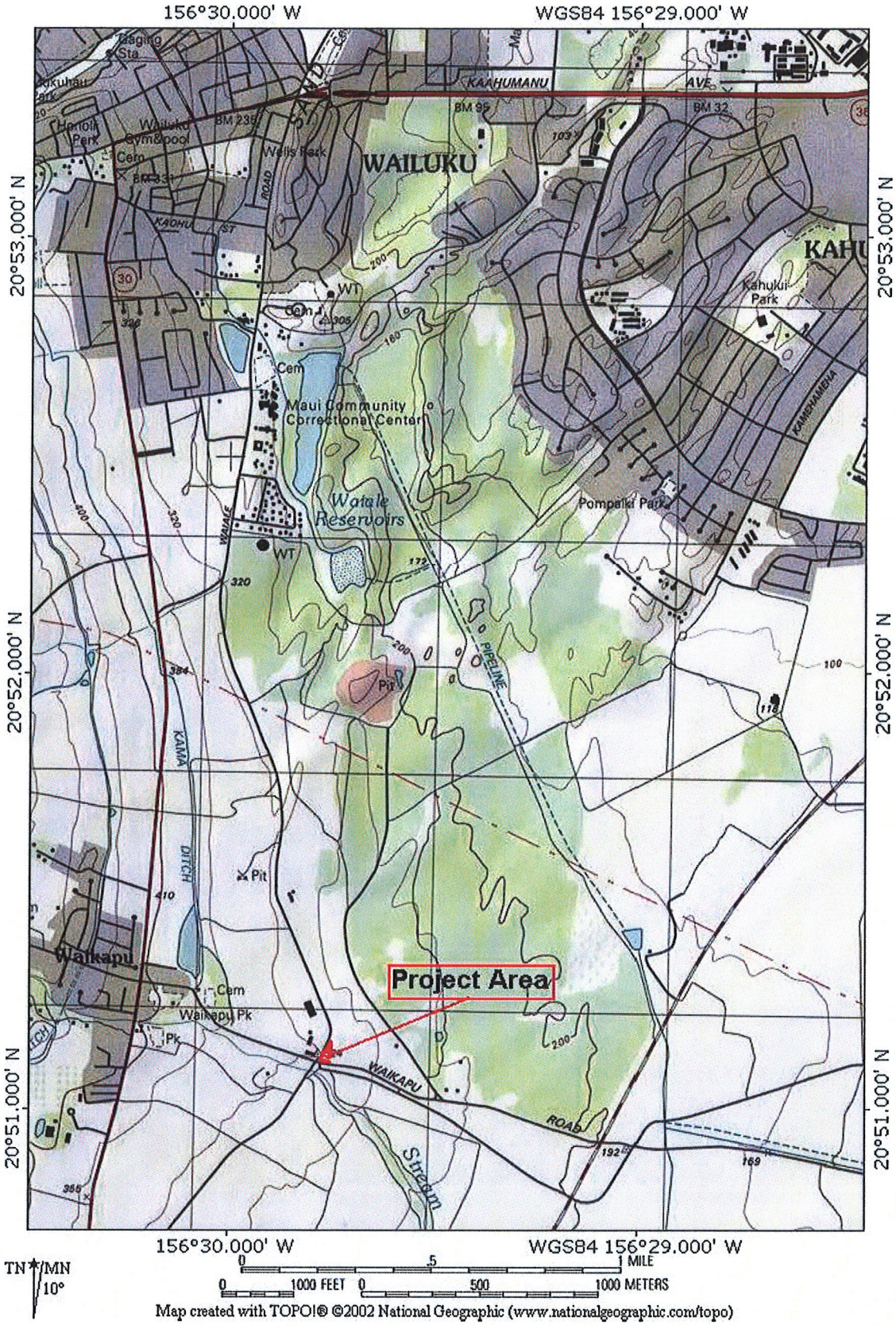


Figure 1. Location of Project Area on USGS Wailuku Quadrangle

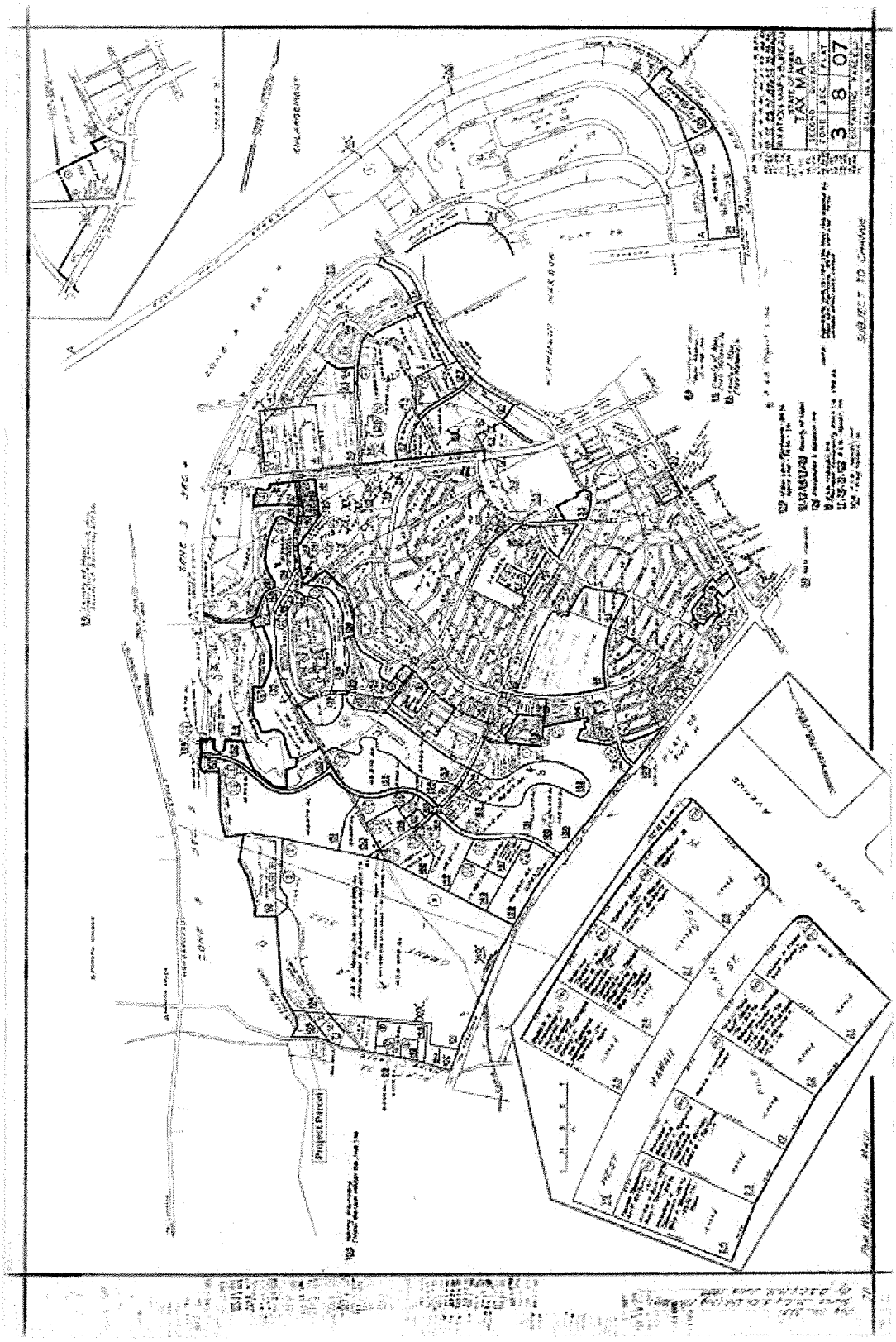


Figure 2. Tax Map for Plat 07 Showing Location of Parcel 105

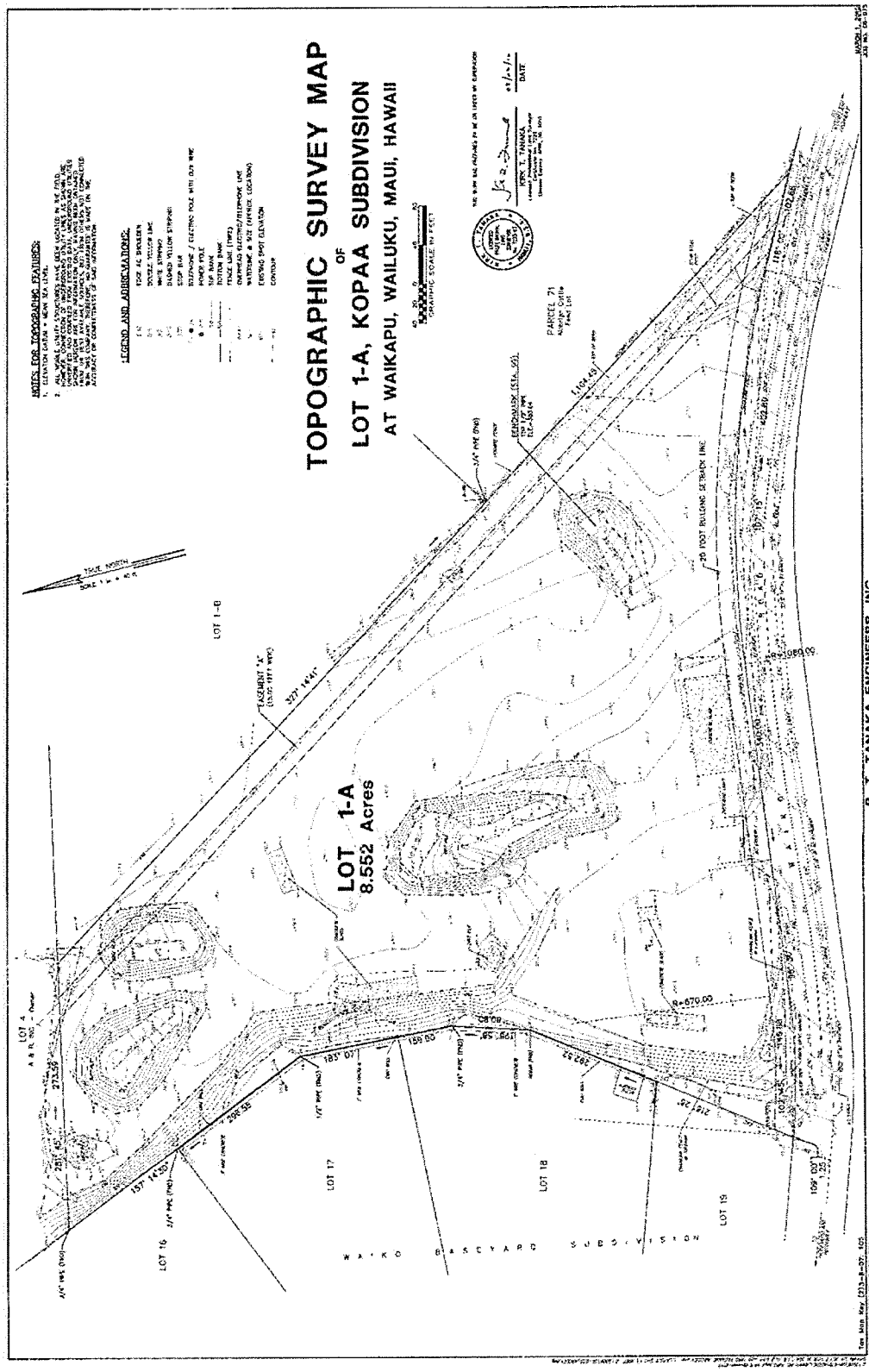


Figure 3. Topographic Survey Map of Lot 1-A, Note Waterline Easement Along East Boundary

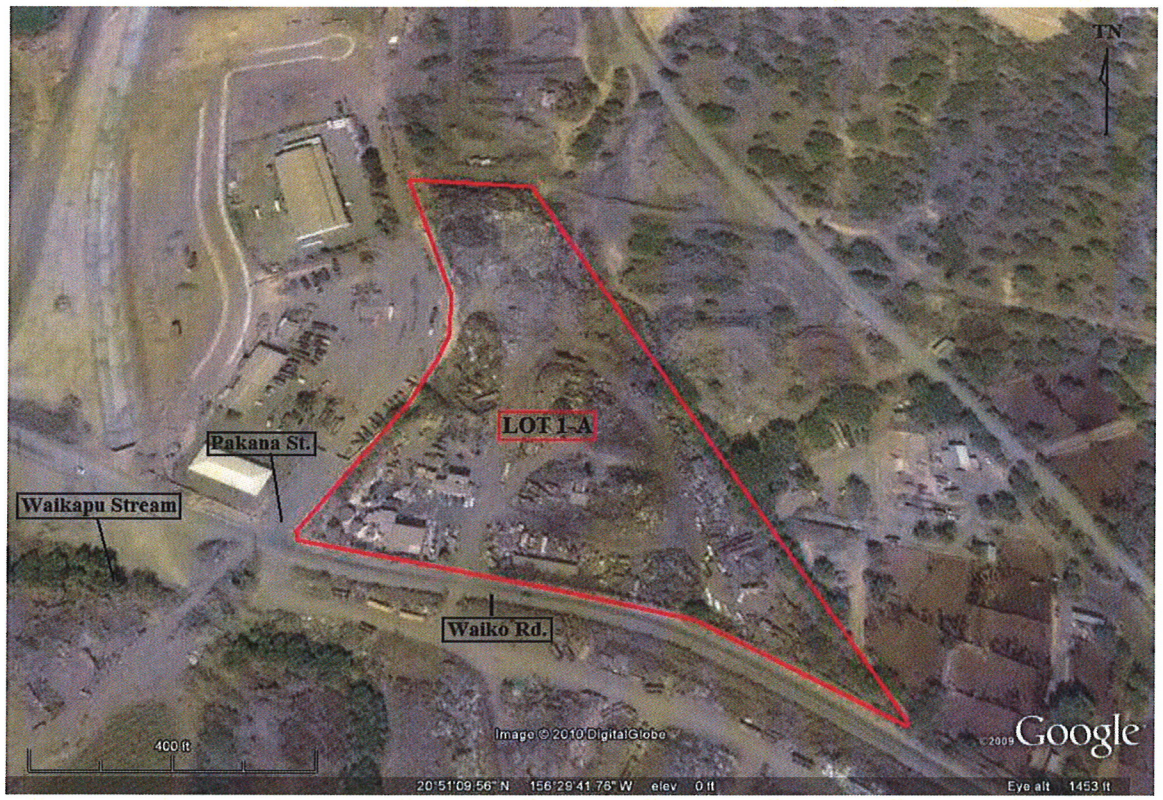


Figure 4. Aerial Photo of Project Parcel Prior to Scrap Removal
(Google Earth Photo)

demolished. The ground surface was almost wholly devoid of any cover vegetation aside from sporadic, small stands of exotic weeds and grass, with some tall cane grass (*Pennesetum purpureum*), castor bean or pa`aila (*Ricinus communis*), *koa haole* (*Leucaena leucocephala*), and *kiawe* (*Prosopis pallida*) along the periphery of the parcel.

The soils in the project area consist primarily of Pu`uone Series sand, an excessively drained sand derived from coral and seashells (Foote et al 1972:117). The southwestern corner of the project parcel also contains some Jaucus soils, which are derived from calcareous soils developed by wave and wind action and also excessively drained (Foote et al 1972:48). The existence of subsurface riverine deposits; consisting of apparent flood-borne lenses of waterworn basalt boulders, pebbles, and gravel in the southern and lowlying portions of the project area; also attests to the fact that the natural course of Waikapu Stream, which is currently diverted, at one time followed an alignment paralleling the southern boundary of the subject parcel.

Figure 5. (top) Overview of Project Area to North
(bottom) Overview to South
Note Lower Ground Elevation Along Western Boundary

METHODS

The current archaeological procedure was conducted over two days, on March 22 and 31, 2012, expending 6 person/days. The surface survey achieved 100% coverage of the project area. The walking transects and subsurface testing locations were recorded through the use of topographic maps and plans provided by the owner as well as through GPS point survey using a handheld Garmin 76Sx. Formal subsurface testing was undertaken at nine locations, employing a CAT 330C excavator. Eleven subsurface inspection units were also excavated in the period preceding the current assessment in conjunction with the cleanup of the scrap-yard.

Based on the absence of any surface or subsurface remains or other indications of prehistoric or historic period cultural activities, further data recovery procedures were deemed unwarranted. Mr. Hinano Rodrigues from the Maui Office of the State Historic Preservation Division conducted a field inspection on March 31, 2010 and observed the absence of any cultural remains of significance within the project area and the test trenches. The fieldwork and report preparation were undertaken by Paul Titchenal, M.A., Kimokeo Kapahulehua, and Aki Sinoto. Eugene Dashiell provided GPS/GIS support.

RESULTS OF FIELDWORK

The surface survey encountered no evidence of surface structural or other remains of significant past cultural activities. In addition, nine subsurface test trenches and eleven subsurface inspection units, totaling twenty localities excavated to depths ranging between 1.5 to 2.6 meters, produced a complete absence of subsurface cultural remains. No surface or subsurface structural remains or any other features indicative of prehistoric or historic period cultural activities were encountered during the course of the current fieldwork. Extensive physical evidence of compounded previous ground disturbances was observed within the subject area.

The placement of the test units was based upon two criteria; one was the selection of areas where the ground surface appeared to be higher and possibly underwent less prior disturbance, such as in the southeast corner of the parcel; and second, in locations where stratigraphic anomalies were previously observed in the inspection units.

The locations of the test trenches and the inspection units (Fig. 5) are provided together with stratigraphic descriptions for each trench (Table 1), representative stratigraphic profiles (Fig. 6), and photographs for each test trench (Figs. 7-15).

TEST TRENCH DESCRIPTIONS

A total of nine trenches were excavated in the project parcel (Figure 6). Trenches 1-5, were located in the southern portion of the parcel; Trenches 6-8 were located in the northern portion of the parcel; and Trench 9 was situated in the central portion of the project area. Test trenches averaged about 5 meters in length, about 1.5 meters in width, and ranged in depth between 1.5 to 2.6 meters. A 0.50 meter representative column profile was drawn for each trench (Fig. 7). Descriptions of these profiles are summarized on Tables 1-3 and narrative descriptions are provided below.

In the following soil descriptions, the term 'sand' always refers to Jaucus, coralline derived sands. It is notable that no formations of lithified or cemented coralline sands, which are common in adjacent areas to the east, were encountered in the project area. The silt deposits exposed in the test trenches are fairly coarse and non plastic. No clay strata were encountered. The rounded basalt boulders and cobbles described in the basal portions of some of the profiles are not derived from stream bed environments but are roughly rounded materials resulting primarily from processes of mass waiting. The other deposits of water-rounded, boulders, pebbles, and gravel occurring interspersed within the intermediate and upper zones of the trench profiles can be attributed to flood borne riverine deposits. Layer I, in all trenches with the exception of T-8, consists of silts or sandy silts which are reportedly imported fill materials. In some cases however, the similarity of this layer to underlying strata renders this assumption difficult to verify or speculative. This situation, however, may be the result of the recent cleanup activities which truncated the upper ground surface deposition.

Trench 1

Trench 1 was excavated in the southeastern corner of the project parcel and oriented east to west (Fig. 8). A representative column was drawn of the central segment of the south wall of Trench 1. The area surrounding the trench had been recently scraped and leveled and was free of vegetation. Layer I extended to a depth of 25 cmbs and consisted of slightly compact, brown (10 YR 5/3) silt; reportedly fill material imported from adjacent properties. The boundary between Layers I and II is abrupt and level. Layer II extends from 25 to 42 cmbs and consists of slightly compact, brown (7.5 YR 4/2) silt. The interface between Layers II and III is abrupt and slightly wavy. Layer III is a lens, extending from 43 to 49 cmbs, which was not contiguous in all areas of the trench. Layer III is composed of about40% partially rounded basalt pebbles in a matrix of loose, brown (7.5 YR 5/3), sandy silt. The transition between Layers III and IV is abrupt and

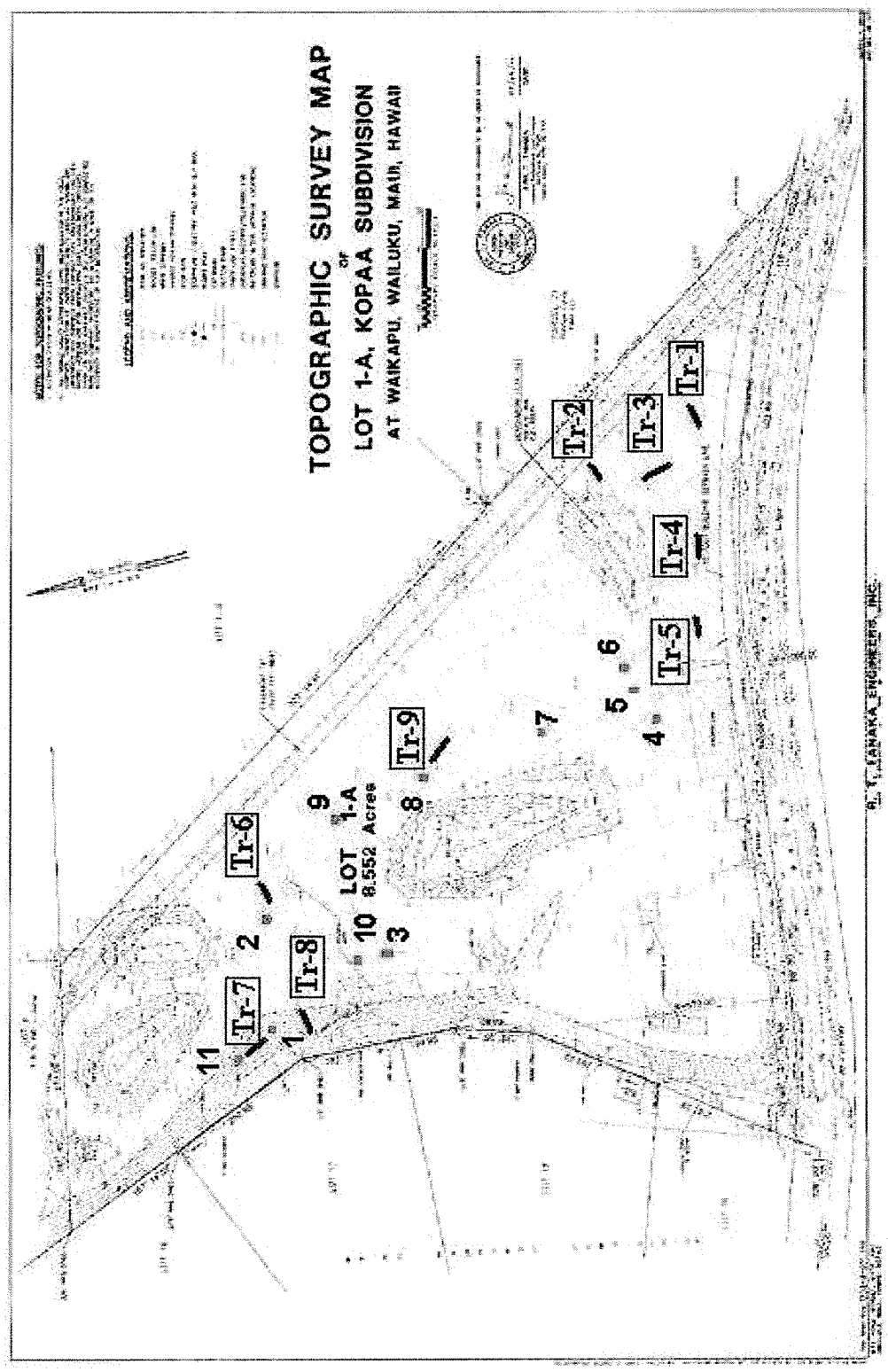
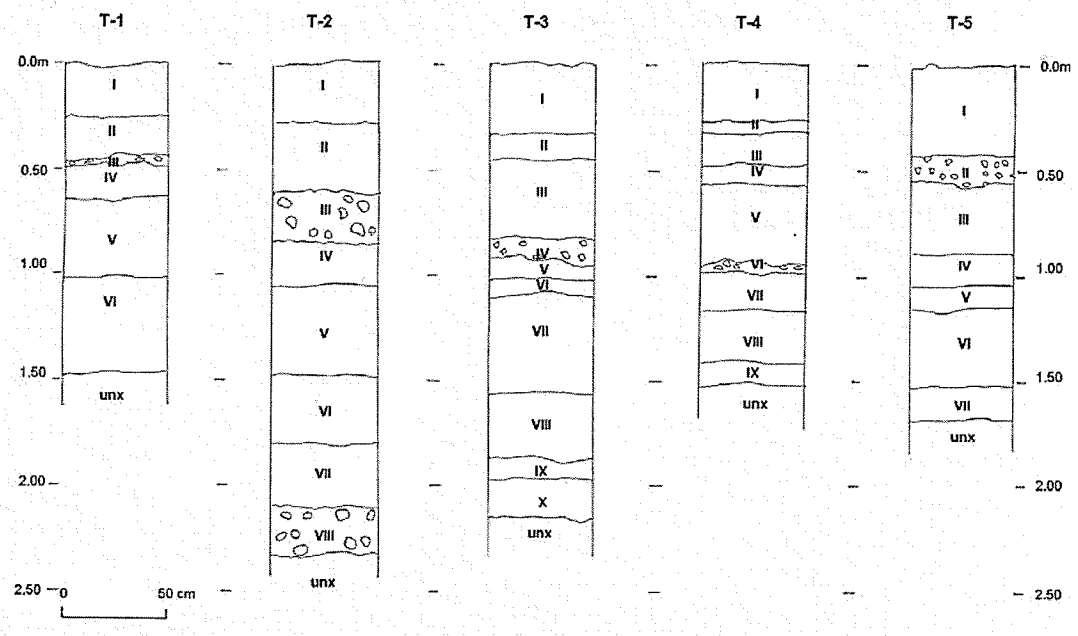


Figure 6. Map Showing Test Trenches 1-9 in Red and Inspection Units 1-11 in Green



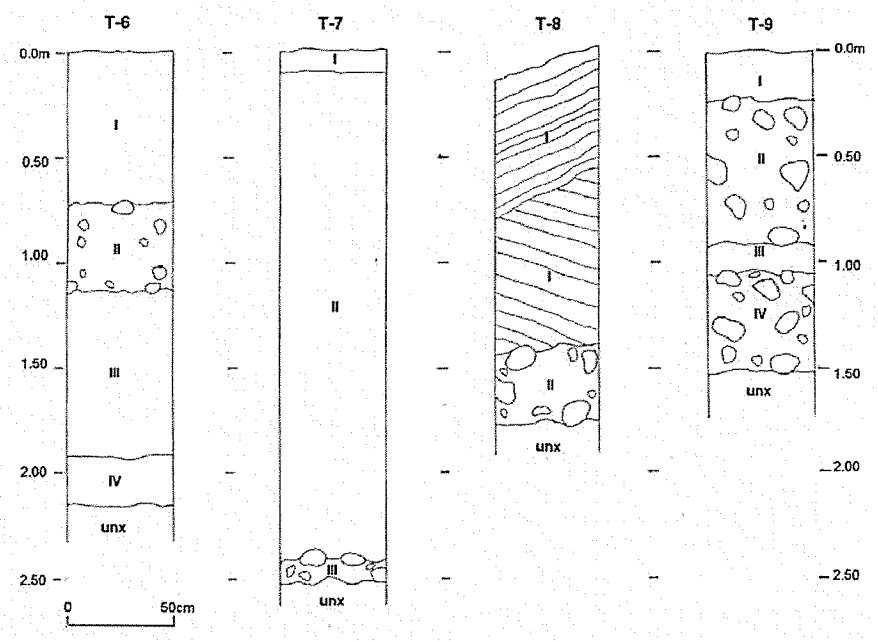


Figure 7. Stratigraphic Profiles of Backhoe Trenches 1 – 9

Table 1. Stratigraphic Descriptions of T-1 through T-3

	T-1	T-2	T-3
length	5.5m	6.5m	7.5m
width	2.1m	1.6m	1.5m
depth	1.5m	2.3m	2.2m
orient	107 degrees of MN	80 degrees of MN	155 degrees of MN
I	10YR5/3 brown silt fill	7.5YR5/2 brown sandy silt	10YR4/2 dark grayish brown silt fill
II	7.5YR4/2 brown silt	10YR4/2 dark grayish brown silty sand	10YR4/3 brown sand silt
III	7.5YR5/3 brown sandy silt	7.5YR5/3 brown silty sand	10YR4/4 dark yellowish brown sandy silt
IV	water-worn pebbles 7.5YR4/2 brown silty sand	waterworn gravel and cobbles 10YR4/2 dark grayish brown silty sand	10YR4/3 brown sand waterworn gravel
V	7.5YR5/2 brown sand	10YR4/3 brown sandy silt	10YR4/3 dark gray-brown Silty sand
VI	7.5YR6/4 light brown sand clean and homogenous	10YR5/4 yellowish brown sandy silt	7.5YR4/2 brown silt
VII		7.5YR4/2 brown silt	7.5YR4/3 brown silt
VIII		10YR5/2 grayish brown coarse sand, waterworn pebbles	7.5YR5/2 brown sandy silt
IX			10YR6/3 pale brown sandy silt
X			10YR4/3 brown silt

Table 2. Stratigraphic Descriptions of T-4 through T-6

	T-4	T-5	T-6
length	5.6m	5.3m	6.5m
width	1.6m	1.3m	1.6m
depth	1.5m	1.8m	2.2m
orient	90 degrees of MN	96 degrees of MN	245 degrees of MN
I	10YR4/2 dark grayish-brown sandy silt fill	10YR3/3 dark brown sandy silt fill	7.5YR5/4 brown sand loose
II	10YR4/2 dark grayish-brown sandy silt	10YR3/3 dark brown silt waterworn gravel	10YR3/2 very dark grayish brown silt, waterworn cobbles
III	10YR5/3 brown silt	10YR3/3 dark brown silt	10YR4/2 dark grayish brown silt, homogenous
IV	10YR5/2 grayish brown sandy silt	10YR3/2 very dark grayish brown silt	10YR4/2 brown silt homogenous
V	10YR4/3 brown silt	10YR4/2 dark grayish brown silt	
VI	10YR4/3 brown sand waterworn gravel	10YR3/2 very dark grayish brown silty sand	
VII	10YR4/3 brown silt	7.5YR5/4 brown sand clean and homogenous	
VIII	10YR5/3 brown sand		
IX	7.5YR7/4 pink sand clean and homogenous		
X			

Table 3. Stratigraphic Descriptions of T-7 through T-9

	T-7	T-8	T-9
length	5.5m	6.0m	4.6m
width	2.2m	2.3m	1.4m
depth	2.2m	2.6m / 1.6m steep slope	1.6m
orient	135 degrees of MN	250 degrees of MN	260 degrees of MN
I	7.5YR3/2 dark brown sandy silt	7.5YR5/6-5/8 strong brown sand, clean loose aeolian	7.5YR3/2 dark brown sandy silt fill with retuse
II	7.5YR5/6 strong brown sand, homogenous	7.5YR3/2 dark brown sandy silt, waterworn small boulders	7.5YR3/2 dark brown silt waterworn small boulders
III	7.5YR3/2 dark brown silt waterworn small boulders		7.5YR5/4 brown sand
IV			7.5YR3/2 dark brown silt waterworn small boulders
V			
VI			
VII			
VIII			
IX			
X			

Figure 8. Overview of T-1 to East and South Trench Face

slightly wavy. Layer IV, extending from 49 to 62 cmbs, is composed of slightly compact, brown (7.5 YR 4/2) silty sand. The transition between Layers IV and V is graded and nearly level. Layer V, extending from 62 to 101 cmbs, consists of loose, brown (7.5 YR 5/2) sand and exhibits a clear level interface with Layer VI. Layer VI, extending to a depth of 145 cmbs, consists of clean, loose, light brown (7.5YR 6/4), sand. Excavation of Trench 1 was terminated at a depth of 145 cmbs. . No cultural features or materials were present in Trench 1.

Trench 2

Trench 2 was excavated along south east margin of the property and oriented east to west (Fig. 9). A representative column was taken from the central portion of the south wall of Trench 2. No vegetation was present on this recently graded surface. Layer I extends to a depth of 28 cmbs and consists of loose, brown (7.5 YR 5/2) sandy silt; reportedly fill material imported from adjacent properties. The boundary between Layers I and II is abrupt and level. Layer II extends from 28 to 62 cmbs and consists of loose, dark grayish brown (10 YR 4/2) silty sand and exhibits a clear slightly irregular but nearly level boundary with underlying Layer III materials. Layer III, extending from 62 to 85 cmbs, is composed of about 30% rounded basalt cobbles, pebbles, and gravels in a loose matrix of coarse, brown (7.5 YR 5/3) silty sand. The interface between Layers III and IV is abrupt, slightly irregular and nearly level. Layer IV extends from 85 to 105 cmbs and consists of loose, dark grayish brown (10 YR 4/2) silty sand with a slightly graded, nearly level transition to underlying Layer V materials. Layer V, extending from 105 to 147 cmbs, is composed of slightly compact, brown (10 YR 4/3) sandy silt with a graded, level boundary separating the underlying layer. Layer VI, 147 to 179 cmbs, consists of slightly compact, yellowish brown (10 YR 5/4) sandy silt and exhibits an abrupt, level boundary with underlying Layer VII materials. Layer VII, extending from 179 to 208 cmbs, is composed of compact, brown (7.5 YR 4/2) silt. The transition between Layers VII and VIII is abrupt, slightly irregular but generally level. Layer VIII is composed of about 30% rounded basalt pebbles and gravels in a matrix of loose, coarse, grayish brown (10 YR5/2) sand. Excavation of Trench 2 was terminated in Layer VIII at a depth of 230 cmbs. No cultural materials or features were present.

Trench 3

Trench 3, located between Trenches 1 and 2, was oriented north to south (Fig. 10). Trench 3 was excavated on a graded level surface; free of vegetation. The column profile was taken from the west wall in the central segment of the trench. Layer I, reportedly imported fill, extends to a depth 22 cmbs and consists of slightly compact, dark grayish brown (10 YR 4/2) silt with an

Figure 9. Overview of T-2 to East and South Trench Face

Figure 10. Overview of T-3 to Northwest and East Trench Face

abrupt, level, interface between underlying Layer II materials. Layer II, 22 to 45 cmbs, is composed of slightly compact, brown (10 YR 4/3) sandy silt. The boundary between Layers II and III is graded but nearly level. Layer III, 45 to 84 cmbs, consists of slightly compact, dark yellowish brown (10YR 4/4) sandy silt with an abrupt, level transition to underlying Layer IV material. Layer IV, extending from 84 to 95 cmbs, is composed of about 30% rounded basaltic gravels in a matrix of loose, coarse, brown (10 YR 4/3) sand. The boundary between Layers IV and V is distinct and irregular, gaining about 5 cm in elevation from west to east. Layer V, 95 to 102 cmbs, consists of loose, dark grayish brown (10 YR 4/3) silty sand with an abrupt level boundary separating Layers V and VI. Layer VI, 102 to 110 cmbs, consists of slightly compact, brown (7.5 YR4/2) silt with a graded, slightly wavy transition to Layer VII. Layer VII, 110 to 155 cmbs, is composed of slightly compact, brown (7.5 YR 4/3) silt with a distinct, level, basal boundary. Layer VIII, 155 to 185 cmbs, is composed of slightly compact, brown (7.5 YR 5/2) sandy silt. A clear, irregular boundary separates Layers VIII and IX. Layer IX, 185 to 195 cmbs, consists of slightly compact, pale brown (10 YR 6/3) sandy silt exhibiting an abrupt nearly level boundary with Layer X. Layer X, extending to a depth of 212 cmbs, consists of compact, brown (10 YR 4/3) silt. Excavation of Trench 3 was terminated at 212 cmbs where a layer of silt and rounded cobbles was encountered. No cultural materials or features were present in Trench 3.

Trench 4

Trench 4 was situated along the southern parcel boundary and oriented east to west (Fig. 11). Trench 4 was excavated on a level graded surface, free of vegetation. The column was drawn from the south wall in the western end of the trench. Layer I, extending to 26 cmbs, is composed of loose, dark grayish brown (10 YR 4/2) sandy silt. A graded, slightly wavy transition separates the underlying layer of similar but coarser material with slightly higher percentages of sand. Layer II, extending to 32 cmbs, is also a dark grayish brown (10 YR 4/2) sandy silt. The boundary between Layers II and III is distinct and nearly level. Layer III, 32 to 47 cmbs, is composed of slightly compact, brown (10 YR 5/3) silt. A graded, slightly wavy but nearly level boundary separates the underlying layer. Layer IV, 47 to 56 cmbs, consists of loose, grayish brown (10 YR 5/2 sandy silt with an abrupt level boundary between the underlying Layer V material. Layer V, 56 to 93 cmbs, consists of moderately compact, brown (10 YR 4/3) silt. An abrupt, irregular boundary separates the underlying layer. Layer VI, a thin strata, about 5 cm in thickness, is composed of about 20% rounded basaltic gravels in a matrix of loose, coarse, brown (10 YR 4/3) sand. An abrupt, slightly irregular but nearly level boundary separates underlying materials. Layer VII, extending from 97 to 115 cmbs consists of slightly compact, brown (10 YR

Figure 11. Overview of T-4 to East and South Trench Face

4/3) silt with an abrupt, level basal boundary. Layer VIII, 115 to 140 cmbs, consists of loose, brown (10 YR 5/3) sand. The interface between Layers VIII and IX is abrupt and level. Layer XI, was excavated to 150 cmbs where excavation was terminated. Layer IX material is composed of clean, pink (7.5 YR 7/4) sand. No cultural features or materials were present in Trench 4.

Trench 5

Located west of Trench 4, Trench 5 was also oriented east to west (Fig. 12). Trench 5 was excavated on a recently graded, level surface that was free of vegetation. The column profile was obtained from the central southern wall. Layer I, extending to a depth of 42 cmbs, consists of slightly compact, dark brown (10 YR 3/3) sandy silt which is reportedly imported fill. The boundary between Layers I and II is abrupt and nearly level. Layer II extends from 42 to 55 cmbs and is composed of about 20% rounded basaltic gravels in a matrix of moderately compact, dark brown (10 YR 3/3) silt. The basal boundary of Layer II is graded and irregular. Layer III is similar to Layer II but the gravel is not present. Layer III, extending from 55 to 88 cmbs consists of moderately compact, dark brown (10 YR 3/3) silt. The interface between Layers III and IV is distinct, slightly graded and level. Layer IV extends from 88 to 103 cmbs and consists of slightly compact, very dark grayish brown (01 YR 3/2) sandy silt with an abrupt, level, basal boundary. Layer V, 103 to 113 cmbs, consists of moderately compact, dark grayish brown (10 YR 4/2) silt and exhibits a slightly graded, irregular, basal boundary. Layer VI, 113 to 150 cmbs, consists of loose, very dark grayish brown (10 YR 3/2) silty sand. The interface between Layers VI and VII is abrupt and nearly level. Layer VII extends from 150 to 165 cmbs where excavation was terminated. Layer VII consists of clean, loose, brown (7.5 YR 5/4) sand. No cultural materials or features were present in Trench 5.

Trench 6

Trench 6 was located in the northeastern segment of the project parcel (Fig. 13). Trench 6 was excavated on a recently graded, level surface, free of vegetation. This surface is 80 cm below the surface of an existing concrete slab located adjacent to the southern trench wall. The level of this slab is indicative of a previous surface 80 cm higher than the present surface. The column profile was obtained from the central southern trench wall. Layer I, extending to a depth of 72 cmbs, consists of loose, brown (7.5 YR 5/4) sand exhibiting a distinct, irregular basal boundary. Layer II, extending from 72 to 112 cmbs, is composed of about 30% rounded basalt cobbles, pebbles and gravels in a matrix of moderately compact, very dark grayish brown (10 YR 3/2) silt. The interface between Layers II and III is distinct, slightly irregular and generally level. Layer III

Figure 12. Overview of T-5 to East and South Trench Face

Figure 13. Overview of T-6 to West and South Trench Face

extends from 112 to 190 cmbs and consists of moderately compact, dark grayish brown (10 YR 4/2) silt. The interface between Layers III and IV is slightly graded and nearly level. Similar to Layer II, Layer IV is distinguished only by the presence of coarser particles. Layer IV extends from 190 to 213 cmbs where excavation was terminated. Layer IV consists of moderately compact, brown (10 YR 4/2) silt. No cultural materials or features were encountered in Trench 6.

Trench 7

Trench 7 was oriented north to south at the base of a steeply rising sand embankment which separates the project parcel from the adjacent western parcel which is about 8 m higher in elevation. Trench 7 was excavated on a graded level surface at the base of the embankment which was free of vegetation (Fig. 14). Layer I, extending to a depth of 10 cmbs consists of slightly compact, dark brown (7.5 YR 3/2) sandy silt with an abrupt, level, basal boundary. Layer II, extending from 10 to 240 cmbs consists of loose, strong brown (7.5 YR 5/6) sand and forms a distinct, irregular boundary with underlying Layer III materials. Layer III extends from 240 to 250 cmbs where excavation was terminated. Layer III is composed of about 40% rounded basalt small boulders, cobbles and pebbles in a matrix of moderately compact, dark brown (7.5 YR 3/2) silt. No cultural materials or features were present in Trench 7.

Trench 8

Trench 8, oriented east to west, sampled the eastern face of the steep, machine cut, sand exposure which separates the surface of the project parcel from the adjacent western parcel by about 8 meters in elevation (Fig. 15). The profile column was taken from the south wall at the western end of the trench. This column represents basal edge and subsurface of the cut sand face which climbs sharply to the west (see Fig. 7). The eastern extension of the trench was excavated on a graded level surface. Layer I which extends from the surface to a depth of 140 cmbs consists of multiple thin parallel strata of loose, strong brown (7.5 YR 5/6 to 7.5 YR 5/8) sand. The parallel strata within Layer I which are about 5cm in thickness are created by sorted particle size and a slight color variation. At a depth of 60 cmbs the orientation of these strata shifts from upslope to down slope. These banded strata appear to be the result of wind blown deposition. The boundary between Layers I and II is abrupt and irregular, sloping slightly downhill to the west. Layer II extends from 140 to 176 cmbs, where excavation was terminated. Layer II is composed of about 40% rounded basalt small boulders, cobbles, pebbles and gravels in a matrix of moderately compact, dark brown (7.5 YR 3/2) sandy silt. No cultural materials or features were present in Trench 8.

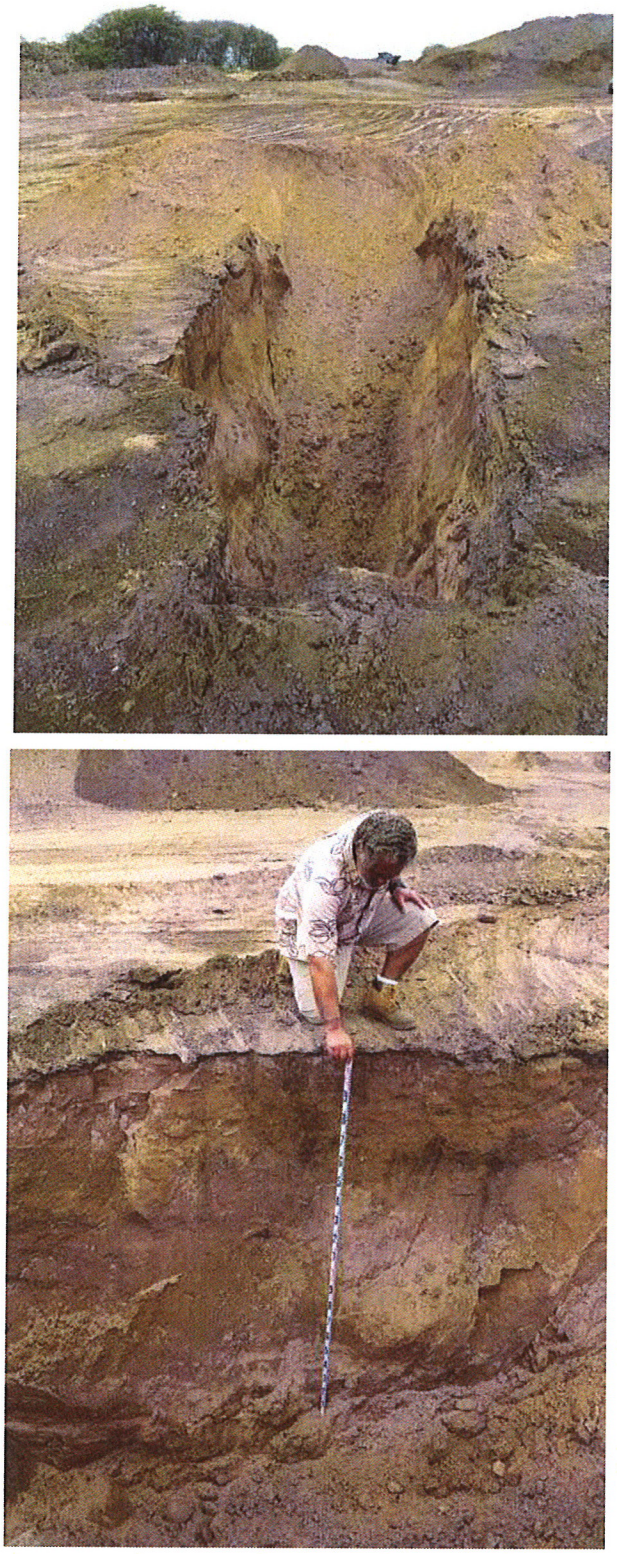


Figure 14. Overview of T-7 to North and West Trench Face

Figure 15. Overview of T-8 to West and South Trench Face

Trench 9

Trench 9 was excavated in the central portion of the project parcel and oriented east to west on a graded level surface, free of vegetation (Fig. 16). The column profile was taken from the central segment of the south wall. Layer I extends to a depth of 22 cmbs and is composed of slightly compact, dark brown (7.5 YR 3/2) silt with a component of modern refuse including plastics and metals. The basal boundary of Layer I is distinct and irregular. Layer II extending from 22 to 90 cmbs, is composed of about 30% rounded basalt small boulders and cobbles in a matrix of moderately compact, dark brown (7.5 YR 3/2) silt with a distinct, irregular basal boundary. Layer III, 90 to 104 cmbs, consists of loose, brown (7.5 YR 5/4) sand. The interface between Layers III and IV is distinct and irregular. Layer IV extends from 104 to 150 cmbs where excavation was terminated. Similar to Layer II, Layer IV is composed of about 30% rounded basalt small boulders and cobbles in a matrix of slightly compact, dark brown (7.5 YR 3/2) silt. With the exception of modern refuse present in Layer I, no cultural materials or features were present in Trench 9.

DISCUSSION

The current project area occurs within the region known as Pu`uone or the Wailuku sandhills, an area well known for the presence of traditional Hawaiian burials. Many other archaeological projects in the neighboring properties have encountered human remains ranging from one or two to multiple clusters of burials. However, some projects have also resulted in largely negative findings, especially around the peripheral margins of the Pu`uone region where extensive historic period and modern land alteration activities have taken place (Sinoto and Titchenal 1996). The extensive and compounded nature of the ground disturbing activities undertaken within the current project area, including past sand mining activities, appear to have truncated the layers of soil deposition in which past human activities may have taken place. Thus, the existing ground surface may represent depths ranging from 3 to 10 meters below the original surface, especially in the western portions of the area. The stratigraphic evidence indicates that the majority of the area within the subject parcel consists of culturally sterile deposition.

RECOMMENDATIONS

The negative results of the current assessment warrants no further pre-construction archaeological procedures. However, due to the potential presence of human burials in the subject region, archaeological monitoring of construction–related ground disturbing activities is recommended. A monitoring plan shall be submitted to SHPD for review and approved prior to commencement of any construction activities.

Figure 16. Overview of T-9 to Northwest and Northeast Trench Face
Note Deposit of Waterworn Basalt Boulders and Cobbles

BIBLIOGRAPHY

Armstrong, R.W., J.A. Bier, and S. Chang
1973 *Atlas of Hawaii.* University of Hawaii Press, Honolulu.

Donham, Theresa
1992 *Human Skeletal Remains Discovered at the Maui Homeless Shelter Construction Site (50-50-04-2916), Wailuku, Maui.* Ms. on file at SHPD, DLNR. Kahului.

Foote, D., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai.* U.S.D.A. Soil Conservation Service, U.S. Government Printing Office, Washington, D.C.

Neal, Marie C.
1965 *In Gardens of Hawaii.* Bishop Museum Special Publication No.50. Bishop Museum Press. Honolulu.

Pratt, H. Douglas
1998 *A Pocket Guide to Hawai`i's Trees and Shrubs.* Mutual Publishing, Honolulu.

Sinoto, Aki, Lisa Rotunno-Hazuka, and Jeffrey Pantaleo
2000 *Archaeological Inventory Survey for the Proposed Industrial Park Development Area, Waikapu, Wailuku, Maui Island (TMK:3-8-07:89 & por 102).* Aki Sinoto Consulting. Honolulu.

Sinoto, Aki and Paul Titchenal
1996 *Archaeological Survey and Testing of Proposed Development Areas in Waikapu, Wailuku , Maui.* Wailuku Agricultural Company. Aki Sinoto Consulting. Honolulu.

APPENDIX C-1.

State Historic Preservation Division Approval

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY KAULUKUKUI
INTERIM FIRST DEPUTY

WILLIAM M. TAM
INTERIM 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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

February 7, 2011

Aki Sinoto
Aki Sinoto Consulting
2333 Kapiolani Blvd., No. 2704
Honolulu, Hawaii 96826

LOG NO: 2011.0150
DOC NO: 1101MD38
Archaeology

Dear Mr. Sinoto:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Revised Archaeological Assessment of 8.552 Acres with No New Sites
Waikapū Ahupua'a, Wailuku District, Island of Maui
TMK: (2) 3-8-007:105

This letter summarizes our review of the aforementioned report (Titchenal and Sinoto December 2010; *Archaeological Assessment Survey: Lot 1-A, Kopa'a Subdivision No. 2, Waikapu, Wailuku District, Maui Island, TMK: [2] 3-8-07:105; ASC082510; SCS Project Number 1164-2*), which we received on January 5, 2011.

The report documents an archaeological inventory survey in conjunction with the proposed development of a light industrial subdivision. This location, which consists primarily of Pu'uone Series sand except in the southwestern corner which contains Jaucus soils, was previously subject to 2-3 feet of fill in the past, and was later in use as a metal scrap yard.

Nine mechanical backhoe trenches were excavated, averaging 1.5-2.6 meters deep. An additional eleven subsurface "inspection units" were viewed during cleanup of the scrap yard prior to the backhoe trenches. No historic properties were noted, although archaeological monitoring during future construction is recommended, given the numerous discoveries of human remains in nearby areas.

We previously reviewed an earlier draft of this report and requested corrections (*Log No. 2010.3653, Doc No. 1011MD37*); these have been satisfactorily addressed. This report is accepted as final pursuant to HAR §13-276. Upon receipt of this letter please submit one paper copy of your report marked "Final" to our Kapolei office along with a CD containing a searchable pdf version of the final report and a copy of this approval letter, marked to the attention of the "Kapolei Library." If you have questions about this letter please contact Morgan Davis at (808) 243-5169 or via email to: morgan.e.davis@hawaii.gov.

Aloha,

Theresa K. Donham
Acting Archaeology Branch Chief
State Historic Preservation Division

APPENDIX D.

Cultural Impact Assessment

CULTURAL IMPACT ASSESSMENT

for

Lot 1-A, Kopa'a Subdivision No. 2
Waikapu, Wailuku, Maui Island

July 2010

Hana Pono, LLC

CULTURAL IMPACT ASSESSMENT

for

Lot 1-A, Kopa'a Subdivision No. 2
Waikapu, Wailuku, Maui Island
TMK: (2) 3-8-07:105

Prepared for:

ABC Development Company, LLC
815 Waiakamilo Road
Honolulu, HI 96817

Prepared by:

Keli`i Taua

Kimokeo Kapahulehua

and

Kainoa Horcajo

July 2010

Hana Pono, LLC
PO Box 2039
Wailuku, Maui, Hawai'i 96793

MANAGEMENT SUMMARY

Report	Cultural Impact Assessment for Lot 1-A of the Kopa'a Subdivision No. 2; focusing in the area of Nā Wai 'Ehā, Waikapu ahupua'a, Wailuku Moku
Date	July 2010
Project Location	County of Maui; Locality of Waikapu; TMK: 3-8-07:105
Acreage	8.552 Acres
Ownership	ABC Development Company, LLC of Honolulu
Project Description	Kopa'a Subdivision Lot 1-A, Proposed Light Industrial Commercial Complex
Region of Influence	along Waikō Rd, between Honoapiilani Hwy. and Kuihelani Hwy.
Agencies Involved	SHPD/DLNR, Maui County Council, Maui County Planning Department
Environmental Regulatory Context	The undertaking is subject to both State and County zoning regulations, and other environmental regulations
Results of Consultation	No impacts to Hawaiian cultural practices indicated. Area has been modified for so long, no significant impacts expected
Recommendations	The results of the current study do not identify any contemporary or traditional cultural practices taking place within the subject project area. Thus, the proposed project appears to pose no adverse effects to native Hawaiian cultural practices. Therefore, no specific mitigation recommendations are warranted at this time. However a meeting with the neighboring community to address individual concerns as outlined in the conclusion of this report may be beneficial. Planting appropriate Native Hawaiian plants and trees would restore a piece of the history that has been lost.

CULTURAL SUMMARY

ABC Development Company, LLC of Honolulu is proposing a Light-Industrial Commercial Complex located in Lot 1-A of the Kopa`a Subdivision No. 2, encompassing approximately 8.5 acres, in the former location of Apana Scrapyard or Maui Scrap Metal. The proposed development seeks to remediate the site of all old debris and re-grade the site into terraces appropriate for building pads for light-industrial usage.

The project is located in the ahupua'a of Waikapu, in the moku of Wailuku, on Maui Island. Waikapu is the southeastern most ahupua'a of the four streams collectively known as Nā Wai 'Ehā, the Four Waters. The project area is located north of Waikapu Stream just across the existing Waikō Road, near the junction with the old cane road that is now Waiale Road, in the area between Honoapiilani Highway and the Kuihelani Highway.

The entire parcel was formerly Apana's Maui Scrap Metal Junkyard that underwent significant alteration to the original landscape, including the easement for the Waiehu-to-Mākena Central Maui Water Transmission Line that traverses near the northeastern boundary of the property. What is not grubbed land, bare soil, or previously poured cement slab is largely covered in non-native grasses and Kiawe trees.

TABLE OF CONTENTS

Management Summary iii
Cultural Summary iv
Table Of Contents v
Introduction 1
Project Area 1
Goal And Purpose 2
Approach & Method 2
Guiding Legislation For Cultural Impact Assessments 3
Scope Of Work 3
Historical & Current Cultural Resources & Practices 4
First Migrations 4
Settling Of Wailuku Moku & Ahupua'a 6
Place Names Associated With This Area 7
Traditional Hawaiian Uses & Practices 8
Post-Contact Historical Uses & Practices 11
Current Uses & Practices Of Project Area 11
Summary Of Oral Interviews 12
Sandy Bell 12
Marian Ching 12
Zelie Harders 13
Florence Nakama 14
Wallette Pellegrino 14
Alfred Santiago 15
Conclusion 16
Synthesis Of Archival, Literary, & Oral Accountings 16
Potential Effects Of Development On Resources/Practices 17
Bibliography 18
Appendix A: Participation Agreement Forms 19

INTRODUCTION

At the request of Carlsmith Ball LLP of Honolulu, representing ABC Development Company, LLC of Honolulu; Hana Pono, LLC of Wailuku completed a Cultural Impact Assessment of Lot 1-A of Kopa`a Subdivision No. 2, located in Waikapu ahupua`a, Wailuku moku, Maui Island (TMK: (2) 3-8-07:105). This study was undertaken in accordance with State of Hawaii Chapter 343, HRS, and the State of Hawaii Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts (1997).

PROJECT AREA

The project parcel, encompassing 8.5 acres, is located on Maui Island, Wailuku moku, Waikapu ahupua`a (TMK: (2)-3-8-07:105). Designated Lot 1-A of the Kopa'a Subdivision No. 2, the project area occurs on Waikō Road near its junction with Waiale Road.

Figure 1: Looking toward project area from Japanese graveyard in Waikapu

The island of Maui is comprised of twelve (12) traditional land districts, called moku. Each moku is made up of a number of ahupua'a, smaller land divisions wherein a self-inclusive community could find all the things needed for satisfactory life. Ahupua'a are often wedge-shaped land divisions spanning from the heights of the mountain peak to the edge of the outer reef. Generally and ideally, these ahupua`a containing various ecological zones and corresponding resources were self-subsistent, although many ahupua'a did not fit this template. Of the two peaks on Maui, the lower of the two is Mauna Kahalawai, now indifferently referred to as the West Maui Mountains. Mauna Kahalawai incorporates 3 traditional moku, Lahaina, Ka'anapali, and Wailuku. Within the moku of Wailuku are four ahupua'a,

Waihe'e, Waiehu, Wailuku, and Waikapu, from north to south. The project area occurs in the moku of Wailuku and the ahupua'a of Waikapu,

Handy (1940:159-160) relates that:

> On the northeast coast of western Maui it was only the shores and adjacent flatlands below the taro terraces of Waihe'e and Waiehu that were favorable for the combined enterprises of planting potatoes and fishing. The flat north coasts, eastward from Wailuku, had fishing settlements here and there in ancient times and presumably sweet potato plantations...From Waihe'e to Waikapu there is much good land below and bounding the ancient terrace area on the kula and in the lower valleys which would be ideal for sweet potato culture, but it is said that little was grown in this section because there was so much taro.

GOAL AND PURPOSE

The goal of this study is to identify any traditional or contemporary Native Hawaiian or otherwise noteworthy practices, resources, sites, and beliefs attached to the project area. Consultation with lineal descendents or kupuna (Hawaiian elders) with knowledge of the area shall be undertaken to acquire any specific knowledge or information regarding the subject area. All such information generated will aid in analyzing the impact of the proposed development on any potential practices and resources.

APPROACH & METHOD

The approach taken in this study is two-fold. One involves archival and literature research, including reviews of appropriate; mahele (land division of 1848), census, and tax records; previous reports, published or recorded ethnographic interviews and oral histories; community studies; old maps and photographs; and other pertinent archival documents. The second involves searching out and conducting oral interviews with selected individuals who have ties, either lineal or cultural, to the project area and the surrounding region and possess knowledge or participate in traditional or contemporary cultural practices.

Guiding Legislation for Cultural Impact Assessments

It is the policy of the State of Hawaii under Chapter 343, Hawaii Revised Statutes, to alert decision makers about significant environmental effect that may occur due to actions such as development, re-development, or other actions taken on lands. Articles IX and XII of the State Constitution and other pertinent state laws require the promotion and preservation of cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups.

The Guidelines for Assessing Cultural Impacts, as adopted by the Environmental Council, State of Hawaii 1997 is applied by the Office of Environmental Quality Control with HAR Title 11 Chapter 200-4(a) to include in their review of environmental assessments and impact statements, potential effects of specific development initiatives on identified cultural practices within the target community. The definition of "significant effect" is also amended to include adverse effects on cultural practices.

Scope of Work

The scope will be to compile various historical, cultural, and ethnographical accounts of the project area, *ahupua'a*, and region.

The OEQC Guidelines for Assessing Cultural Impacts (Nov 9, 1997) states that:

> "The geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment...An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices."

This study shall compile and summarize pertinent material beginning with the first migrations of Polynesians to the area, progressing through the pre-contact period of Hawaiian settlement, onto the post-contact period, and include the present and any

cultural practices or beliefs that may still occur in the project area. Hawaiian *kupuna* with ties to the area will be interviewed for their knowledge of the area and associated beliefs, practices, and resources. Additionally, other selected individuals or organizations with pertinent knowledge or expertise concerning the types of cultural resources, practices, and beliefs found within the subject geographical region will also be consulted.

HISTORICAL & CURRENT CULTURAL RESOURCES & PRACTICES

As a deep fertile valley fronted by easily terraced kula (open country) land, the area of Waikapu and the surrounding valleys of Mauna Kahalawai (West Maui Mountains) were settled early in Polynesian migrations, leading to long-standing settlement and cultivation. Below the valleys, a long row of sand dunes stretched across the isthmus from the northern portion of Nā Wai ʻEhā. Waikapu was said to have many temples and sites (Ashdown 1974:58) but many of them were never documented. There were many famous battles fought in the long stretch of sand dunes and flatland between Mā'alaea bay to the south and the seat of power and government in Wailuku during the time of Kahekili and his son Kalanikupule. Waikapu Stream runs south of the subject parcel, across Waikō Road. The project area is located in what might have been the transitional point between land suitable for lo'i kalo and the beginnings of the sand dunes where little farming was done. There is little known about any practices historically or currently ongoing in the direct parcel and none have been witnessed by any of our interviewees.

FIRST MIGRATIONS

Hawaiian oral traditions start with the creation chant called Kumulipo. The Kumulipo brings darkness into light. Embedded in this all-encompassing chant includes the tale of the coming of the Hawaiian Islands through the mythical stories of Pele and another demigod named Maui who, with his brothers, pulls up all the islands from the bottom of the sea. The latest and last physical appearance of Pele occurred as late as mid-18th century when the Fire Goddess flowed from the top of the southern slopes of Haleakalā down through Honua'ula and landing at the surf of Mākena and Wailea. In the Hawaiian Annual published by Thomas Thrum and James Dana's "Characteristics of Volcanoes",

are reported Father Bailey's statements of his oral interviews explaining that the last flow had occurred in 1750 (Sterling, 228). An earlier part of the creation story tells of two of the major deities, Kane and Kanaloa. It was said that Kane, the god of fresh running water, and Kanaloa, god of the ocean and the 'awa plant, traveled around the islands and sat and drank 'awa wherever they went. It goes to show that Kane and Kanaloa travelled in the area of Nā Wai 'Ehā, Kane pounding his digging stick into the ground to bring forth the life giving waters so that he and Kanaloa may drink 'awa and bring life to the land. Mauna Kahalawai, what we now refer to as the West Maui Mountains, is much older than its companion mountain, over a million years old, allowing time to create valleys that cut deep into the mountain, Handy and Handy (1972:497) elaborate thus:

> The old 'okana (land division) named Nā Wai 'Ehā (Nā Wai 'Ehā means 'The Four Streams') comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Pu'u Kukui and the ridges radiating northeastward, eastward, and southeastward from it. Two of the great valleys, Waihe'e and Waiehu, open toward the ocean and their streams empty into it. Wailuku is partly landbound, but its stream flows into Kahului Bay, which has been eroded by the ocean out of what was formerly the stream mouth. Waikapu is landbound. The waters of its great stream, now utilized for irrigating a great acreage of sugar cane, formerly was diverted into lo'i and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui.

The occupation of the Hawaiian archipelago after its mythical creation came in distinct eras starting around 0 to 600 A.D. This was the time of migrations from Polynesia, particularly the Marquesas. Between 600 and 1100 A.D. the population in the Hawaiian Islands primarily expanded from natural internal growth on all of the islands. Through the course of this period the inhabitants of the Hawaiian Islands grew to share common ancestors and a common heritage. More significantly, they had developed a Hawaiian culture and language uniquely adapted to the islands of Hawai'i which was distinct from that of other Polynesian peoples (Fornander 1919:222).

Between 1100 and 1400 A.D., marks the era of the long voyages between Hawai'i and Tahiti and the introduction of major changes in the social system of the Hawaiian nation. The chants, myths and legends record the voyages of great Polynesian chiefs and priests, such as the high priest Pa'ao, the ali'inui (Head Chief) Mō'ikeha and his sons Kiha and La'amaikahiki, and high chief Hawai'iloa. Traditional chants and myths describe how these new Polynesian chiefs and their sons and daughters gradually appropriated the rule over the land from the original inhabitants through intermarriage, battles and ritual sacrifices. The high priest Pa'ao introduced a new religious system that used human sacrifices, feathered images, and enclosed heiau (temples) to facilitate their sacred religious practices. The migration coincided also with a period of rapid internal population growth. Remnant structures and artifacts dating to this time suggest that previously uninhabited leeward areas were settled during this period.

SETTLING OF WAILUKU MOKU & AHUPUA'A

The valley of Waikapu and the larger area of Nā Wai 'Ehā was most likely settled early, recognized for its abundance of water and fertile soil, not to mention easily accessible harbors and a good vantage point for invading forces. At first the new colonists would have settled along the shoreline, within easy access to the bounty of the ocean and a number of plants they were familiar with from the Southern islands. "The rich valley bottoms which later they would clear, terrace, and irrigate for wet-taro cultivation were, in their pristine state, dense jungle…for this jungle the first settlers had no use". Handy and Handy (1972:12) elaborate:

> For generations the small, slowly growing population clustered around shore sites near streams that supplied them with water. Such sites are best for inshore fishing. When they acquired taro, they no doubt rapidly cleared away the jungle along the streams to make room for taro patches, and there was a beginning of terraced flats that could be irrigated directly from the stream. If we may judge by the many ways in which taro is cultivated under varying conditions in the South Seas, this was their staple, and they would not be long in developing real plantations instead of merely planting along stream banks and in swampy places where there were springs.

For this, the area of Nā Wai 'Ehā was a perfect location for these early Polynesian settlers to make home. They began settling the coastal areas of Mā'alaea, Kahului, and Paukukalo, slowly moving upward clearing the jungle to create terraces. After many generations these settlers whose ancestors had never intensively farmed taro became a distinct people, they became Hawaiians. They would have slowly cleared land and moved further up the valleys, creating home sites and small kauhale (family-group compounds) within the valleys of Nā Wai 'Ehā, settling into Waikapu.

The moku contains many great cultural treasures including the twin fishponds of Kanaha and Mauoni, the heiau Pihanakalani and Haleki'i, Alakaihonua in Waihe'e, and many of the highest ancient royalty buried secretively deep in the valleys. There was also access to a large deposit of 'Alae or 'Alaea at the leeward bay, called Mā'alaea (the place of Alaea). 'Alaea was used for many things, medicinally to help with blood deficiencies, spiritually, and in food preparation. The availability of resources such as water, salt, easily terraced lands, fertile soil, 'alaea, and calm harbors would have made the people who settled here very wealthy in their sense of the word.

PLACE NAMES ASSOCIATED WITH THIS AREA

In Waikapu, there are many different stories associated with the name of this valley and ahupua'a, but perhaps the earliest known is that of the story of Puapualenalena and the conch shell. It was said that in ancient times a conch shell would ring out from the valley, heard around the island it was so loud and resounding. On the opposite, northern side of the stream a dog named Puapualenalena was infatuated with this conch and wanted it for himself. One day, the owners of the conch had been careless and Puapualenalena gained entrance to the cave on the southern side of the stream that hid the conch, and from that point on it no longer sounded through the valley. The area was so named for the conch (Pu), The Water (Wai) of the Conch (Ka Pū) (Nupepa Kuokoa, 1872).

The name was said to have been usurped by Kamehameha after the famous battle of Kepaniwai, whereupon he changed it to honor his victory over the forces of

Kalanikupule, chief of Maui after his father, Kahekili's, death. There are two versions of the name. One is Wai-ka-pū, the Water of the Conch, for the place where Kamehameha sounded the Pu to begin the battle for Maui. The second, Wai-Kapu, The Sacred Water. CW Stoddard (1894:161), in his book Hawaiian Life details, "Kamehameha landed at Kalepolepo, and a kapu was put upon the nearest stream. It became sacred to royalty, as was the custom and is known as Wai-kapu to this hour-that is, the forbidden water". Stoddard (1894:161) continues:

> Presently the monarch began his march; and at the second stream a great battle raged, so those water were called Luku. Luku-'to slaughter, to slay as in war, the destruction of many at once'...The enemy defeated and put to flight, and a third stream was called Ehu. Ehu-'to scare away, as dogs or hens,' or faint-hearted and sore-footed foes...There over the hill and down into the dale of Waihe'e rushed the panic-stricken hosts. As for the word Hee, it may mean, probably does mean in this case, utter rout, or to be dispersed in battle.

TRADITIONAL HAWAIIAN USES & PRACTICES

From the time of first settlement to the first contact by Western explorers in the late 1700's, the Nā Wai 'Ehā area and the ahupua'a of Waikapu was slowly terraced and cultivated, allowing the development of a large population center, centered around the four great streams coming out of Mauna Kahalawai. Around each of the valleys of Waihe'e, Waiehu, Wailuku (Iao), and Waikapu there would have been localized centers of community life focusing on the ability to cultivate the land and fish the sea. So much so, that by the time of European contact the area of Nā Wai 'Ehā, including the project area, was known around the archipelago for having an abundance of kalo. The land from the far reaches of Waihe'e all the way to the end of Waikapu toward Mā'alaea, viewed from afar, were one contiguous patchwork of lo'i kalo, fed by the life-giving waters of the four streams.

Figure 2: Terraced lo'i kalo located in Waikapu--approximately 1 mile mauka (up hill) from the project area.

The surrounding area of Waikapu and perhaps the parcel in question lent itself to heavy cultivation of wetland taro terraces. In *Native Planters of Old Hawai'i* Handy relates that even in the 1900's one could still see the span of the old terraces, "spreading north and south from the base of Waikapu to a considerable distance below the valley are the vestiges of extensive wet-taro plantings" (Handy & Handy 1972:497). One of our interviewee's whose family farms taro in ancient lo'i in Waikapu spoke of hearing an old-timer talk of lo'i near the Japanese cemetery, which still remains a quarter mile mauka from the project parcel although he could not recall seeing them himself. These old terraces would have slowly dwindled in size and intensity as they approached the dry, sandy area that makes up much of the isthmus between the two mountains.

Perhaps overshadowing even the multitude of lo'i kalo in Waikapu and Nā Wai 'Ehā are the stories of the battles waged along the sand dunes and into the uplands between warring chiefs. The first prominent battle that took place around the project area is known by the name of *Ahulau ka Pi'ipi'i i Kakanilua*, the slaughter of the Pi'ipi'i at Kakanilua, otherwise known as the *Alapa* battle in the year 1776. Kalaniopu'u, chief of Hawai'i Island during much of the reign of Kahekili was always seeking to gain control over Maui, desiring to extend his reign of power. Kahekili, although greatly feared, ushered in a period of peace and prosperity for the island of Maui, until Kalaniopu'u decided to invade.

The Hawai'i chief had lost one battle on the southern slopes of Haleakalā and returned with his most fearsome and practiced regiments, the divisions called the Alapa and

Pi'ipi'i. These divisions were hand-picked by the Hawai'i chief, all of them ali'i class, "there were 800 of them, all expert spear-point breakers, every one of whose spears went straight to the mark, like arrows shot from a bow, to drink the blood of a victim" (Kamakau, 85). They made landfall in Mā'alaea, their canoes stretching from Kealia all the way to Kapa'ahu, a distance of many miles and began marching across the isthmus towards Wailuku. Kahekili gathered his forces and slaughtered the Alapa along the central plains of Maui. Kamakau continues, "Like a dark cloud hovering over the Alapa, rose the destroying host of Kahekili seaward of the sand hills of Kahulu'u...They slew the Alapa on the sand hills at the southeast of Kalua." The next day Kalaniopu'u tried again to gain control of Kahekili's terrain and once again was outwitted, "Kalaniopu'u expected to enter Wailuku at Kakanilua, but Kahekili's men rose at dawn and occupied the sand hills of Kama'oma'o, and a portion of them took their stand on the side toward Waikapu turn" (Kamakau 1961:85-87). Kalaniopu'u finally recognized the defeat of his battle plans and sent word to Kahekili that he wished a cessation of battle and mercy for those who survived.

The next large battle that took place along this region was also the last battle to take place on Maui, the invasion of Maui by Kamehameha at the battle commonly known as Kepaniwai. It was near Kalepolepo that Kamehameha is said to have landed his canoes for his invasion of Maui, but they stretched from Mā'alaea all way to Kihei. Kamehameha had previously been beaten by the forces of Maui because of their furious use of the ma'a (sling) for which Maui's warriors were famous. But Kamehameha this time had the foreign technology of mortars, muskets, and cannons. It was here he uttered the now famous saying, "Imua e nā poki'i. He inu i ka wai awa'awa", ("forward my brothers or drink of the bitter waters.") He set fire to his canoes, their only form of retreat and challenged his men to win the battle or drink the bitter water of defeat and certain death. From Kalepolepo the army of Kamehameha pushed the warriors of Maui back to the slopes of Mauna Kahalawai. They fled first at Waikapu, then to Wailuku where some made it out the back pass to Olowalu, then to Waiehu and Waihe'e.

POST-CONTACT HISTORICAL USES & PRACTICES

After the consolidation of the islands under one monarch and the widespread infiltration of foreigners into all the islands, the fertile kalo terraces of Waikapu fell into disrepair or were made suitable for other endeavors. Many of the old terraces were made into house pads, truck gardens, or plowed under to make way for the sugarcane plantations. As early as 1828 a Spaniard by the name of James Louzada was making syrup from the sugarcane in the Waikapu area.

The entire ahupua'a and surrounding lowlands were given as Royal Patent Grant 3125 to Henry Cornwall for a sugar plantation, Waikapu Sugar Company, which eventually merged with others to become Wailuku Sugar Company. This later became consolidated into the large holdings of Alexander & Baldwin (McGerty & Spear 2004:12).

> By the mid-1900's one could only see remnants of the old extensive terracing system, now almost obliterated by sugar-cane production; a few here and there are preserved in plantation camps and under house and garden sites along the roads...Far on the north side, just above the main road and at least half a mile below the entrance to the canyon, an extensive truck garden on old terrace ground showed the large area and the distance below and away from the valley that was anciently developed in terraced taro culture (Handy, 497).

CURRENT USES & PRACTICES OF PROJECT AREA

The project area has been long used as one of the island's only scrap metal recycling facility, run by the Apana family and called Maui Scrap Metal. The land was cleared of brush and trees and sculpted to suit this purpose. In the 1970's there was also the Waiehu to Mākena water transmission line which runs through the eastern border of the property and demands a large easement. This line which varies from 1' to 4' in size was buried in the ground at varying depths. Any sub-surface cultural features would have been displaced at that time. There are no reports of any cultural practices occurring in the parcel or any cultural uses associated with the parcel in question. Pedestrian travel along any old paths through the parcel has long been supplanted by the current paved roadways. Practices associated with farming, planting, fishing or any other customary cultural

practice have long since disappeared from this area. There are families native to the greater Waikapu area that carry on the old traditions of farming, gathering, and subsistence living, but no resources are gathered from the project parcel. A few of our interviewees farm kalo in ancient lo'i further up the valley and none can remember lo'i kalo being in the project area in recent times.

Summary of Oral Interviews

Summaries of the Oral Interviews are described here. The complete transcription is available upon request.

Sandy Bell

Sandy has been a resident of Waikapu for 31 years. She lives on Honua Place, which is off W. Waiko Road, about 1 mile from the project area. Her family has 7 lo'i kalo. She is thrilled about how the taro industry has been revitalized and reminisced about how Waikapu used to be known for the terraces of lo'i. The water for her lo'i comes from the Kuleana water rights and her husband is an active participant in that process. She is very happy that all of the junk cars have been moved away from the project area. She does not know of any cultural sites or historic cultural practices directly in the project area. She does not know of any current cultural practices happening in the project area.

Marian Ching

Marian has been a resident in Waikapu since 1955, she would have been a teenager at that time. When they broke all of the camps apart she moved to East Waiko Road from Hayashi Camp. Hayashi Camp housed workers for the Wailuku Sugar Plantation, it was located near the current Kuihelani Highway. She spoke about growing up in the camp-lifestyle. A life where everybody had the same things and shared everything with everybody. Nobody stole anything, but sometimes

would go into other people's houses to borrow onions or sugar and would replace what they borrowed shortly thereafter. She attended Baldwin High School during the 50's at a time when most students walked to school. She talked about some of the more common Hawaiian La'au Lapa'au practices that they used in their family—namely guava shoots for diarrhea and eucalyptus steam for clearing sinuses. She is looking forward to the project area being developed with the hope that the occupants of the land will care for the land and keep it clean. She also feels that having more jobs in the area will be a positive thing for the younger generation. She doesn't know of any past or present cultural sites or practices in the project area.

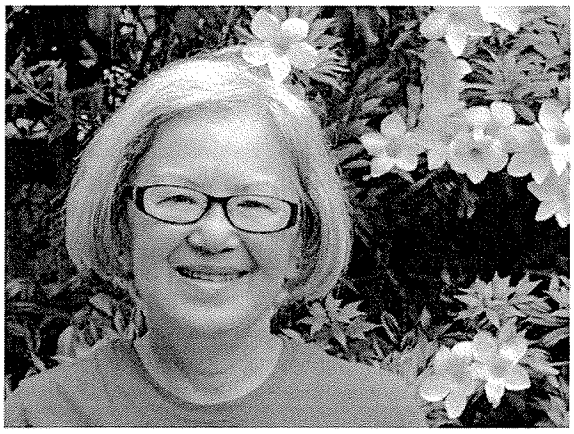
Zelie Harders

Zelie's maiden name is Rogers, her family has been in Waikapu for at least four generations. Although most of her time growing up was spent up in the valley, rather than down in the flatlands, Zelie remembers that the project area was all pasture and Keawe. Zelie told about a how the current housing situation came to be. Her husband bid on a house in an auction, they cut the bank of Waiko Road to make the road wide enough, they brought the house over on a truck and where the truck stopped in the pasture, there the house stayed. The subdivision was built around that house. That house is still used as the community gathering place. Zelie does not know of any current or historical cultural sites or practices. She would like to know more about the proposed development. She would like the community of Waikapu to be able to work with the developers in order to ensure that whatever goes in there is safe and that the developer will listen to the concerns of the community. She thought it would be especially important for the residents on East Waiko Road to be involved as any development in that area would certainly affect them more than the residents of West Waiko Road.

Florence Nakama

Florence was born and raised on East Waiko Road—where she currently resides. The years she went to college is the only time being away from Waikapu. Both of her parents worked for Wailuku Sugar plantation. She recalls the project area as Keawe trees and pasture land when she was a child. She talked about the punawai (water source) on the side of the Apana Junkyard where there were many farmers. She does not recall any trails or temples or native plants in the project area. She is an active member in the Waikapu Community Association. Although she's not opposed to development, she feels strongly that any development should be in harmony with what Waikapu is. The community association is trying to document all of the stories from the elders in Waikapu as a way to recognize and honor the people who were raised in Waikapu. Her main concern is the additional traffic any development will bring. She took Hana Pono representatives on a tour of the Waikapu Cemetery.

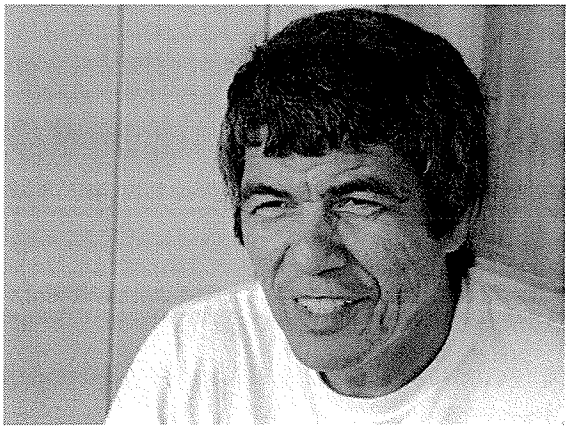
Wallette Pellegrino



Wallette has lived off West Waiko Road since the 1960's, she currently has an active lo'i farm project that brings in students from Wailuku schools to learn about farming and sustainability. She talked about the old auwai system that supplies her lo'i with water. Wallette grew up in Wailuku and remembers coming to Waikapu as a child to go to the outdoor movie theater that was near the project area. She remembers the project area as being pasture land with a lot of Keawe trees. She does not recall any cultural sites or

practices in the project area. Wallette understands that change is coming, but feels that not all change is for the better. She said, "I think that's the issue that all little communities face… knowing that the change is going to happen and wanting to be part of the positive change. Working together." Her main concerns were preserving the stone walls and the old trees that line Waiko Road as well as the old auwai system, but understands that the proposed development will not affect any of the things she mentioned.

Alfred Santiago



Alfred is a life-long resident of Wailuku. During his childhood he spent countless hours near the project site at the rubbish dump collecting for redemption. The bottles were refilled at the Maui Soda Company or Star Soda Company. He was told that there were graves in and around the project area. He and his friends were taught about the general understanding of respect for things like that. They were taught never to play with bones or move them, but they never saw any remains or burials. They understood that the area was to be respected. Alfred used to work with the water company as a ditch-man in the Waikapu area. He kept an eye on the water flow and the harvesting of sugar cane and pineapple. At one point he was an expert witness and testified about the slow decline of the water flow that pointed in the direction of mismanaging of some sort. He also talked about how they aren't using the reservoirs to hold water, they are using them as part of the filtration system—and are just skimming the top of the reservoir—there isn't a way to catch and contain the excess water flow. Alfred compared the current system to his understanding of how the Hawaiian kupuna would have managed the water system. His thoughts were that the kupuna would have tightly, manually and visually monitored the water flow. They didn't have the luxury of a large reservoir, so they had to quickly regulate any excess water so it would do any damage. They would have had to be constantly hands-on and be able to anticipate

changes in water flow. He described the ancient auwai systems as being umbilical cords for the communities to the streams. As a child he remembers going up into Waikapu valley and collecting opai and guava and banana. In his lifetime he's seen the devastation of invasive species—namely strawberry guava. He commented about how quickly things have changed and about how important it is to develop land based on what it's suited for rather than what "I" want to do with that land. An example he used is about rocky land being well-suited for some types of farming since there is good drainage. He would recommend to use the land in a way that brings about the most good for the land, the owners and the community, rather than building based on what "we" want from the land. He did suggest planting Native Hawaiian plants in the project area in order to sustain life in all forms. He said, "You watch one tree in a parking lot and the birds are coming on and off of the tree, some of them nest in the tree, some of them would find sustenance, there's bugs and stuff in the tree so just one tree in a baron looking parking lot is like a little oasis. So for that reason I'm always appreciative of people who insert that even if they are only looking for esthetic reasons, I'm not thinking just that, I'm thinking beyond but the thing is I know it's good to have. It can not be bad."

CONCLUSION

SYNTHESIS OF ARCHIVAL, LITERARY, & ORAL ACCOUNTINGS

The project area, in the moku of Wailuku, the ahupua'a of Waikapu, bordering Waikō Road on the south and east of Waiale Road contains no significant cultural sites or resources. The parcel in question has long been degraded by sugar plantation, ranching, and in most recent years, industrial activity. Perhaps the most significant and cultural aspect of the property is its foundation as part of the vast sand dunes that stretched across the central valley floor. For Hawaiians the concept of 'One Hānau, the sand of one's birth, speak to the reciprocal nature Hawaiians have with the land. Care should be taken in any and all earth-moving or excavation activities out of respect for this concept and the ancient chiefs who perished battling for control of these islands. Planting appropriate

Native Hawaiian plants and trees within the project area would reverse the trends of degradation to the area.

POTENTIAL EFFECTS OF DEVELOPMENT ON RESOURCES/PRACTICES

This report finds that the development of a light-industrial commercial complex on the project area encompassing the TMK 2-3-8-07-105 will have no significant impact on cultural resources, practices or beliefs, either directly in the project area or the surrounding areas. The lands in question have been taken over by non-native trees, grasses, and shrubs for the better part of the last century and prior to that no significant cultural sites have been found or discussed by our oral interview participants.

Thus, the proposed project appears to pose no adverse effects to native Hawaiian cultural practices. Therefore, no specific mitigation recommendations are warranted at this time. However a meeting with the neighboring community to address concerns would be beneficial. Many of our consultants expressed concerns about increased traffic and would like to know more about the proposed development to ensure it will be safe for the residents.

Figure 3: Picture of project area taken from fence on East Waikō Road

Bibliography

Ashdown, Inez

1974 *Stories of Old Hawai'i.* Ace Printing Company, Inc., Honolulu, Hawaii.

Fornander, Abraham

1969 *An Account of the Polynesian Race: Its origins & migrations.* Charles Tuttle, Rutland, Vt.

Handy, E. S. Craighill; Handy Elizabeth Green; Pukui, Mary Kawena

1972 *Native Planters in Old Hawai'i: Their Life, Lore, and Environment.* Bishop Museum Press, Honolulu, Hawaii.

Handy, E.S.C.

1940 *The Hawaiian Planter Volume I: His Plants, Methods and Areas of Cultivation.* Bishop Museum Bulletin 161, Honolulu, Hawaii.

Hawaii State Office of Environmental Quality Control

1997 Guidelines for Assessing Cultural Impacts, (taken from OEQC website)

Kamakau, Samuel M.

1961 Ruling Chiefs of Hawaii. Kamehameha Schools Press, Honolulu, Hawaii

McGerty, Leann & Spear, Robert L.

2004 Cultural Impact Assessment on a Piece of property located in Waikapu Ahupua'a, Wailuku District, Maui Island, Hawaii

Ka Nupepa Kuokoa

1872 W.K. Kaualililehua, article, September 21, 1872. Hawaiian Ethnological Notes

Sterling, Elspeth P.

1998 *Sites of Maui.* Bishop Museum Press, Honolulu, Hawaii.

Stoddard, Charles Warren

1894 *Hawaiian Life: Being Lazy Letters from Low Latitudes.* F.T. Neely, Chicago, Ill.

Interviews:

Cassandra "Sandy" Bell
Marian Ching
Zelie Harders
Florence Nakama
Wallette Pellegrino
Alfred Santiago

Appendix A: Participation Agreement Forms

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 7/24/10 Consultant: Cassandra Bell

Name of Project: Kopaa Complex

Location of Project: Waikapu, Maui

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

____I am willing to participate

____I am willing to participate under certain conditions.

Consultant Signature: Cassandra L Bell **Date:** 7/24/10

Mailing Address: 1420 Honua Pl.
Wailuku, Hi 96793

Investigator Signature: [illegible] **Date:** 7/24/10

MAHALO NUI LOA.

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 7/16/2010 Consultant: Marian Ching

Name of Project: Kopaa Complex

Location of Project: Waikapu, Maui

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

X I am willing to participate

____ I am willing to participate under certain conditions.

Consultant Signature: E. Marian Ching **Date:** 7/16/10

Mailing Address: 24 E. Waiko Rd.
Wailuku, Maui

Investigator Signature: Chelsea Tanaka **Date:** 7/16/10

MAHALO NUI LOA.

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 7/10/10 Consultant: Zelie Rogers Harders

Name of Project: Kopaa Complex

Location of Project: Waikapu, Maui

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

____ I am willing to participate

X I am willing to participate under certain conditions.

Consultant Signature: Zelie Harders **Date:** 7/10/10

Mailing Address: 1415 Kilohi St.
Wailuku HI 96793

Investigator Signature: Chelsea Pan Z **Date:** 7/10/10

MAHALO NUI LOA.

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 7/9/10 Consultant: Florence Nakama

Name of Project: Kopaa Complex

Location of Project: County of Maui, Waikapu

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

X I am willing to participate

____ I am willing to participate under certain conditions.

Consultant Signature: Florence K Nakama **Date:** 7/9/10

Mailing Address: 19 E. Waiko Rd
Waikapu, Hi

Investigator Signature: [illegible] **Date:** 7/9/10

MAHALO NUI LOA.

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 07/10/10 Consultant: W. G. Pellegrino

Name of Project: Kopaa Complex

Location of Project: Waikapu, Maui

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

____ I am willing to participate

X I am willing to participate under certain conditions.

Consultant Signature: [signature] **Date:** 07/19/10

Mailing Address: P.O. Box 967
Wailuku HI 96793

Investigator Signature: [signature] **Date:** 7/10/10

MAHALO NUI LOA.

Agreement to Participate in Oral History Interview
Hana Pono, LLC Cultural Impact Assessment

Date: 7/9/10 Consultant: Alfred K. Santiago

Name of Project: Kopaa Complex,

Location of Project: Waikapu, Maui

I understand that Hana Pono, LLC is an independent investigator who will be conducting oral history interviews with individuals (kupuna/makua) knowledgeable about the land and cultural practices in the proposed project area. The oral history interviews are being conducted in order to collect information on possible pre-historic and or historical cultural resources associated with these lands, as well as traditional cultural practices.

The recording of this interview will be transcribed and included in Hana Pono, LLC's final Cultural Impact Assessment for the proposed project.

I understand and agree to participate in this interview.

Please check the bottom:

X I am willing to participate

____ I am willing to participate under certain conditions.

Consultant Signature: Alfred K. Santiago **Date:** 7-9-10

Mailing Address: 2445-C
VINYARD ST.
WAILUKU, HI. 96793

Investigator Signature: Chelsea Pantea **Date:** 7/9/10

MAHALO NUI LOA.

APPENDIX E.

Traffic Impact Analysis Report

TRAFFIC IMPACT ANALYSIS REPORT
WAIKAPU LIGHT INDUSTRIAL PROJECT

WAILUKU, MAUI, HAWAII
TMK: (2) 3-8-007:105

April 19, 2013

Prepared for:

ABC Development Company, LLC
815 Waiakamilo Road
Honolulu, Hawaii 96817

Austin, Tsutsumi & Associates, Inc.
Civil Engineers • Surveyors
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031
Telephone: (808) 533-3646
Facsimile: (808) 526-1267
E-mail: atahnl@atahawaii.com
Honolulu • Wailuku • Hilo, Hawaii

TRAFFIC IMPACT ANALYSIS REPORT
WAIKAPU LIGHT INDUSTRIAL PROJECT

Wailuku, Maui, Hawaii

Prepared for

ABC Development Company, LLC
815 Waiakamilo Road
Honolulu, Hawaii 96817

Prepared by
Austin, Tsutsumi & Associates, Inc.

Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

April 19, 2013

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1-4
	A. Background and Location	1
	B. Project Description	3
	C. Study Methodology	3
II.	EXISTING CONDITIONS	5-12
	A. Roadway System	5
	B. Existing Traffic Volumes	6
	C. Existing Traffic Conditions	7
III.	BASE YEAR 2015 SCENARIO	13-15
	A. Planned Roadway Improvements	13
	B. Base Year 2015 Analysis	13
IV.	YEAR 2015 WITH PROJECT	16-21
	A. Trip Generation	16
	B. Trip Distribution/Assignment	17
	C. Year 2015 with Project Analysis	17
V.	CONCLUSIONS	22
VI.	RECOMMENDATIONS	22-23
VII.	REFERENCES	24

TABLE OF CONTENTS
Cont'd

Page

TABLES

1. SUMMARY OF LEVEL OF SERVICE AND V/C RATIO FOR EXISTING CONDITIONS 12

2. SUMMARY OF LEVEL OF SERVICE AND V/C RATIOS FOR EXISTING AND BASE YEAR 2015 CONDITIONS 15

3. TRIP GENERATION RATES 16

4. YEAR 2015 WITH PROJECT TRIP GENERATION 16

5. SUMMARY OF LEVEL OF SERVICE AND V/C RATIO FOR BASE YEAR 2015 AND YEAR 2015 WITH PROJECT CONDITIONS 21

FIGURES

1. PROJECT LOCATION 2

2. PROJECT SITE PLAN 4

3. EXISTING LANE CONFIGURATION AT EAST WAIKO ROAD/ WEST WAIKO ROAD/HONOAPIILANI HIGHWAY 8

4. EXISTING LANE CONFIGURATION AT EAST WAIKO ROAD/WAIALE ROAD 9

5. EXISTING LANE CONFIGURATION AT EAST WAIKO ROAD/KUIHELANI HIGHWAY 10

6. EXISTING VOLUMES AND LOS 11

7. BASE YEAR 2015 VOLUMES AND LOS 14

8. PROJECT VOLUME 18

9. YEAR 2015 PROJECT ACCESSES 19

10. FUTURE 2015 WITH PROJECT VOLUMES AND LOS 20

11. YEAR 2015 PROJECT ACCESSES 24

TABLE OF CONTENTS
Cont'd

APPENDICES

A. TRAFFIC COUNT DATA

B. LEVEL OF SERVICE CRITERIA

C. LEVEL OF SERVICE CALCULATIONS

AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

TERRANCE S. ARASHIRO, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
ADRIENNE W. L. H. WONG, P.E., LEED AP
KEITH K. NIIYA, P.E.
DEANNA HAYASHI, P.E.
PAUL K. ARITA, P.E.

TRAFFIC IMPACT ANALYSIS REPORT
WAIKAPU LIGHT INDUSTRIAL PROJECT
Wailuku, Maui, Hawaii

I. INTRODUCTION

This report is an update to the Waikapu Light Industrial Project Traffic Impact Analysis Report (TIAR) conducted by Austin, Tsutsumi & Associates, Inc. (ATA) in 2010 documenting the findings to evaluate the potential traffic impacts resulting from the Waikapu Light Industrial Project.

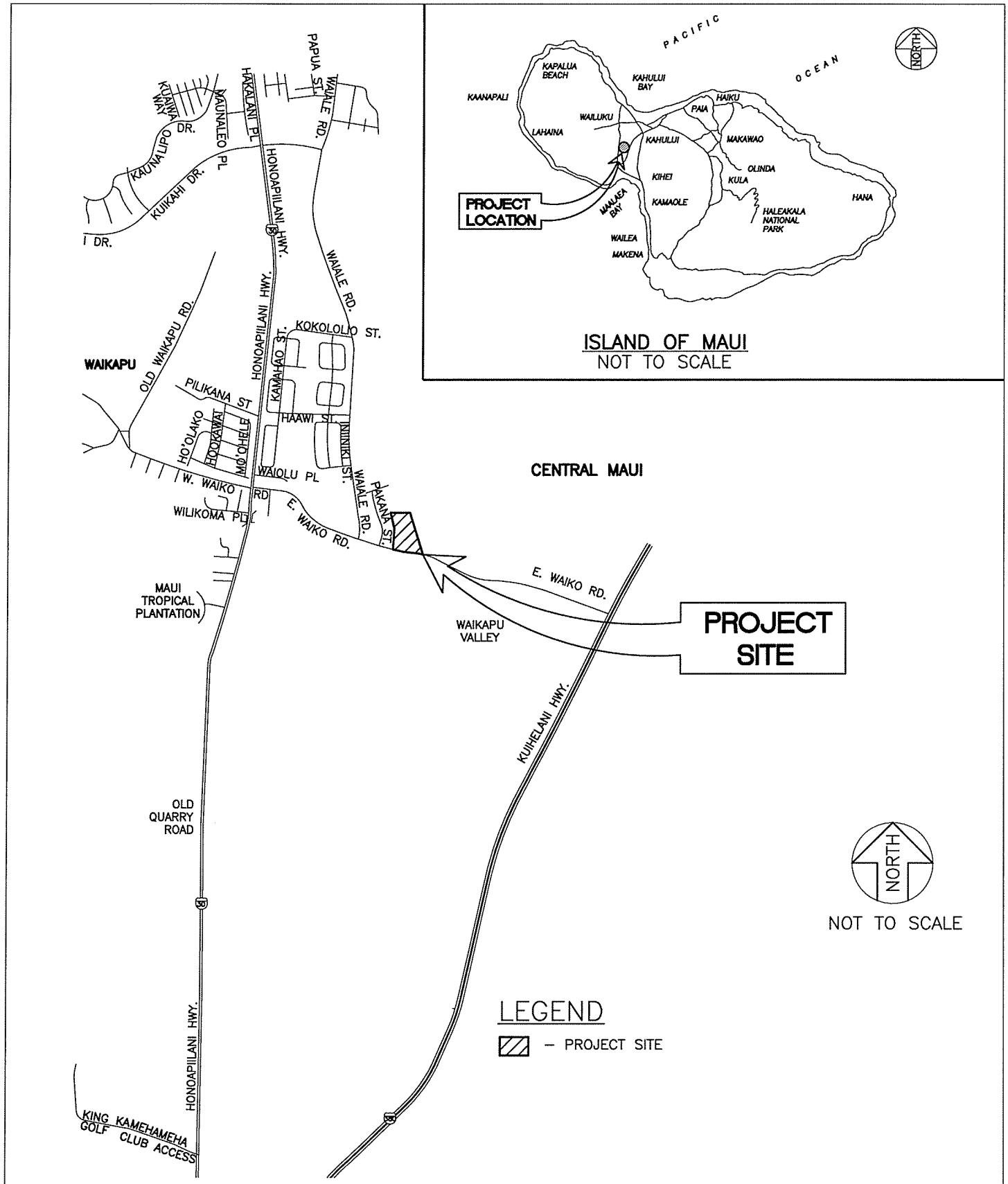
The Waikapu Light Industrial Park Project shall hereinafter be referred to as the "Project." See Figure 1 for the Project Location.

A. Background and Location

The Project will be located within Waikapu (TMK: (2) 3-8-007:105) – more specifically just north of East Waiko Road and approximately 1,000 feet east of the Waiale Road/East Waiko Road intersection. Waikapu is a primarily residential area with some industrial and commercial uses which in recent years has experienced significant growth.

REPLY TO:
501 SUMNER STREET, SUITE 521 • HONOLULU, HAWAII 96817-5031
PHONE (808) 533-3646 • FAX (808) 526-1267
EMAIL : atahnl@atahawaii.com

OFFICES IN:
HONOLULU, HAWAII
WAILUKU, MAUI, HAWAII
HILO, HAWAII



WAIKAPU LIGHT INDUSTRIAL	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE
	PROJECT LOCATION	1

B. Project Description

ABC Development Company plans to construct seven (7) light industrial lots (elements) ranging from 0.8 acres to 1.5 acres on approximately 8.5 acres of land. The Project would provide two (2) accesses onto East Waiko Road. The Project Secondary Access would provide access to elements 1 and 2 and the Project Main Access would provide access to elements 3 through 7. The Project is planned to be completed by year 2015.

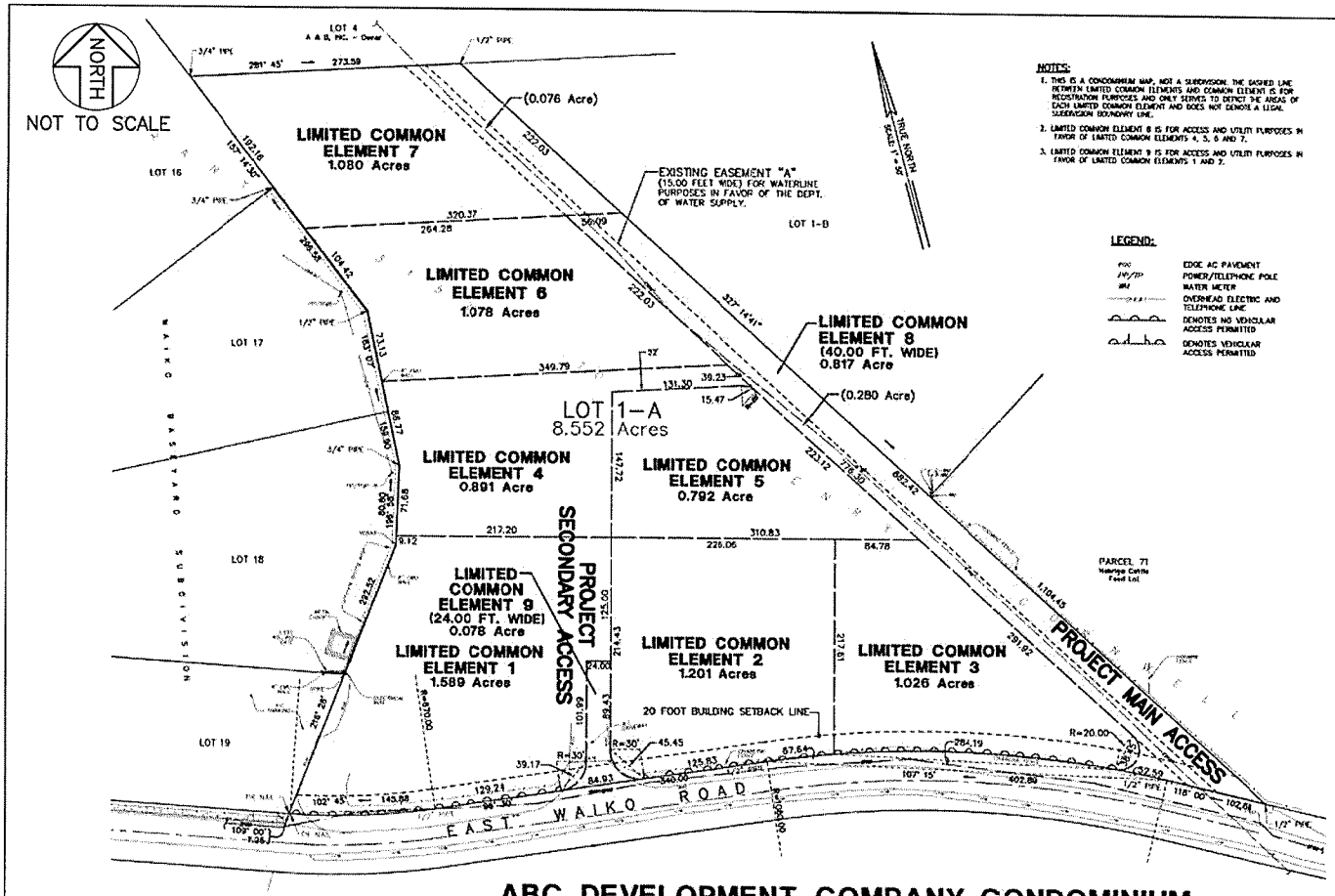
The Traffic Impact Assessment Report (TIAR) conducted in 2010 by ATA for this Project used a buildout year of 2012. The Project site plan has not changed since the previous report.

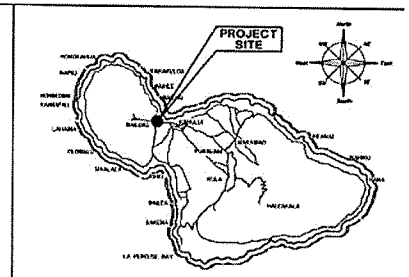
See Figure 2 for the Project Site Plan.

C. Study Methodology

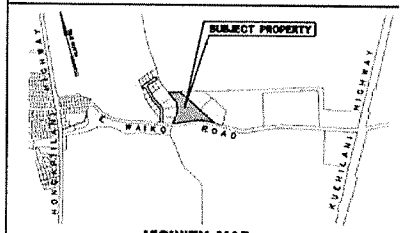
This study will address the following:

1. Assess existing traffic operating conditions at key locations within the study area.
2. Project Base Year 2015 traffic (without improvements) including traffic generated by the Maui Travel Demand Forecasting Model (MTDFM).
3. Identify planned improvements and potential traffic mitigative measures for the Base Year 2015 Traffic.
4. Trip generation and traffic assignment characteristics for the Project.
5. The impact of Project-generated traffic on the Base Year traffic operation.
6. Recommend roadway improvements as appropriate, to minimize or eliminate the adverse traffic impacts resulting from traffic generated by the Project.





LOCATION MAP
ISLAND OF MAUI



VICINITY MAP
NOT TO SCALE

PROJECT AREA SUMMARY

A.	LIMITED COMMON ELEMENT 1 AREA =	1.589 ACRES
B.	LIMITED COMMON ELEMENT 2 AREA =	1.201 ACRES
C.	LIMITED COMMON ELEMENT 3 AREA =	1.026 ACRES
D.	LIMITED COMMON ELEMENT 4 AREA =	0.891 ACRE
E.	LIMITED COMMON ELEMENT 5 AREA =	0.792 ACRE
F.	LIMITED COMMON ELEMENT 6 AREA =	1.078 ACRES
G.	LIMITED COMMON ELEMENT 7 AREA =	1.080 ACRES
H.	LIMITED COMMON ELEMENT 8 AREA =	0.817 ACRE
I.	LIMITED COMMON ELEMENT 9 AREA =	0.078 ACRE
	TOTAL AREA =	8.552 ACRES

NOTE: AREAS SHOWN FOR LIMITED COMMON ELEMENTS ARE APPROXIMATE.

DEVELOPERS
ABC DEVELOPMENT COMPANY, L.L.C.

ABC DEVELOPMENT COMPANY CONDOMINIUM

DESIGNATION OF LIMITED COMMON ELEMENTS 1 TO 9, INCLUSIVE

Being all of Lot 1-A, Kopaa Subdivision No. 2.
Being, also, a portion of R.P. 3152 to Henry Cornwell.

AT WAIKAPU, WAILUKU, MAUI, HAWAII

CONDOMINIUM FILE PLAN

Tax Map Key (2) 3-8-07: 105

SHEET 1 OF 1 SHEET

Revised: DECEMBER 15, 2010
Revised: AUGUST 13, 2010
Revised: AUGUST 11, 2010
Revised: JULY 12, 2010

WAIKAPU LIGHT INDUSTRIAL

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

PROJECT SITE PLAN

FIGURE 2

II. EXISTING CONDITIONS

A. Roadway System

West Waiko Road

West Waiko Road is an east-west, two-way, two-lane undivided collector road with a posted speed limit of 20 mph. West Waiko Road begins approximately 4,500 feet west of Honoapiilani Highway in an established residential neighborhood, and extends eastward towards its terminus at its intersection with Honoapiilani Highway and East Waiko Road.

East Waiko Road

East Waiko Road is an east-west, two-way, two-lane, undivided collector road with a posted speed limit of 20 mph. East Waiko Road currently serves residential and industrial land uses, while also providing connectivity (via Waiale Road) to the Waikapu Gardens subdivision and areas further north of it, including Wailuku. Through the Waikapu region, the 20-foot wide East Waiko Road is currently narrow and winding; the road appears to offer limited sight distance around some of its curves.

Waiale Road

Waiale Road is a north-south, two-way, two-lane, undivided collector road with a posted speed limit of 20 mph. To the north, Waiale Road serves as the Extension of Lower Main Street – wherefrom it extends southward past the Maui Community Correctional Center and residential areas, and eventually terminates at its intersection with East Waiko Road.

Honoapiilani Highway

Honoapiilani Highway is a north-south, two-way, two-lane, undivided arterial with posted speed limits ranging between 30 mph and 45 mph in the vicinity of the Project. Honoapiilani Highway begins as the continuation of South High Street near Kahookele Street, and continues southward through Waikapu, Maalaea, and wraps around the "Pali" towards West Maui.

Channelization is provided at all of its major intersections within the vicinity of the project.

Kuihelani Highway

Kuihelani Highway is a north south, two-way, four-lane, divided arterial with a posted speed limit of 55 mph in the vicinity of the Project. Kuihelani Highway begins to the north in Kahului at its intersection with Puunene Avenue and Dairy Road. The road extends southward along the eastern border of the Maui Lani Development, intersects with East Waiko Road, and ultimately terminates at its signalized intersection with Honoapiilani Highway to the south near Maalaea.

B. Existing Traffic Volumes

Manual turning movement traffic counts and field observations were conducted at the following study intersections on Thursday, January 24, 2013:

- East Waiko Road/West Waiko Road/Honoapiilani Highway (Signalized)
- East Waiko Road/Waiale Road (Unsignalized)
- East Waiko Road/Kuihelani Highway (Signalized)

Based on the count data, it was determined that the weekday AM peak hour of traffic occurs between 7:00 AM and 8:00 AM and the weekday PM peak hour of traffic occurs between 4:00 PM and 5:00 PM.

Between 2010 and 2013, the traffic volume along East Waiko Road has decreased by approximately 30 percent[1] along East Waiko Road but increased on the eastbound approach at the intersections of East Waiko Road/Kuihelani Highway by approximately 20 percent - 50(24) vehicles in the AM(PM) peak hour of traffic. The increase is likely attributed to the industrial land uses located along East Waiko Road between its intersection with Waiale Road and Kuihelani Highway. Overall, traffic operations at the study intersections are similar to 2010 conditions; all intersections operate smoothly at LOS D or better on each movement.

The turning movement count data is included in Appendix A.

---

[1] Decrease along East Waiko Road between Honoapiilani Highway and Kuihelani Highway based on traffic counts taken on April 29th, 2010 at the same intersections.

C. Existing Traffic Conditions

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual – Special Report 209 (HCM), dated 2000, methods for calculating volume-to-capacity ratios (v/c), delays and corresponding Levels of Service were utilized in this study. LOS definitions for signalized and unsignalized intersections are provided in Appendix B.

Methodology

Analysis for the study intersections was performed using Synchro. Synchro is an analysis program that is capable of preparing reports consistent with HCM methodology. These reports contain control delay results (HCM delay), based on intersection lane geometry, signal timing inputs, and hourly traffic volume.

This program assigns a LOS based on HCM delay (see Appendix B) as a qualitative measure of performance and calculates the volume-to-capacity ratios (v/c) which is the traffic volume demand over the roadway capacity; v/c ratios of one (1) or greater indicate that the roadway operates at or over its capacity. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis for the recommendations outlined in this report.

Regional Analysis

The Project is located within the Waikapu area and is accessed via East Waiko Road. East Waiko Road provides direct access to Honoapiilani Highway and Kuihelani Highway which are the main arterials within that region.

Honoapiilani Highway generally serves traffic originating from or destined towards Wailuku; Kuihelani Highway serves traffic originating from or destined towards Kahului, Hana, or Upcountry. Waiale Road also connects with East Waiko Road and services Waikapu Garden residents by providing an alternate north-south route between east Wailuku and Waikapu. However, its ability to process traffic is limited by its posted speed limits and termination as a minor approach to East Waiko Road.

Observations and Intersection Analysis

East Waiko Road/West Waiko Road/Honoapiilani Highway

The intersection operates at LOS D(C) or better on all movements during the AM(PM) peak hours of traffic . See Figure 3 for intersection details.

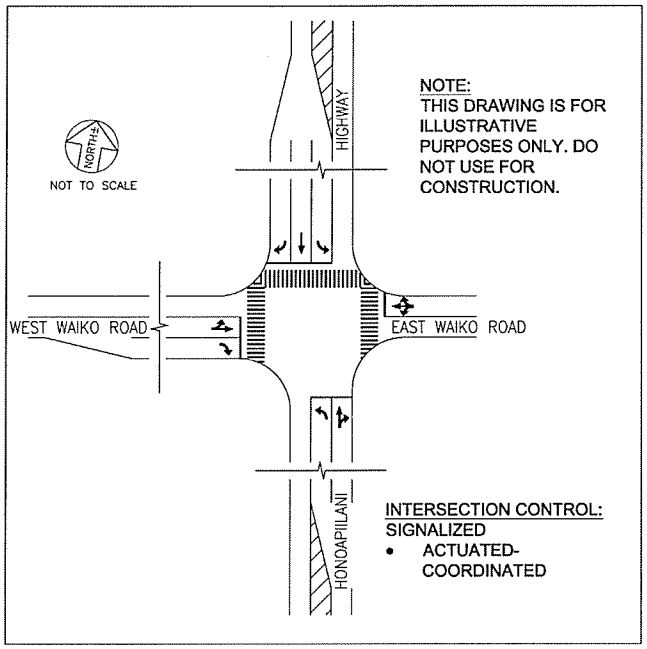


Figure 3: Existing Lane Configuration at East Waiko Road/West Waiko Road/Honoapiilani Highway

East Waiko Road/Waiale Road

The stop-controlled southbound approach at this intersection operates at LOS B(B) or better during the AM(PM) peak hours of traffic. See Figure 4 for intersection details.

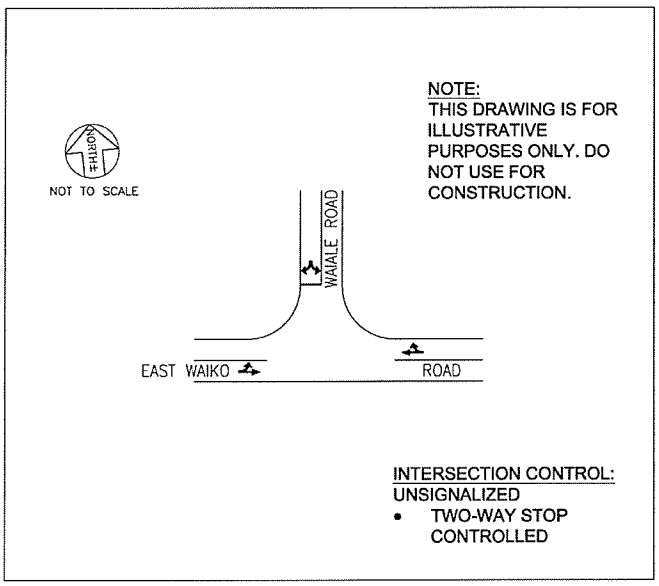


Figure 4: Existing Lane Configuration at East Waiko Road/Waiale Road

East Waiko Road/Kuihelani Highway

The intersection operates at LOS C(C) or better on all movements during the AM(PM) peak hours of traffic.

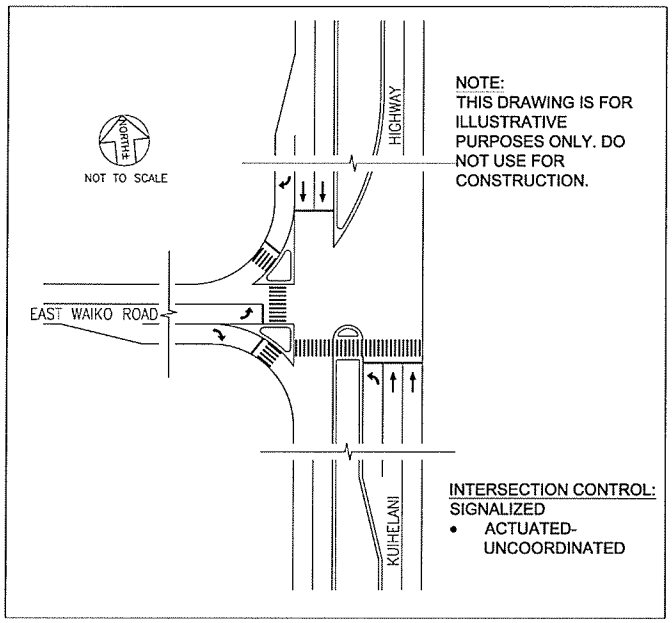
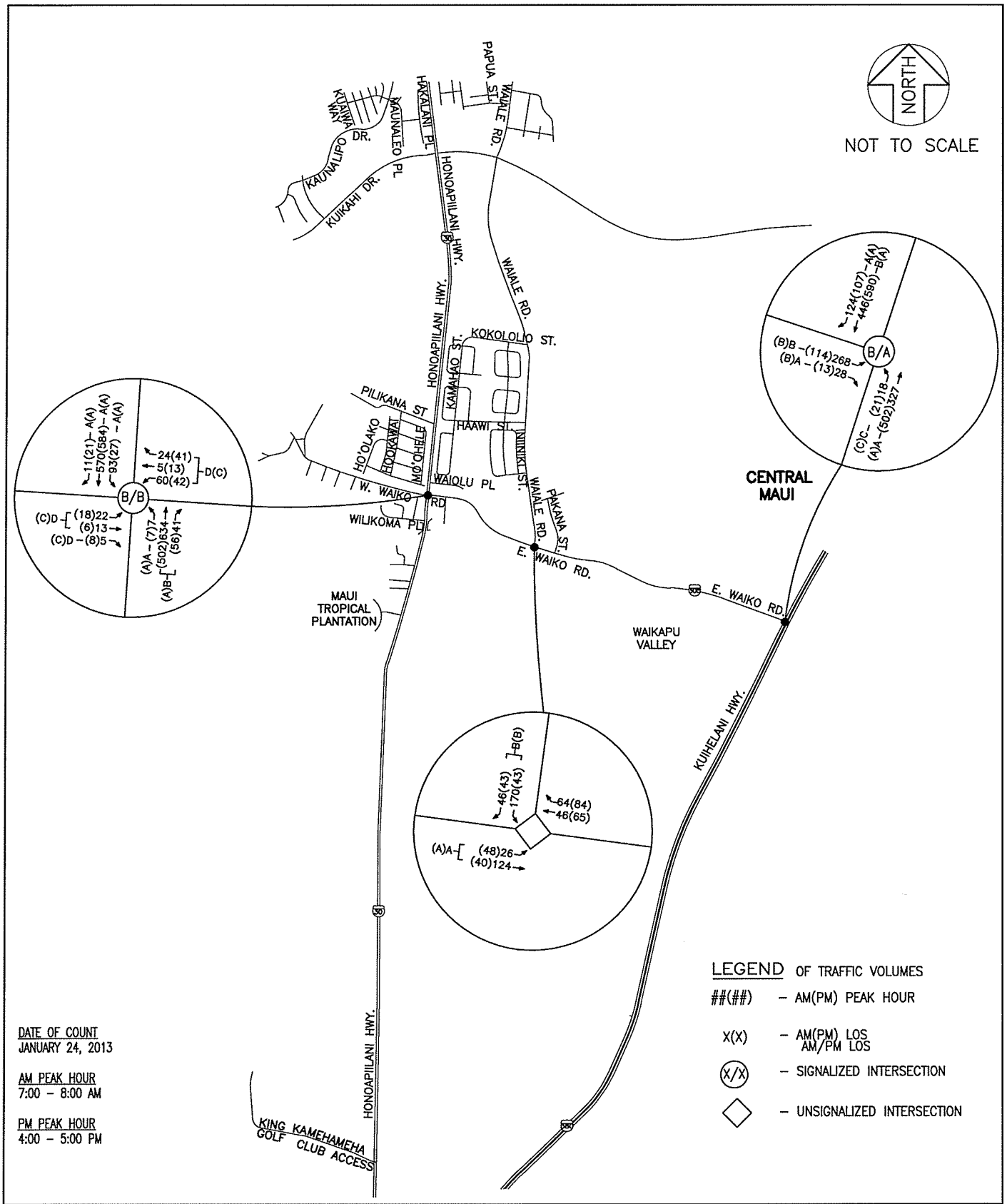


Figure 5: Existing Lane Configuration at East Waiko Road/Kuihelani Highway

See Figure 6 for Existing Volumes and LOS. See Table 1 for Existing LOS and v/c ratios. See Appendix C for intersection analysis worksheets.



WAIKAPU LIGHT INDUSTRIAL

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

FIGURE 6

EXISTING VOLUMES AND LOS

Table 1: Summary of Level of Service and v/c Ratio for Existing Conditions

Intersection	Existing 2013					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Waiko Road & Honoapiilani Highway						
EB LT/TH	44	0.27	D	32	0.22	C
EB RT	37	0.00	D	25	0.01	C
WB LT/TH/RT	55	0.68	D	33	0.49	C
NB LT	5	0.02	A	5	0.02	A
NB TH/RT	13	0.67	B	9	0.52	A
SB LT	7	0.27	A	8	0.07	A
SB TH	6	0.44	A	10	0.48	A
SB RT	4	0.01	A	5	0.02	A
Overall	14	0.65	B	12	0.49	B
East Waiko Road & Waiale Road						
EB LT/TH	2	0.04	A	5	0.05	A
SB LT/RT	14	0.40	B	11	0.14	B
East Waiko Road & Kuihelani Highway						
EB LT	16	0.64	B	18	0.44	B
EB RT	7	0.03	A	12	0.01	B
NB LT	21	0.29	C	23	0.34	C
NB TH	7	0.23	A	5	0.28	A
SB TH	12	0.37	B	8	0.38	A
SB RT	2	0.10	A	1	0.08	A
Overall	10	0.48	B	7	0.40	A

III. BASE YEAR 2015 SCENARIO

By the year 2015, some growth is expected in the Waikapu area. The growth used to project to year 2015 was obtained from the Maui Travel Demand Forecasting Model (MTDFM), which takes into account projects expected to be completed between 2001 and 2035. The MTDFM yielded between 2013 and 2015, an approximate growth of:

- 15 percent along East Waiko Road
- 7 percent along Honoapiilani Highway
- 7 percent along Kuihelani Highway
- and 35 percent along Waiale Road

This growth rate is generally considered conservative and can be attributed to the fact that MTDFM growth was applied linearly – distributed evenly through time rather than based upon projects.

A. Planned Roadway Improvements

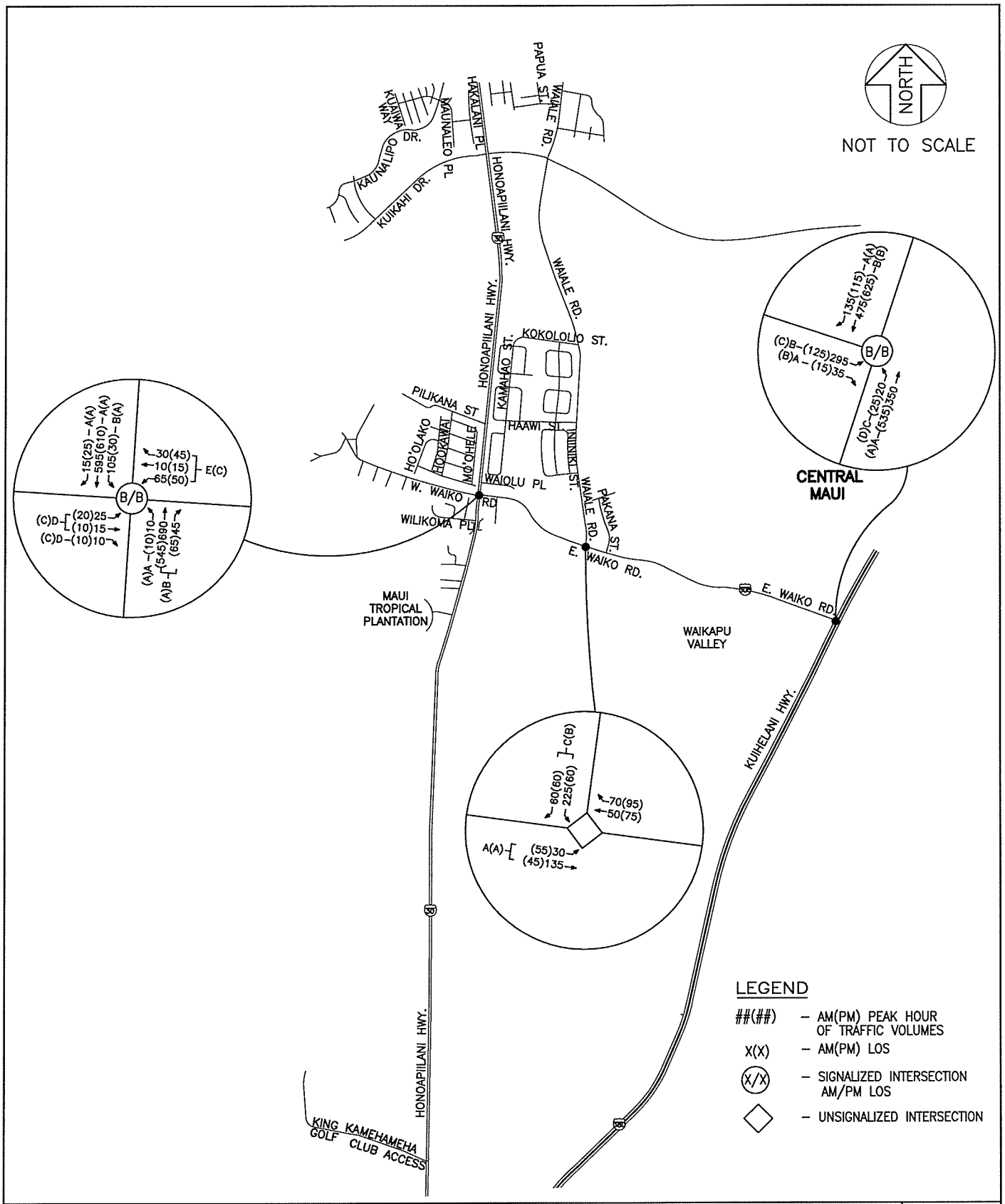
Waiale Road Extension and East Waiko Road Improvements

The County of Maui is currently working on the planning of the Waiale Road Extension and East Waiko Road Improvements. This project will extend Waiale Road from its existing terminus at East Waiko Road approximately one mile south and connect back to Honoapiilani Highway. East Waiko Road Improvements will re-pave East Waiko Road to provide right-of-way (ROW) for two (2) travel lanes. However, the projected completion date for the Waiale Road Extension and East Waiko Road Improvements is beyond the Project build out year of 2015. Therefore, it was not part of this study analysis.

B. Base Year 2015 Analysis

By year 2015, the base year increase in traffic would cause the westbound approach at the intersection of East Waiko Road/West Waiko Road/Honoapiilani Highway to operate at LOS E during the AM peak hour of traffic. Due to existing right-of-way (ROW) constraints imposed by adjacent properties, no improvements are recommended. All other movements at the study intersections would operate similarly to existing conditions.

See Figure 7 for Base Year 2015 Volumes and LOS. See Table 2 for Base Year 2015 LOS and v/c ratios.



WAIKAPU LIGHT INDUSTRIAL	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE
	BASE YEAR 2015 VOLUMES AND LOS	7

Table 2: Summary of Level of Service and v/c Ratios for Existng and Base Year 2015 Conditions

Intersection	Existing 2013						Base Year 2015					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Waiko Road & Honoapiilani Highway												
EB LT/TH	44	0.27	D	32	0.22	C	43	0.27	D	31	0.26	C
EB RT	37	0.00	D	25	0.01	C	35	0.01	D	24	0.02	C
WB LT/TH/RT	55	0.68	D	33	0.49	C	56	0.72	E	35	0.57	C
NB LT	5	0.02	A	5	0.02	A	6	0.03	A	5	0.04	A
NB TH/RT	13	0.67	B	9	0.52	A	17	0.76	B	10	0.55	B
SB LT	7	0.27	A	8	0.07	A	19	0.37	B	0	0.08	A
SB TH	6	0.44	A	10	0.48	A	9	0.47	A	3	0.51	A
SB RT	4	0.01	A	5	0.02	A	5	0.01	A	5	0.02	A
Overall	14	0.65	B	12	0.49	B	18	0.73	B	10	0.53	B
East Waiko Road & Waiale Road												
EB LT/TH	2	0.04	A	5	0.05	A	3	0.04	A	5	0.06	A
SB LT/RT	14	0.40	B	11	0.14	B	17	0.56	C	11	0.21	B
East Waiko Road & Kuihelani Highway												
EB LT	16	0.64	B	18	0.44	B	17	0.65	B	35	0.70	C
EB RT	7	0.03	A	12	0.01	B	8	0.05	A	16	0.02	B
NB LT	21	0.29	C	23	0.34	C	23	0.31	C	39	0.47	D
NB TH	7	0.23	A	5	0.28	A	8	0.25	A	7	0.30	A
SB TH	12	0.37	B	8	0.38	A	13	0.39	B	12	0.39	B
SB RT	2	0.10	A	1	0.08	A	1	0.11	A	2	0.08	A
Overall	10	0.48	B	7	0.40	A	11	0.50	B	12	0.49	B

IV. YEAR 2015 WITH PROJECT

A. Trip Generation

The Institute of Transportation Engineers (ITE) publishes a book based on empirical data compiled from a body of more than 4,250 trip generation studies submitted by public agencies, developers, consulting firms, and associations. This publication, titled Trip Generation, 9th Edition, provides trip rates and/or formulae based on graphs that correlate vehicular trips (Y axis) with independent variables (X axis). The independent variable can range from Dwelling Units (DU) for single-family attached homes to Gross Floor Area (GFA) for commercial or office development. These trip rates/formulae and their associated directional distributions were used to estimate the increase in the number of vehicular trips generated by the Project.

Table 3 summarizes the land use and corresponding trip rates/formulae. Table 4 summarizes the AM and PM trip generation for the Project.

Table 3: Trip Generation Rates

Land Use (ITE Code)	Independent Variable	AM Peak Hour of Traffic		PM Peak Hour of Traffic	
		Trip Rate	% Entering	Trip Rate	% Entering
Industrial Park (130)	ACRES	[a]	83%	[b]	21%

[a] 0.78 LN(X) + 2.82

[b] 0.72 LN(X) + 3.06

where X is the independent variable

Source: Trip Generation, 9th Edition, Institute of Transportation Engineers.

Table 4: Year 2015 with Project Trip Generation

Land Use Designation	Independent Variable	AM Peak Hour of Traffic		PM Peak Hour of Traffic	
		Enter (vph)	Exit (vph)	Enter (vph)	Exit (vph)
Industrial Park (130)	8.5 ACRES	74	15	21	79

B. Trip Distribution/Assignment

The Project will provide two (2) accesses both off of East Waiko Road. The Project Secondary Access will serve elements 1 and 2. The Project Main Access will provide access to elements 3 through 7.

The project traffic was assigned to the roadway network based on existing travel patterns throughout the network. See Figure 8 for Project traffic.

C. Year 2015 with Project Analysis

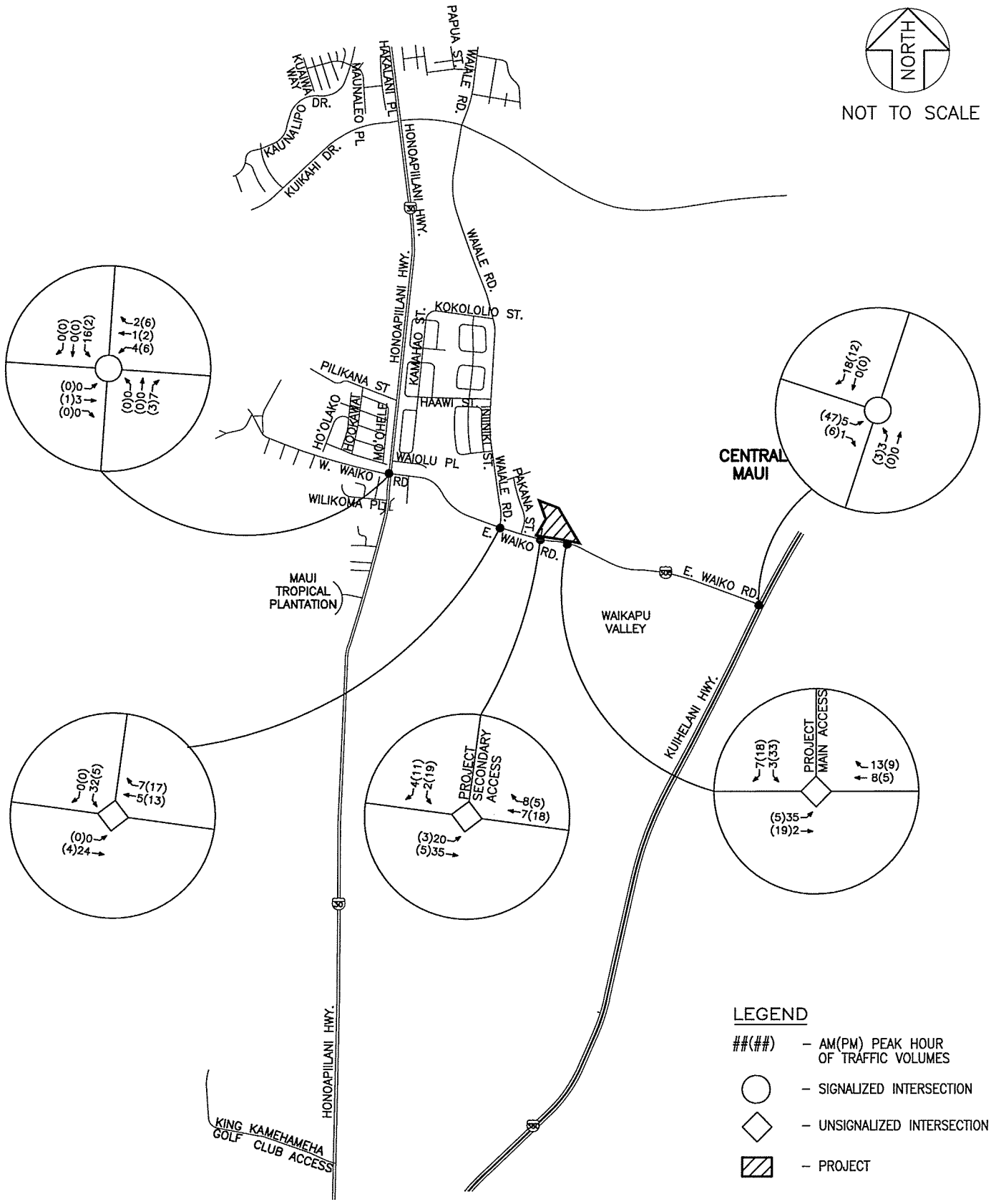
The Project would generate 89(100) trips during the AM(PM) peak hours of traffic. Year 2015 with Project traffic conditions will be similar to Base Year conditions:

- East Waiko Road/West Waiko Road/Honoapiilani Highway: Westbound approach will continue to operate at LOS E during the AM peak hour of traffic due to ROW constraints.

It is recommended that the proposed Project Main Access and Project Secondary Access intersections provide shared left-turn/right-turn lanes with stop control on their respective southbound approaches. Given this lane configuration, both Project Access intersections would operate at LOS C or better during both peak hours of traffic.

It is recommended that both of the Project Accesses ultimately be designed in a manner that will not require the design vehicle to reverse onto Waiko Road when entering or exiting the Project Site.

See Figure 9 for the Project access lane configuration. See Figure 10 for Year 2015 with Project Volumes and LOS. See Table 5 for Year 2015 with Project LOS and v/c ratios.



WAIKAPU LIGHT INDUSTRIAL	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE
	PROJECT VOLUME	8

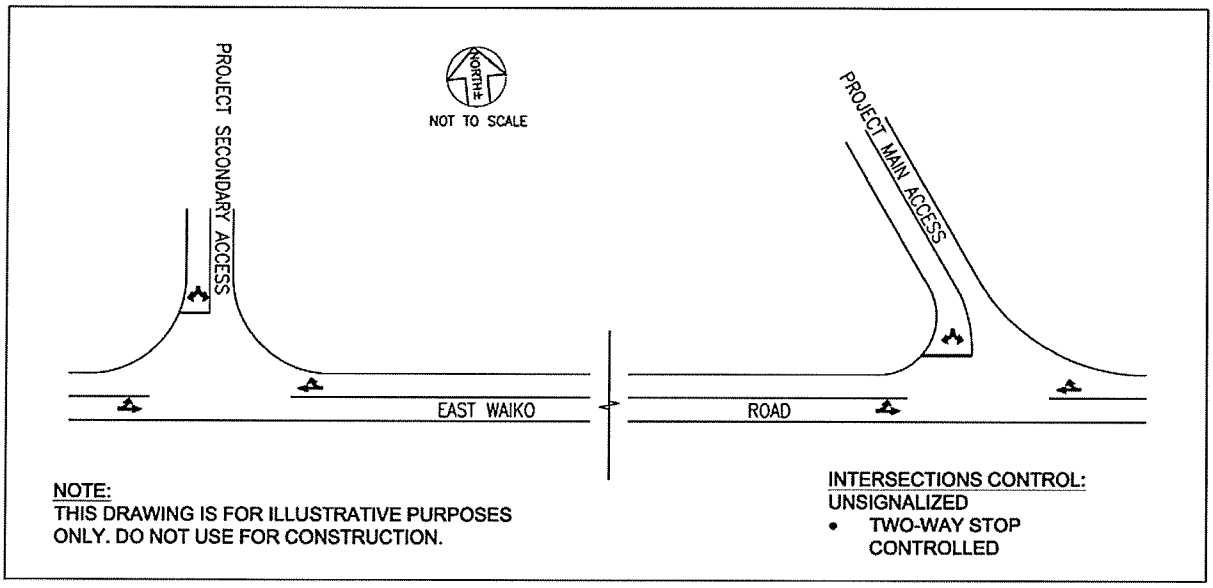
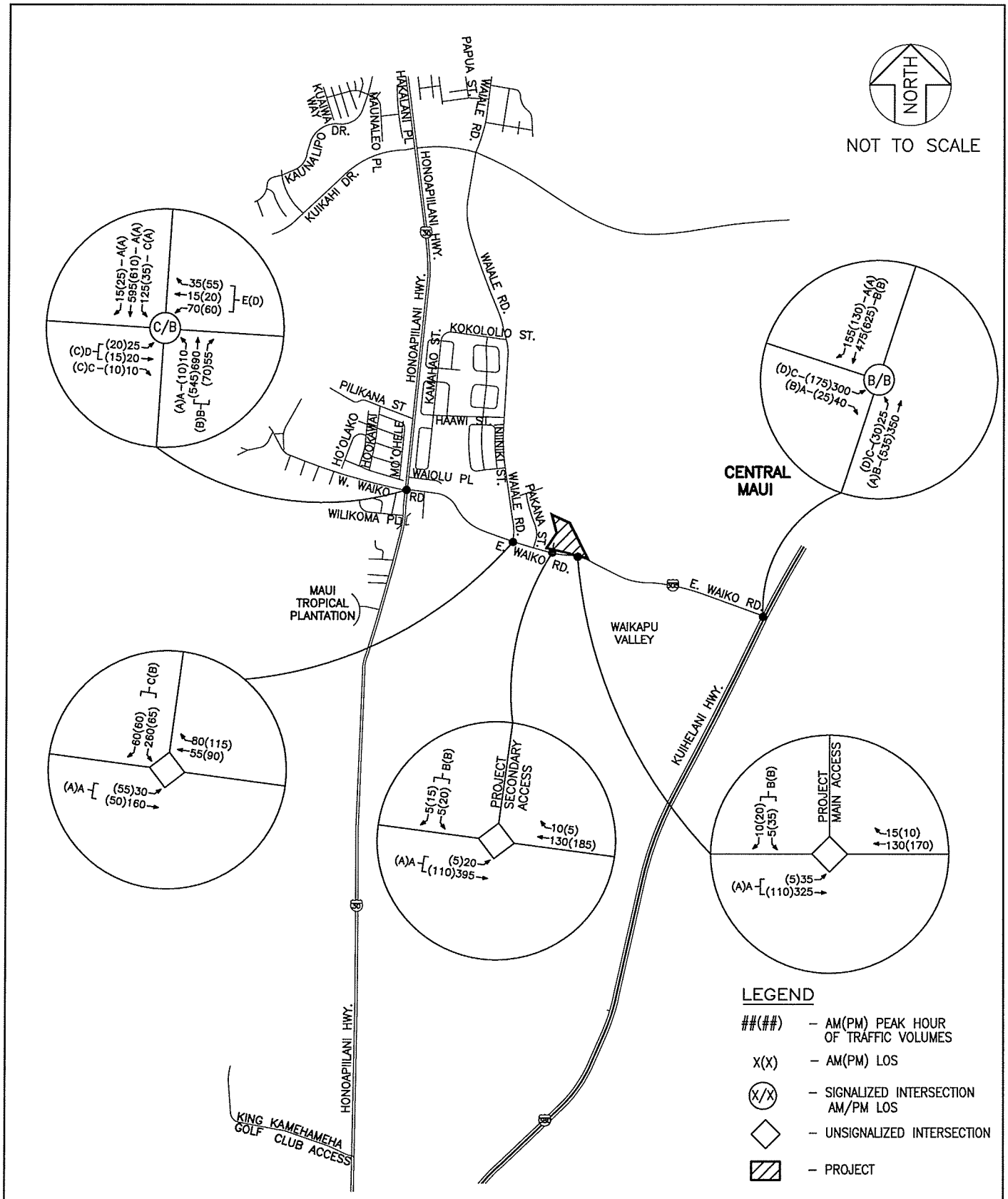


Figure 9: Year 2015 Project Accesses



WAIKAPU LIGHT INDUSTRIAL

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

FIGURE 10

FUTURE 2015 WITH PROJECT VOLUMES AND LOS

Table 5: Summary of Level of Service and v/c Ratios for Base Year 2015 and Year 2015 with Project Conditions

Intersection	Base Year 2015						Year 2015 with Project					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Waiko Road & Honoapiilani Highway												
EB LT/TH	43	0.27	D	31	0.26	C	42	0.30	D	30	0.28	C
EB RT	35	0.01	D	24	0.02	C	35	0.01	C	23	0.02	C
WB LT/TH/RT	56	0.72	E	35	0.57	C	65	0.81	E	38	0.67	D
NB LT	6	0.03	A	5	0.04	A	6	0.03	A	6	0.04	A
NB TH/RT	17	0.76	B	10	0.55	B	18	0.78	B	11	0.58	B
SB LT	19	0.37	B	0	0.08	A	29	0.46	C	0	0.11	A
SB TH	9	0.47	A	3	0.51	A	6	0.47	A	4	0.53	A
SB RT	5	0.01	A	5	0.02	A	5	0.01	A	5	0.02	A
Overall	18	0.73	B	10	0.53	B	20	0.76	C	12	0.57	B
East Waiko Road & Waiale Road												
EB LT/TH	3	0.04	A	5	0.06	A	2	0.05	A	5	0.06	A
SB LT/RT	17	0.56	C	11	0.21	B	22	0.66	C	12	0.23	B
East Waiko Road & Project Secondary Access												
EB LT/TH							1	0.02	A	0	0.00	A
SB TH							11	0.02	B	10	0.05	B
East Waiko Road & Project Main Access												
EB LT/TH							1	0.03	A	0	0.00	A
SB LT/RT							12	0.03	B	10	0.08	B
East Waiko Road & Kuihelani Highway												
EB LT	17	0.65	B	35	0.70	C	27	0.81	C	44	0.81	D
EB RT	8	0.05	A	16	0.02	B	7	0.06	A	15	0.04	B
NB LT	23	0.31	C	39	0.47	D	30	0.37	C	42	0.50	D
NB TH	8	0.25	A	7	0.30	A	13	0.29	B	9	0.31	A
SB TH	13	0.39	B	12	0.39	B	20	0.48	B	14	0.41	B
SB RT	1	0.11	A	2	0.08	A	1	0.13	A	2	0.09	A
Overall	11	0.50	B	12	0.49	B	17	0.66	B	15	0.56	B

V. CONCLUSIONS

Existing Conditions

The study intersections currently operate satisfactorily during the AM(PM) peak hours of traffic. Overall, there is a decrease in traffic volume along East Waiko Road from counts taken in 2010.

Base Year 2015

The study intersections will continue to operate at LOS D or better except for the westbound approach at the intersection of East Waiko Road/Honoapiilani Highway which will operate at LOS E during the AM peak hour of traffic. Due to the limited ROW and the limited potential for expansion of the ROW, no improvements are recommended at this intersection.

Year 2015 with Project

Background conditions will be similar to that of Base Year 2015; LOS E will continue to occur at the Waiko Road/Honoapiilani Highway intersection.

The Project will construct two (2) Accesses to East Waiko Road:

1. Project Main Access – Will provide a common access to elements 3 through 7.
2. Project Secondary Access – Will provide a common access to elements 1 and 2.

The stop controlled project accesses would operate at LOS C or better during both peak hours of traffic.

VI. RECOMMENDATIONS

It is recommended that the following be provided:

- Project Main Access
  - Southbound approach: shared left-turn/right-turn lane (stop-controlled)
  - Eastbound approach: shared left-turn/through lane
  - Westbound approach: shared right-turn/through lane

- Project Secondary Access
  - Southbound approach: shared left-turn/right-turn lane (stop-controlled)
  - Eastbound approach: shared left-turn/through lane
  - Westbound approach: shared right-turn/through lane

It is recommended that both of the Project Accesses ultimately be designed in a manner that will not require the design vehicle to reverse onto East Waiko Road when entering or exiting the Project Site. See Figure 11 below.

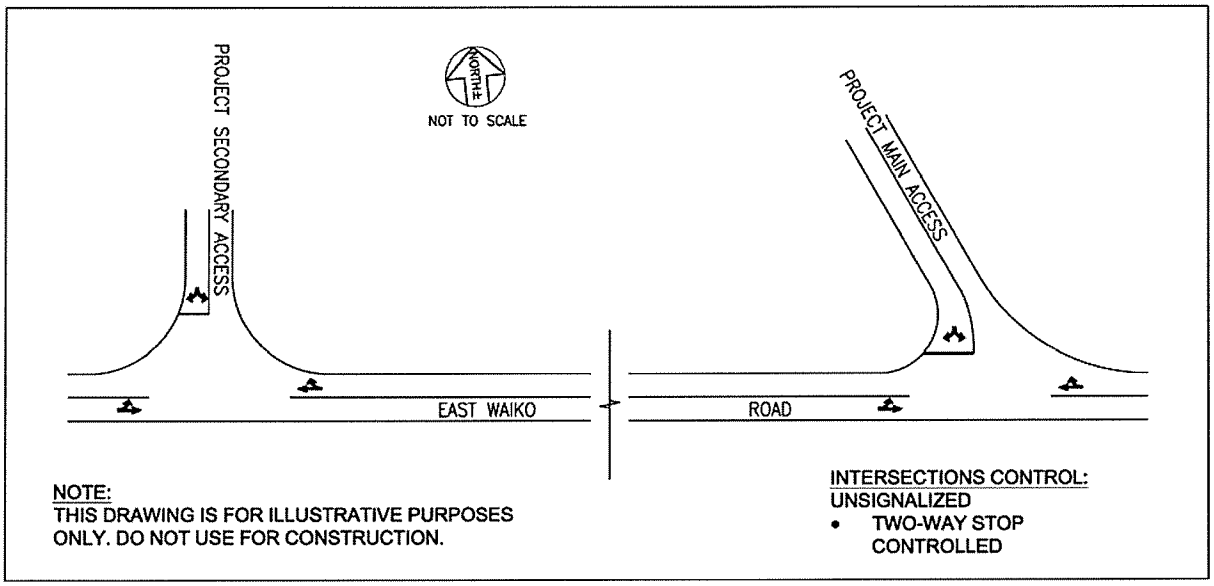


Figure 11: Year 2015 Project Accesses

VII. REFERENCES

1. Austin, Tsutsumi and Associates, Inc., Traffic Impact Analysis Report Waikapu Light Industrial Project, ABC Development Company, LLC, 2010.

2. Directed Growth Areas Listing and Units, Maui County Department of Planning, October 1, 2009.

3. Maui Regional Long Range Transportation Plan, 2013.

4. Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways, 2009.

5. Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.

6. Transportation Research Board, Highway Capacity Manual, 2000.

Z:\2012\12-110\Waikapu Light Industrial\updated TIAR\041913\Report -Waikapu Lt Ind.docx

APPENDICES

APPENDIX A

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Honoapiilani - Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 1

Groups Printed- Unshifted

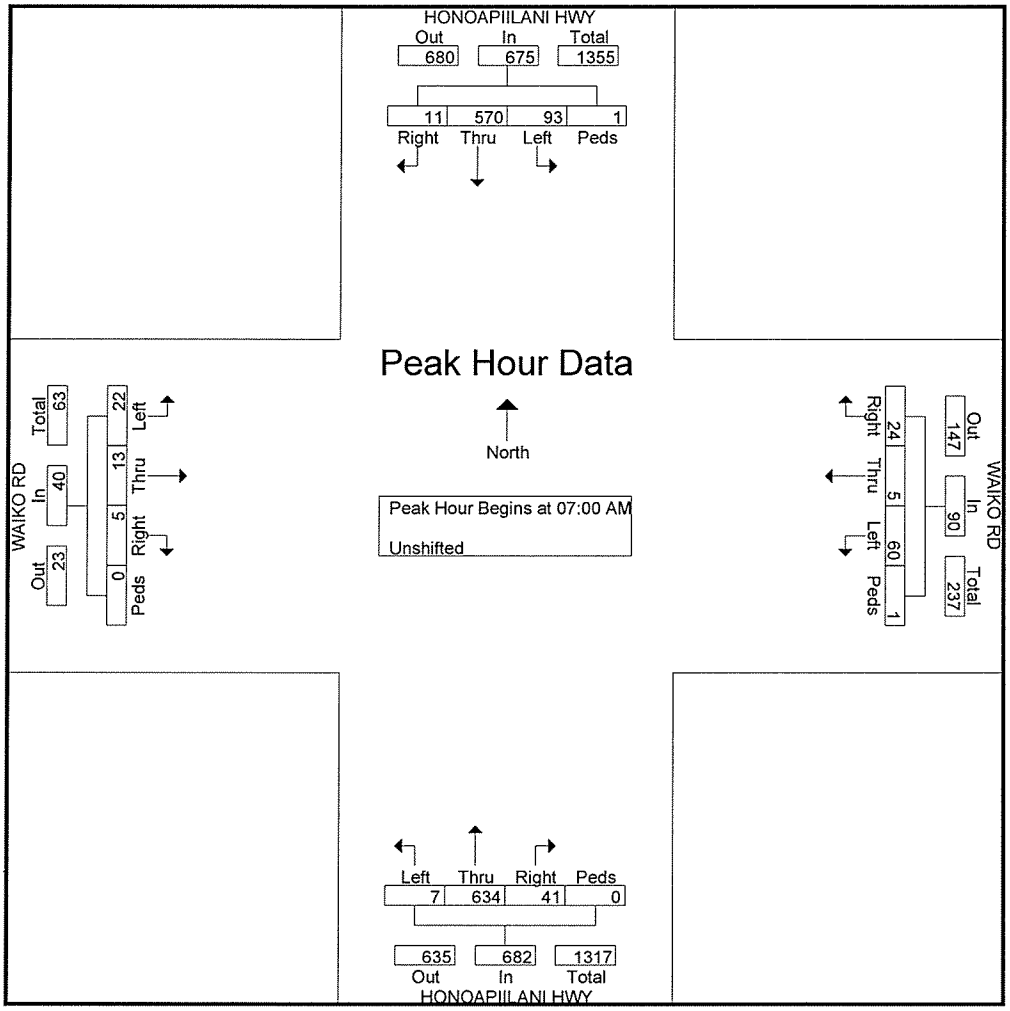
	HONOAPIILANI HWY From North					WAIKO RD From East					HONOAPIILANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	3	91	5	0	99	3	0	8	0	11	3	36	1	0	40	2	1	1	0	4	154
06:15 AM	1	116	8	0	125	2	0	11	0	13	1	62	0	0	63	2	1	2	0	5	206
06:30 AM	2	116	6	1	125	4	2	18	0	24	3	89	2	0	94	4	5	6	0	15	258
06:45 AM	6	144	16	0	166	2	2	18	0	22	4	90	3	0	97	2	3	7	0	12	297
Total	12	467	35	1	515	11	4	55	0	70	11	277	6	0	294	10	10	16	0	36	915
07:00 AM	3	149	14	1	167	9	2	16	0	27	3	119	0	0	122	1	4	6	0	11	327
07:15 AM	1	128	22	0	151	7	1	22	0	30	13	161	1	0	175	2	3	6	0	11	367
07:30 AM	3	141	42	0	186	3	2	12	0	17	21	202	2	0	225	1	4	6	0	11	439
07:45 AM	4	152	15	0	171	5	0	10	1	16	4	152	4	0	160	1	2	4	0	7	354
Total	11	570	93	1	675	24	5	60	1	90	41	634	7	0	682	5	13	22	0	40	1487
08:00 AM	0	120	5	0	125	7	7	14	0	28	13	106	1	0	120	3	2	5	0	10	283
08:15 AM	1	118	2	0	121	4	0	10	0	14	6	115	1	0	122	2	3	4	1	10	267
Grand Total	24	1275	135	2	1436	46	16	139	1	202	71	1132	15	0	1218	20	28	47	1	96	2952
Apprch %	1.7	88.8	9.4	0.1		22.8	7.9	68.8	0.5		5.8	92.9	1.2	0		20.8	29.2	49	1		
Total %	0.8	43.2	4.6	0.1	48.6	1.6	0.5	4.7	0	6.8	2.4	38.3	0.5	0	41.3	0.7	0.9	1.6	0	3.3	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Honoapiilani - Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 2

	HONOAPIILANI HWY From North					WAIKO RD From East					HONOAPIILANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	3	149	14	**1**	167	**9**	**2**	16	0	27	3	119	0	0	122	1	**4**	**6**	0	**11**	327
07:15 AM	1	128	22	0	151	7	1	**22**	0	**30**	13	161	1	0	175	**2**	3	6	0	11	367
07:30 AM	3	141	**42**	0	**186**	3	2	12	0	17	**21**	**202**	2	0	**225**	1	4	6	0	11	**439**
07:45 AM	**4**	**152**	15	0	171	5	0	10	**1**	16	4	152	**4**	0	160	1	2	4	0	7	354
Total Volume	11	570	93	1	675	24	5	60	1	90	41	634	7	0	682	5	13	22	0	40	1487
% App. Total	1.6	84.4	13.8	0.1		26.7	5.6	66.7	1.1		6	93	1	0		12.5	32.5	55	0		
PHF	.688	.938	.554	.250	.907	.667	.625	.682	.250	.750	.488	.785	.438	.000	.758	.625	.813	.917	.000	.909	.847



Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Kuihelani - E. Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 1

Groups Printed- Unshifted

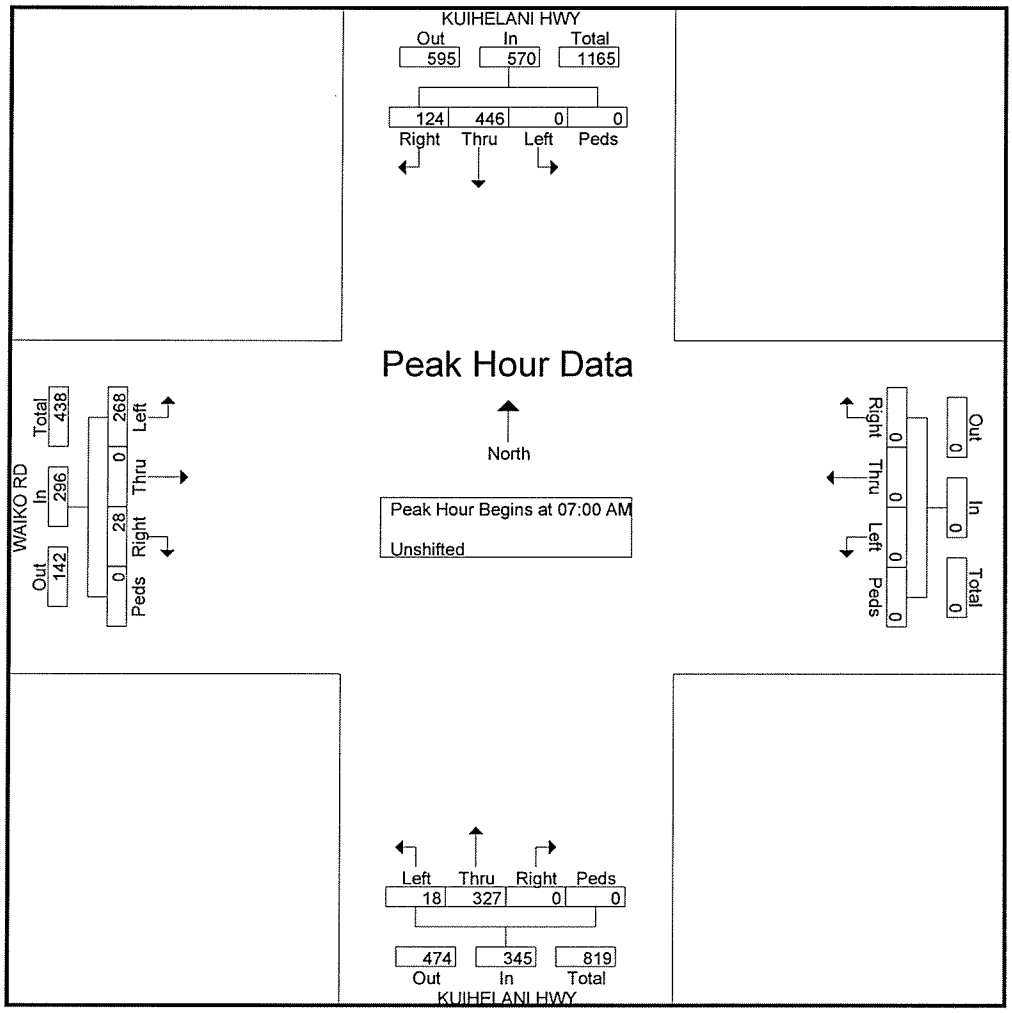
	KUIHELANI HWY From North					From East					KUIHELANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	16	80	0	0	96	0	0	0	0	0	0	19	1	0	20	4	0	18	0	22	138
06:15 AM	15	119	0	0	134	0	0	0	0	0	0	37	3	0	40	6	0	17	0	23	197
06:30 AM	25	115	0	0	140	0	0	0	0	0	0	46	6	0	52	8	0	20	0	28	220
06:45 AM	38	122	0	0	160	0	0	0	0	0	0	42	2	0	44	9	0	34	0	43	247
Total	94	436	0	0	530	0	0	0	0	0	0	144	12	0	156	27	0	89	0	116	802
07:00 AM	25	110	0	0	135	0	0	0	0	0	0	71	3	0	74	10	0	43	0	53	262
07:15 AM	32	112	0	0	144	0	0	0	0	0	0	64	6	0	70	3	0	74	0	77	291
07:30 AM	30	109	0	0	139	0	0	0	0	0	0	85	7	0	92	9	0	97	0	106	337
07:45 AM	37	115	0	0	152	0	0	0	0	0	0	107	2	0	109	6	0	54	0	60	321
Total	124	446	0	0	570	0	0	0	0	0	0	327	18	0	345	28	0	268	0	296	1211
08:00 AM	34	128	0	0	162	0	0	0	0	0	0	70	4	0	74	7	0	27	0	34	270
08:15 AM	14	111	0	0	125	0	0	0	0	0	0	104	2	0	106	7	0	26	0	33	264
Grand Total	266	1121	0	0	1387	0	0	0	0	0	0	645	36	0	681	69	0	410	0	479	2547
Apprch %	19.2	80.8	0	0		0	0	0	0		0	94.7	5.3	0		14.4	0	85.6	0		
Total %	10.4	44	0	0	54.5	0	0	0	0	0	0	25.3	1.4	0	26.7	2.7	0	16.1	0	18.8	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Kuihelani - E. Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 2

	KUIHELANI HWY From North					From East					KUIHELANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	25	110	0	0	135	0	0	0	0	0	0	71	3	0	74	**10**	0	43	0	53	262
07:15 AM	32	112	0	0	144	0	0	0	0	0	0	64	6	0	70	3	0	74	0	77	291
07:30 AM	30	109	0	0	139	0	0	0	0	0	0	85	**7**	0	92	9	0	**97**	0	**106**	**337**
07:45 AM	**37**	**115**	0	0	**152**	0	0	0	0	0	0	**107**	2	0	**109**	6	0	54	0	60	321
Total Volume	124	446	0	0	570	0	0	0	0	0	0	327	18	0	345	28	0	268	0	296	1211
% App. Total	21.8	78.2	0	0		0	0	0	0		0	94.8	5.2	0		9.5	0	90.5	0		
PHF	.838	.970	.000	.000	.938	.000	.000	.000	.000	.000	.000	.764	.643	.000	.791	.700	.000	.691	.000	.698	.898



Austin Tsutsumi & Asscociates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Waiale - Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 1

Groups Printed- Unshifted

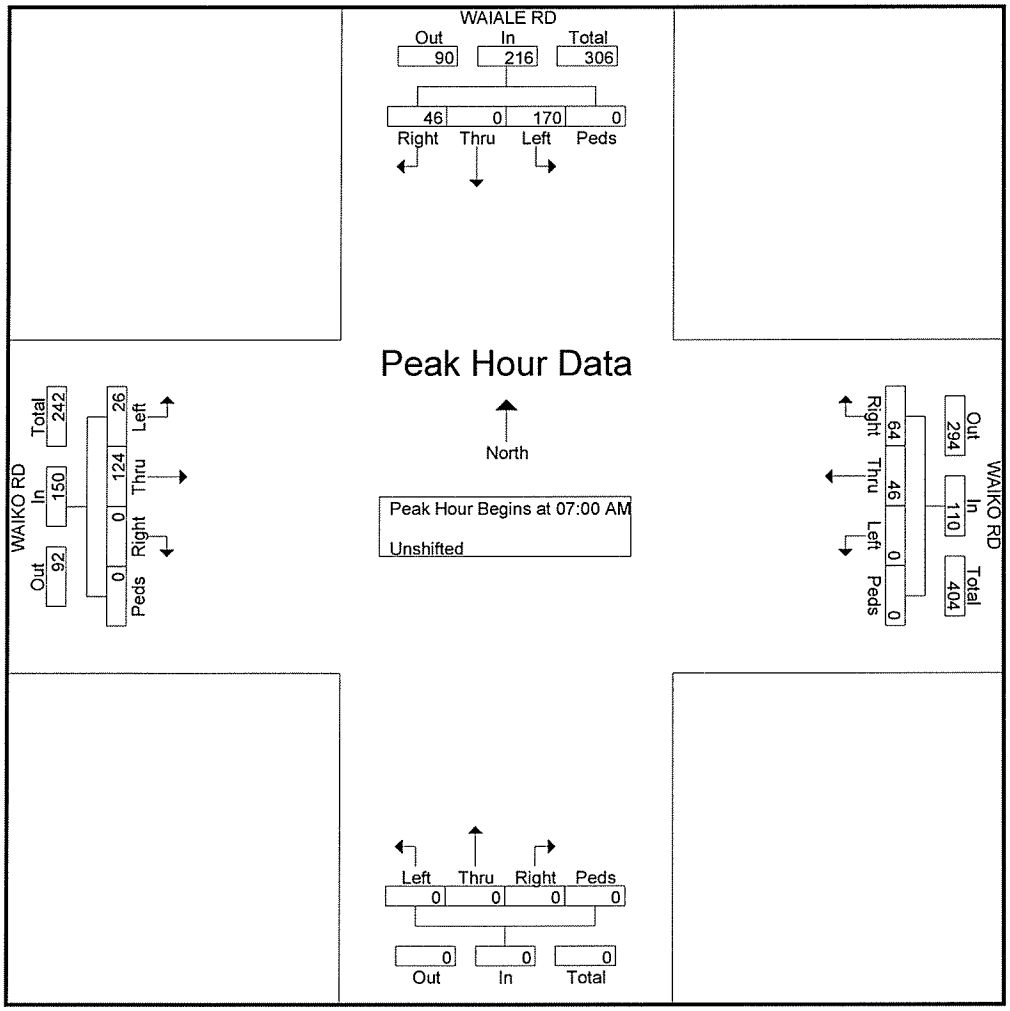
	WAIALE RD From North					WAIKO RD From East					From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	10	0	14	0	24	6	2	0	0	8	0	0	0	0	0	0	10	1	0	11	43
06:15 AM	13	0	16	0	29	1	4	0	0	5	0	0	0	0	0	0	9	3	0	12	46
06:30 AM	11	0	25	0	36	5	8	0	0	13	0	0	0	0	0	0	14	2	0	16	65
06:45 AM	14	0	38	0	52	6	6	0	0	12	0	0	0	0	0	0	20	5	0	25	89
Total	48	0	93	0	141	18	20	0	0	38	0	0	0	0	0	0	53	11	0	64	243
07:00 AM	15	0	38	0	53	13	10	0	0	23	0	0	0	0	0	0	21	4	0	25	101
07:15 AM	15	0	51	0	66	11	15	0	0	26	0	0	0	0	0	0	31	6	0	37	129
07:30 AM	12	0	52	0	64	17	9	0	0	26	0	0	0	0	0	0	53	13	0	66	156
07:45 AM	4	0	29	0	33	23	12	0	0	35	0	0	0	0	0	0	19	3	0	22	90
Total	46	0	170	0	216	64	46	0	0	110	0	0	0	0	0	0	124	26	0	150	476
08:00 AM	9	0	16	0	25	13	15	0	0	28	0	0	0	0	0	0	8	8	0	16	69
08:15 AM	10	0	19	0	29	9	4	0	0	13	0	0	0	0	0	0	9	6	0	15	57
Grand Total	113	0	298	0	411	104	85	0	0	189	0	0	0	0	0	0	194	51	0	245	845
Apprch %	27.5	0	72.5	0		55	45	0	0		0	0	0	0		0	79.2	20.8	0		
Total %	13.4	0	35.3	0	48.6	12.3	10.1	0	0	22.4	0	0	0	0	0	0	23	6	0	29	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : AM_Waiale - Waiko
Site Code : 00000000
Start Date : 1/24/2013
Page No : 2

	WAIALE RD From North					WAIKO RD From East					From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**15**	0	38	0	53	13	10	0	0	23	0	0	0	0	0	0	21	4	0	25	101
07:15 AM	15	0	51	0	**66**	11	**15**	0	0	26	0	0	0	0	0	0	31	6	0	37	129
07:30 AM	12	0	**52**	0	64	17	9	0	0	26	0	0	0	0	0	0	**53**	**13**	0	**66**	**156**
07:45 AM	4	0	29	0	33	**23**	12	0	0	**35**	0	0	0	0	0	0	19	3	0	22	90
Total Volume	46	0	170	0	216	64	46	0	0	110	0	0	0	0	0	0	124	26	0	150	476
% App. Total	21.3	0	78.7	0		58.2	41.8	0	0		0	0	0	0		0	82.7	17.3	0		
PHF	.767	.000	.817	.000	.818	.696	.767	.000	.000	.786	.000	.000	.000	.000	.000	.000	.585	.500	.000	.568	.763



Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Honoapiilani - Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 1

Groups Printed- Unshifted

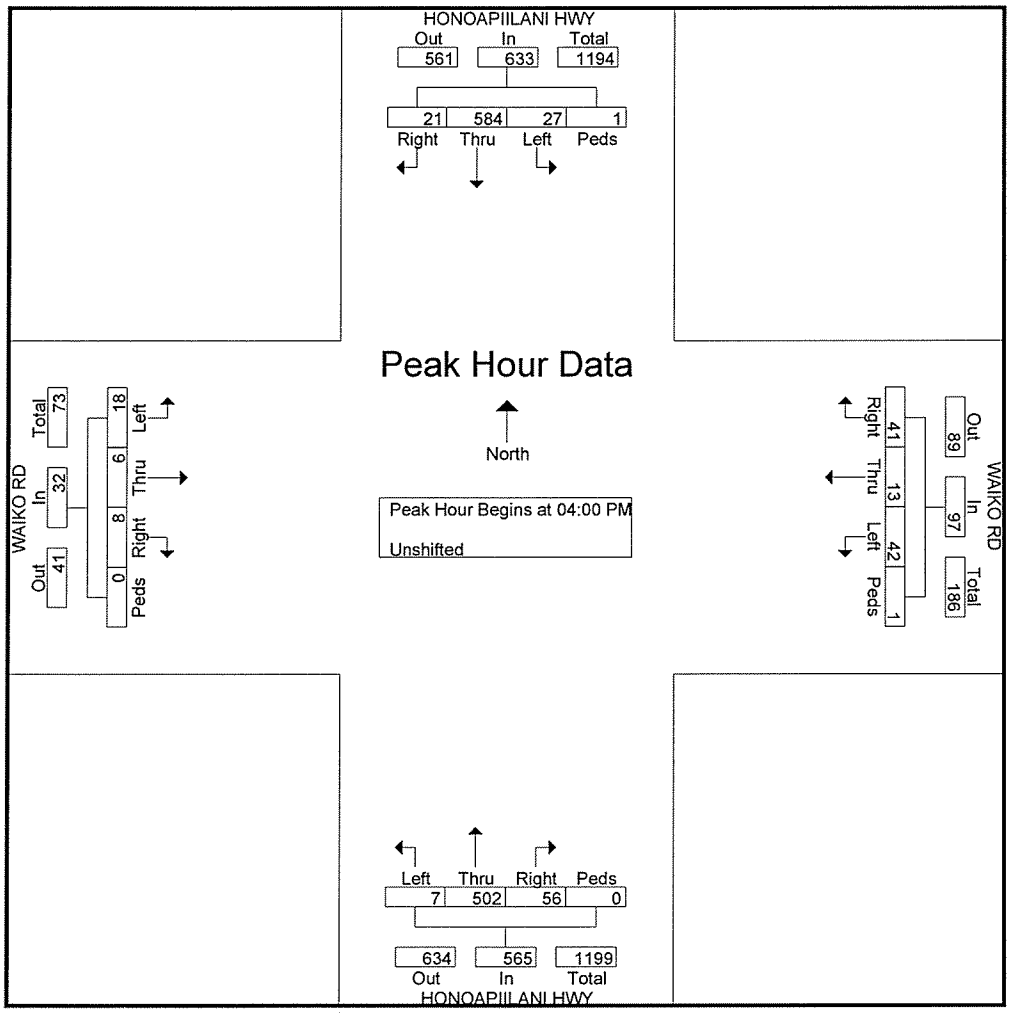
	HONOAPIILANI HWY From North					WAIKO RD From East					HONOAPIILANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	1	124	3	0	128	10	1	16	0	27	12	117	1	0	130	0	1	5	0	6	291
03:15 PM	4	131	3	0	138	8	3	8	0	19	14	126	1	0	141	0	0	4	0	4	302
03:30 PM	3	120	15	0	138	8	5	6	1	20	13	154	1	0	168	1	1	3	0	5	331
03:45 PM	3	113	10	0	126	7	1	10	0	18	16	141	6	0	163	4	1	2	0	7	314
Total	11	488	31	0	530	33	10	40	1	84	55	538	9	0	602	5	3	14	0	22	1238
04:00 PM	5	151	3	1	160	10	5	13	0	28	15	107	3	0	125	2	2	6	0	10	323
04:15 PM	7	132	8	0	147	9	1	9	1	20	14	111	1	0	126	4	2	1	0	7	300
04:30 PM	3	147	12	0	162	15	3	9	0	27	10	138	2	0	150	1	0	8	0	9	348
04:45 PM	6	154	4	0	164	7	4	11	0	22	17	146	1	0	164	1	2	3	0	6	356
Total	21	584	27	1	633	41	13	42	1	97	56	502	7	0	565	8	6	18	0	32	1327
05:00 PM	4	122	10	0	136	7	2	12	0	21	22	146	1	0	169	1	1	2	0	4	330
05:15 PM	10	126	4	0	140	9	4	11	0	24	12	140	1	0	153	0	3	2	3	8	325
Grand Total	46	1320	72	1	1439	90	29	105	2	226	145	1326	18	0	1489	14	13	36	3	66	3220
Apprch %	3.2	91.7	5	0.1		39.8	12.8	46.5	0.9		9.7	89.1	1.2	0		21.2	19.7	54.5	4.5		
Total %	1.4	41	2.2	0	44.7	2.8	0.9	3.3	0.1	7	4.5	41.2	0.6	0	46.2	0.4	0.4	1.1	0.1	2	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Honoapiilani - Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 2

	HONOAPIILANI HWY From North					WAIKO RD From East					HONOAPIILANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	5	151	3	**1**	160	10	**5**	**13**	0	**28**	15	107	**3**	0	125	2	**2**	6	0	**10**	323
04:15 PM	**7**	132	8	0	147	9	1	9	**1**	20	14	111	1	0	126	**4**	2	1	0	7	300
04:30 PM	3	147	**12**	0	162	**15**	3	9	0	27	10	138	2	0	150	1	0	**8**	0	9	348
04:45 PM	6	**154**	4	0	**164**	7	4	11	0	22	**17**	**146**	1	0	**164**	1	2	3	0	6	**356**
Total Volume	21	584	27	1	633	41	13	42	1	97	56	502	7	0	565	8	6	18	0	32	1327
% App. Total	3.3	92.3	4.3	0.2		42.3	13.4	43.3	1		9.9	88.8	1.2	0		25	18.8	56.2	0		
PHF	.750	.948	.563	.250	.965	.683	.650	.808	.250	.866	.824	.860	.583	.000	.861	.500	.750	.563	.000	.800	.932



Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Kuihelani - E. Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 1

Groups Printed- Unshifted

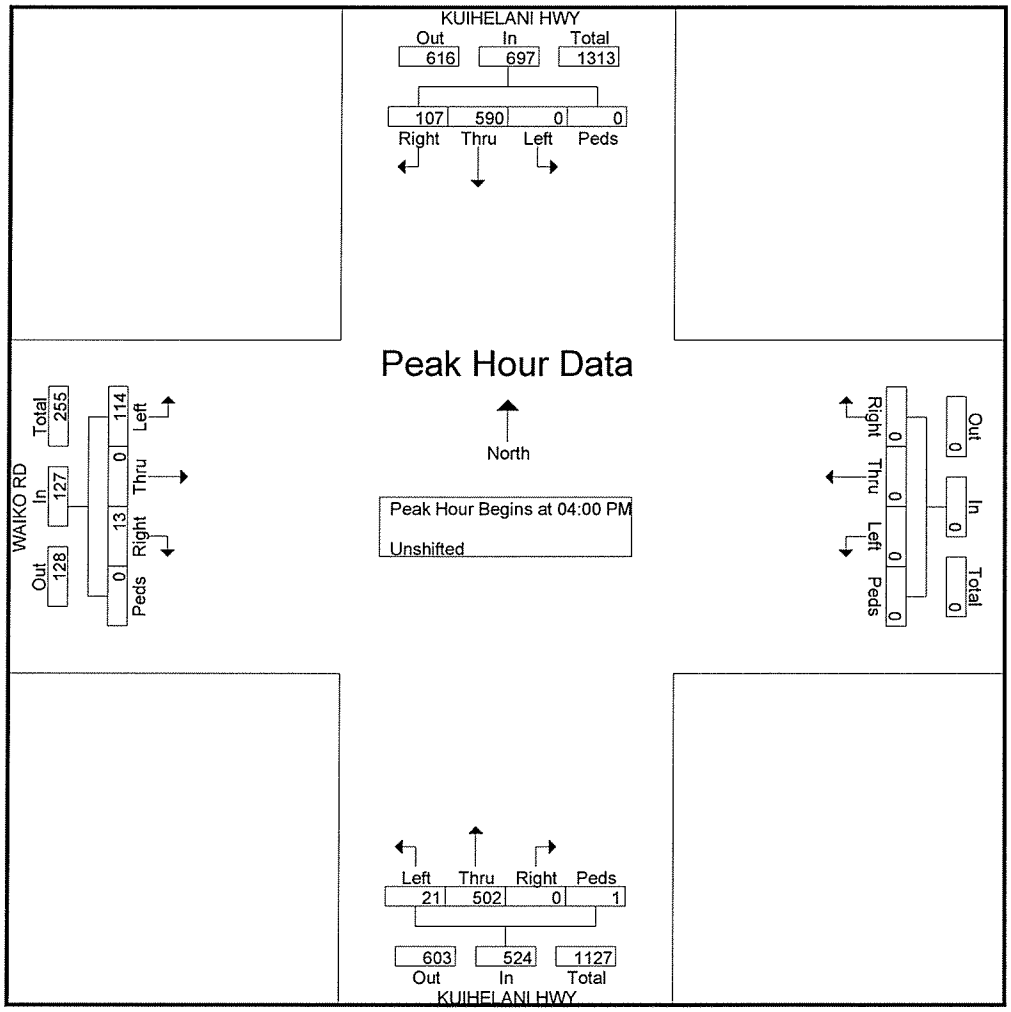
	KUIHELANI HWY From North					From East					KUIHELANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	31	147	0	0	178	0	0	0	0	0	0	122	7	0	129	9	0	25	0	34	341
03:15 PM	19	125	0	0	144	0	0	0	0	0	0	145	3	0	148	4	0	21	0	25	317
03:30 PM	24	152	0	0	176	0	0	0	0	0	0	123	4	0	127	6	0	34	0	40	343
03:45 PM	21	127	0	0	148	0	0	0	0	0	0	109	2	0	111	2	0	32	0	34	293
Total	95	551	0	0	646	0	0	0	0	0	0	499	16	0	515	21	0	112	0	133	1294
04:00 PM	29	156	0	0	185	0	0	0	0	0	0	132	6	1	139	4	0	24	0	28	352
04:15 PM	17	132	0	0	149	0	0	0	0	0	0	122	5	0	127	1	0	21	0	22	298
04:30 PM	34	131	0	0	165	0	0	0	0	0	0	114	7	0	121	5	0	43	0	48	334
04:45 PM	27	171	0	0	198	0	0	0	0	0	0	134	3	0	137	3	0	26	0	29	364
Total	107	590	0	0	697	0	0	0	0	0	0	502	21	1	524	13	0	114	0	127	1348
05:00 PM	26	161	0	0	187	0	0	0	0	0	0	142	2	0	144	2	0	31	0	33	364
05:15 PM	17	129	0	0	146	0	0	0	0	0	0	147	3	0	150	9	0	25	0	34	330
Grand Total	245	1431	0	0	1676	0	0	0	0	0	0	1290	42	1	1333	45	0	282	0	327	3336
Apprch %	14.6	85.4	0	0		0	0	0	0		0	96.8	3.2	0.1		13.8	0	86.2	0		
Total %	7.3	42.9	0	0	50.2	0	0	0	0	0	0	38.7	1.3	0	40	1.3	0	8.5	0	9.8	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Kuihelani - E. Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 2

	KUIHELANI HWY From North					From East					KUIHELANI HWY From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	29	156	0	0	185	0	0	0	0	0	0	132	6	**1**	**139**	4	0	24	0	28	352
04:15 PM	17	132	0	0	149	0	0	0	0	0	0	122	5	0	127	1	0	21	0	22	298
04:30 PM	**34**	131	0	0	165	0	0	0	0	0	0	114	**7**	0	121	**5**	0	**43**	0	**48**	334
04:45 PM	27	**171**	0	0	**198**	0	0	0	0	0	0	**134**	3	0	137	3	0	26	0	29	**364**
Total Volume	107	590	0	0	697	0	0	0	0	0	0	502	21	1	524	13	0	114	0	127	1348
% App. Total	15.4	84.6	0	0		0	0	0	0		0	95.8	4	0.2		10.2	0	89.8	0		
PHF	.787	.863	.000	.000	.880	.000	.000	.000	.000	.000	.000	.937	.750	.250	.942	.650	.000	.663	.000	.661	.926



Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Waiale - Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 1

Groups Printed- Unshifted

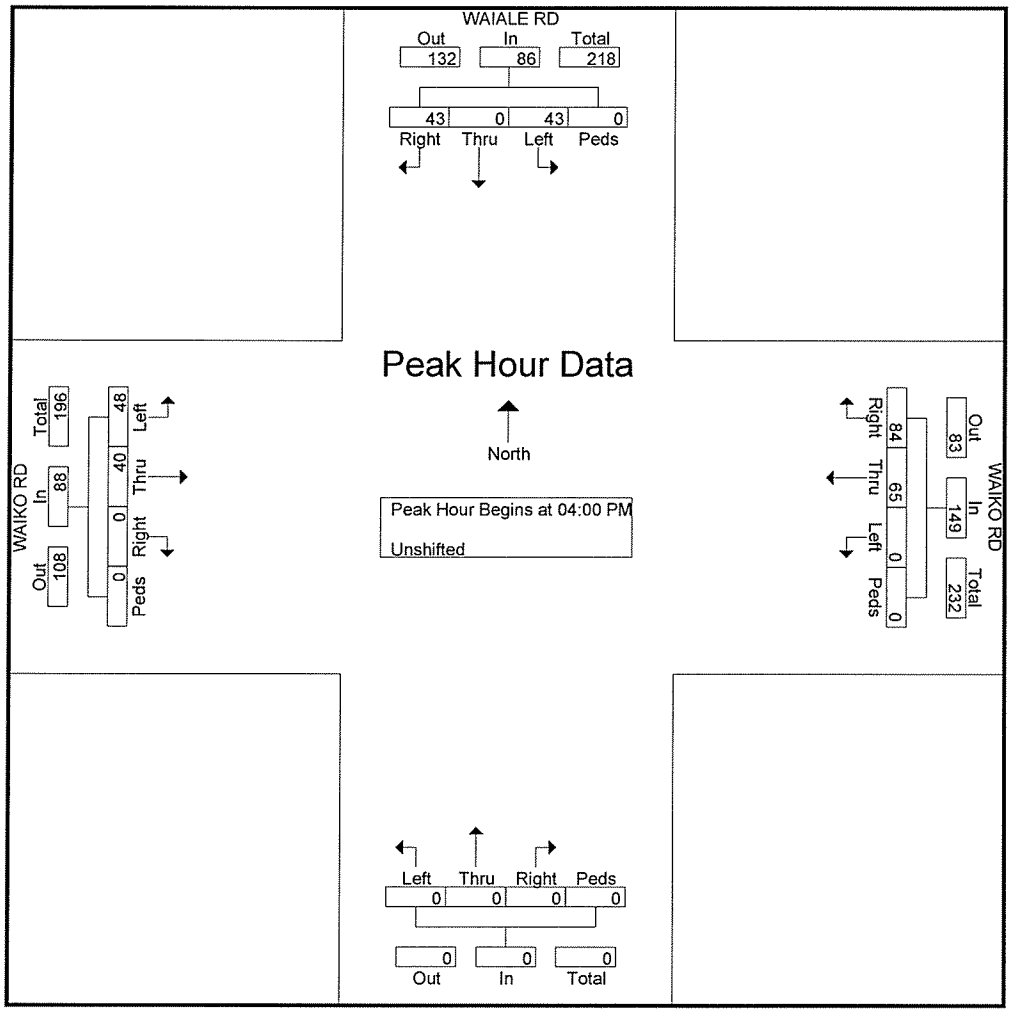
	WAIALE RD From North					WAIKO RD From East					From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	11	0	15	0	26	27	12	0	0	39	0	0	0	0	0	0	8	7	0	15	80
03:15 PM	8	0	14	0	22	14	13	0	0	27	0	0	0	0	0	0	5	9	0	14	63
03:30 PM	6	0	12	0	18	20	10	0	0	30	0	0	0	0	0	0	16	12	0	28	76
03:45 PM	7	0	15	0	22	22	13	0	0	35	0	0	0	0	0	0	12	14	0	26	83
Total	32	0	56	0	88	83	48	0	0	131	0	0	0	0	0	0	41	42	0	83	302
04:00 PM	10	0	9	0	19	26	19	0	0	45	0	0	0	0	0	0	10	11	0	21	85
04:15 PM	8	0	12	0	20	14	11	0	0	25	0	0	0	0	0	0	4	13	0	17	62
04:30 PM	10	0	12	0	22	23	16	0	0	39	0	0	0	0	0	0	13	8	0	21	82
04:45 PM	15	0	10	0	25	21	19	0	0	40	0	0	0	0	0	0	13	16	0	29	94
Total	43	0	43	0	86	84	65	0	0	149	0	0	0	0	0	0	40	48	0	88	323
05:00 PM	14	0	12	0	26	23	13	0	0	36	0	0	0	0	0	0	13	9	0	22	84
05:15 PM	11	0	21	0	32	22	15	0	0	37	0	0	0	0	0	0	15	11	0	26	95
Grand Total	100	0	132	0	232	212	141	0	0	353	0	0	0	0	0	0	109	110	0	219	804
Apprch %	43.1	0	56.9	0		60.1	39.9	0	0		0	0	0	0		0	49.8	50.2	0		
Total %	12.4	0	16.4	0	28.9	26.4	17.5	0	0	43.9	0	0	0	0	0	0	13.6	13.7	0	27.2	

Austin Tsutsumi & Associates

501 Sumner St. Ste. 521
Honolulu, HI 96817
(808) 533-3646

File Name : PM_Waiale - Waiko
Site Code : 00000000
Start Date : 1/23/2013
Page No : 2

	WAIALE RD From North					WAIKO RD From East					From South					WAIKO RD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	10	0	9	0	19	**26**	**19**	0	0	**45**	0	0	0	0	0	0	10	11	0	21	85
04:15 PM	8	0	**12**	0	20	14	11	0	0	25	0	0	0	0	0	0	4	13	0	17	62
04:30 PM	10	0	12	0	22	23	16	0	0	39	0	0	0	0	0	0	**13**	8	0	21	82
04:45 PM	**15**	0	10	0	**25**	21	19	0	0	40	0	0	0	0	0	0	13	**16**	0	**29**	**94**
Total Volume	43	0	43	0	86	84	65	0	0	149	0	0	0	0	0	0	40	48	0	88	323
% App. Total	50	0	50	0		56.4	43.6	0	0		0	0	0	0		0	45.5	54.5	0		
PHF	.717	.000	.896	.000	.860	.808	.855	.000	.000	.828	.000	.000	.000	.000	.000	.000	.769	.750	.000	.759	.859



APPENDIX B

LEVEL OF SERVICE CRITERIA

APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 2000)

Level of service for signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	< 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2000)

The level of service criteria for unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Exist AM

Timings
3: Honoapiilani Highway & Waiko Road

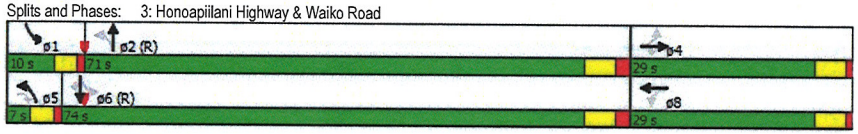
4/17/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	22	13	5	60	5	7	634	93	570	11
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	24.0	24.0		23.0	23.0	7.0	24.0	7.0	24.0	24.0
Total Split (s)	29.0	29.0		29.0	29.0	7.0	71.0	10.0	74.0	74.0
Total Split (%)	26.4%	26.4%		26.4%	26.4%	6.4%	64.5%	9.1%	67.3%	67.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
3: Honoapiilani Highway & Waiko Road

4/17/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	13	5	60	5	24	7	634	41	93	570	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1889	1647		1736		1768	1842		1770	1863	1542
Flt Permitted		0.80	1.00		0.78		0.42	1.00		0.22	1.00	1.00
Satd. Flow (perm)		1559	1647		1395		775	1842		411	1863	1542
Peak-hour factor, PHF	0.86	0.53	0.75	0.74	0.44	0.65	0.67	0.79	0.76	0.89	0.96	0.75
Adj. Flow (vph)	26	25	7	81	11	37	10	803	54	104	594	15
RTOR Reduction (vph)	0	0	6	0	15	0	0	2	0	0	0	4
Lane Group Flow (vph)	0	51	1	0	114	0	10	855	0	104	594	11
Confl. Peds. (#/hr)							2		1	1		2
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		13.3	19.5		13.3		77.3	76.1		85.7	80.5	80.5
Effective Green, g (s)		13.3	19.5		13.3		77.3	76.1		85.7	80.5	80.5
Actuated g/C Ratio		0.12	0.18		0.12		0.70	0.69		0.78	0.73	0.73
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		188	291		168		555	1274		389	1363	1128
v/s Ratio Prot							0.00	c0.46		c0.01	0.32	
v/s Ratio Perm		0.03	0.00		c0.08		0.01			0.19		0.01
v/c Ratio		0.27	0.00		0.68		0.02	0.67		0.27	0.44	0.01
Uniform Delay, d1		43.9	37.3		46.3		5.0	9.8		7.4	5.8	4.0
Progression Factor		1.00	1.00		1.00		1.00	1.00		0.99	0.80	1.00
Incremental Delay, d2		0.3	0.0		8.3		0.0	2.8		0.1	0.9	0.0
Delay (s)		44.2	37.3		54.6		5.0	12.6		7.4	5.6	4.0
Level of Service		D	D		D		A	B		A	A	A
Approach Delay (s)		43.4			54.6			12.5			5.8	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Waiko Road & Waiale Road

4/17/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	26	124	46	64	170	46
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.47	0.89	0.72	0.91	0.82	0.69
Hourly flow rate (vph)	55	139	64	70	207	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	134				349	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	134				349	99
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				67	93
cM capacity (veh/h)	1450				623	957

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	195	134	274
Volume Left	55	0	207
Volume Right	0	70	67
cSH	1450	1700	681
Volume to Capacity	0.04	0.08	0.40
Queue Length 95th (ft)	3	0	49
Control Delay (s)	2.4	0.0	13.8
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	13.8
Approach LOS			B

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
8: Kuihelani Highway & Waiko Road

4/17/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	268	28	18	327	446	124
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	6.0		3.0	10.0	10.0	
Minimum Split (s)	28.0		7.0	16.0	24.0	
Total Split (s)	29.0		10.0	51.0	41.0	
Total Split (%)	36.3%		12.5%	63.8%	51.3%	
Yellow Time (s)	3.0		3.0	4.0	4.0	
All-Red Time (s)	1.0		1.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 44.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Kuihelani Highway & Waiko Road

HCM Signalized Intersection Capacity Analysis
8: Kuihelani Highway & Waiko Road

4/17/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	268	28	18	327	446	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.83	0.72	0.58	0.81	0.98	0.76
Adj. Flow (vph)	323	39	31	404	455	163
RTOR Reduction (vph)	0	16	0	0	0	39
Lane Group Flow (vph)	323	23	31	404	455	124
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	13.0	19.8	2.8	22.6	15.8	34.8
Effective Green, g (s)	13.0	19.8	2.8	22.6	15.8	34.8
Actuated g/C Ratio	0.29	0.43	0.06	0.50	0.35	0.76
Clearance Time (s)	4.0		4.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	5.0	5.0	
Lane Grp Cap (vph)	504	687	108	1753	1226	1208
v/s Ratio Prot	c0.18		0.02	c0.11	c0.13	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.64	0.03	0.29	0.23	0.37	0.10
Uniform Delay, d1	14.3	7.4	20.4	6.5	11.2	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.0	0.5	0.1	0.4	0.1
Delay (s)	16.3	7.4	21.0	6.7	11.6	1.5
Level of Service	B	A	C	A	B	A
Approach Delay (s)	15.4			7.7	8.9	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Exist PM

Timings
3: Honoapiilani Highway & Waiko Road

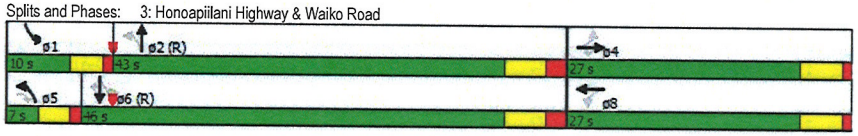
4/17/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	18	6	8	42	13	7	502	27	584	21
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	23.0	23.0		27.0	27.0	7.0	31.0	7.0	26.0	26.0
Total Split (s)	27.0	27.0		27.0	27.0	7.0	43.0	10.0	46.0	46.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%	8.8%	53.8%	12.5%	57.5%	57.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
3: Honoapiilani Highway & Waiko Road

4/17/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	6	8	42	13	41	7	502	56	27	584	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1878	1647		1721		1768	1827		1770	1863	1541
Flt Permitted		0.74	1.00		0.85		0.39	1.00		0.35	1.00	1.00
Satd. Flow (perm)		1435	1647		1488		722	1827		646	1863	1541
Peak-hour factor, PHF	0.69	0.41	0.40	0.77	0.58	0.73	0.58	0.93	0.72	0.76	0.98	0.75
Adj. Flow (vph)	26	15	20	55	22	56	12	540	78	36	596	28
RTOR Reduction (vph)	0	0	16	0	39	0	0	4	0	0	0	9
Lane Group Flow (vph)	0	41	4	0	94	0	12	614	0	36	596	19
Confl. Peds. (#/hr)							3					3
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		10.3	17.1		10.3		53.3	51.5		56.1	52.9	52.9
Effective Green, g (s)		10.3	17.1		10.3		53.3	51.5		56.1	52.9	52.9
Actuated g/C Ratio		0.13	0.21		0.13		0.67	0.64		0.70	0.66	0.66
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		184	352		191		504	1176		497	1231	1018
v/s Ratio Prot							0.00	c0.34		c0.00	0.32	
v/s Ratio Perm		0.03	0.00		c0.06		0.02			0.05		0.01
v/c Ratio		0.22	0.01		0.49		0.02	0.52		0.07	0.48	0.02
Uniform Delay, d1		31.3	24.8		32.4		4.7	7.6		4.3	6.8	4.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.74	1.28	1.00
Incremental Delay, d2		0.2	0.0		0.7		0.0	1.7		0.0	1.2	0.0
Delay (s)		31.5	24.8		33.1		4.7	9.3		7.6	9.9	4.7
Level of Service		C	C		C		A	A		A	A	A
Approach Delay (s)		29.3			33.1			9.2			9.5	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Waiko Road & Waiale Road

4/17/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	48	40	65	84	43	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.78	0.83	0.92	0.84	0.75
Hourly flow rate (vph)	73	51	78	91	51	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	170				321	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170				321	124
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				92	94
cM capacity (veh/h)	1408				638	927

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	124	170	109
Volume Left	73	0	51
Volume Right	0	91	57
cSH	1408	1700	764
Volume to Capacity	0.05	0.10	0.14
Queue Length 95th (ft)	4	0	12
Control Delay (s)	4.7	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	4.7	0.0	10.5
Approach LOS			B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
8: Kuihelani Highway & Waiko Road

4/17/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	114	13	21	502	590	107
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	6.0		4.0	10.0	10.0	
Minimum Split (s)	28.0		8.0	16.0	24.0	
Total Split (s)	29.0		10.0	51.0	41.0	
Total Split (%)	36.3%		12.5%	63.8%	51.3%	
Yellow Time (s)	3.0		3.0	4.0	4.0	
All-Red Time (s)	1.0		1.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Recall Mode	None		None	Min	Min	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 45.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 8: Kuihelani Highway & Waiko Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	114	13	21	502	590	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.81	0.62	0.88	0.82	0.91	0.88
Adj. Flow (vph)	141	21	24	612	648	122
RTOR Reduction (vph)	0	15	0	0	0	25
Lane Group Flow (vph)	141	6	24	612	648	97
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	8.7	14.6	1.9	29.1	23.2	37.9
Effective Green, g (s)	8.7	14.6	1.9	29.1	23.2	37.9
Actuated g/C Ratio	0.18	0.31	0.04	0.61	0.49	0.79
Clearance Time (s)	4.0		4.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	5.0	5.0	
Lane Grp Cap (vph)	322	483	70	2154	1717	1255
v/s Ratio Prot	c0.08		0.01	c0.17	c0.18	
v/s Ratio Perm		0.00				0.06
v/c Ratio	0.44	0.01	0.34	0.28	0.38	0.08
Uniform Delay, d1	17.4	11.6	22.3	4.4	7.7	1.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	1.1	0.2	0.3	0.1
Delay (s)	17.7	11.6	23.4	4.6	8.0	1.1
Level of Service	B	B	C	A	A	A
Approach Delay (s)	16.9			5.3	6.9	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2015 AM

Timings
1: Honoapiilani Highway & Waiko Road

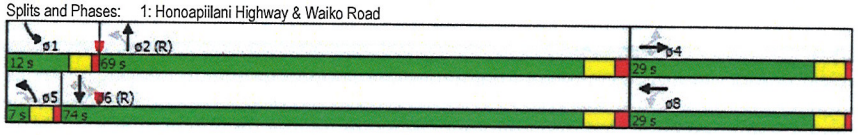
3/25/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	25	15	10	65	10	10	690	105	595	15
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	24.0	24.0		23.0	23.0	7.0	24.0	7.0	24.0	24.0
Total Split (s)	29.0	29.0		29.0	29.0	7.0	69.0	12.0	74.0	74.0
Total Split (%)	26.4%	26.4%		26.4%	26.4%	6.4%	62.7%	10.9%	67.3%	67.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 89 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
1: Honoapiilani Highway & Waiko Road

3/25/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	15	10	65	10	30	10	690	45	105	595	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1889	1647		1740		1768	1842		1770	1863	1542
Flt Permitted		0.78	1.00		0.79		0.39	1.00		0.17	1.00	1.00
Satd. Flow (perm)		1513	1647		1421		730	1842		310	1863	1542
Peak-hour factor, PHF	0.86	0.53	0.75	0.74	0.44	0.65	0.67	0.79	0.76	0.89	0.96	0.75
Adj. Flow (vph)	29	28	13	88	23	46	15	873	59	118	620	20
RTOR Reduction (vph)	0	0	10	0	15	0	0	2	0	0	0	6
Lane Group Flow (vph)	0	57	3	0	142	0	15	930	0	118	620	14
Confl. Peds. (#/hr)							2		1	1		2
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		15.3	22.1		15.3		75.2	73.4		83.7	77.9	77.9
Effective Green, g (s)		15.3	22.1		15.3		75.2	73.4		83.7	77.9	77.9
Actuated g/C Ratio		0.14	0.20		0.14		0.68	0.67		0.76	0.71	0.71
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		210	330		197		516	1229		319	1319	1092
v/s Ratio Prot							0.00	c0.50		c0.02	0.33	
v/s Ratio Perm		0.04	0.00		c0.10		0.02			0.26		0.01
v/c Ratio		0.27	0.01		0.72		0.03	0.76		0.37	0.47	0.01
Uniform Delay, d1		42.4	35.2		45.3		5.7	12.3		11.2	7.0	4.7
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.68	1.07	1.00
Incremental Delay, d2		0.3	0.0		10.5		0.0	4.4		0.2	1.1	0.0
Delay (s)		42.6	35.2		55.9		5.7	16.7		19.1	8.6	4.7
Level of Service		D	D		E		A	B		B	A	A
Approach Delay (s)		41.2			55.9			16.5			10.2	
Approach LOS		D			E			B			B	

Intersection Summary

HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Waiko Road & Waiale Road

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	135	50	70	225	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.47	0.89	0.72	0.91	0.82	0.69
Hourly flow rate (vph)	64	152	69	77	274	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	146				387	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146				387	108
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				53	91
cM capacity (veh/h)	1436				589	946

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	216	146	361
Volume Left	64	0	274
Volume Right	0	77	87
cSH	1436	1700	648
Volume to Capacity	0.04	0.09	0.56
Queue Length 95th (ft)	3	0	86
Control Delay (s)	2.5	0.0	17.3
Lane LOS	A		C
Approach Delay (s)	2.5	0.0	17.3
Approach LOS			C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
3: Kuihelani Highway & Waiko Road

3/25/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	295	35	20	350	475	135
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	6.0		3.0	10.0	10.0	
Minimum Split (s)	28.0		7.0	16.0	24.0	
Total Split (s)	36.0		11.0	44.0	33.0	
Total Split (%)	45.0%		13.8%	55.0%	41.3%	
Yellow Time (s)	3.0		3.0	4.0	4.0	
All-Red Time (s)	1.0		1.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 48.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Kuihelani Highway & Waiko Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	295	35	20	350	475	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.83	0.72	0.58	0.81	0.98	0.76
Adj. Flow (vph)	355	49	34	432	485	178
RTOR Reduction (vph)	0	15	0	0	0	40
Lane Group Flow (vph)	355	34	34	432	485	138
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	15.3	22.4	3.1	24.4	17.3	38.6
Effective Green, g (s)	15.3	22.4	3.1	24.4	17.3	38.6
Actuated g/C Ratio	0.31	0.45	0.06	0.49	0.35	0.78
Clearance Time (s)	4.0		4.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	5.0	5.0	
Lane Grp Cap (vph)	544	713	110	1737	1231	1229
v/s Ratio Prot	c0.20		0.02	c0.12	c0.14	
v/s Ratio Perm		0.02				0.09
v/c Ratio	0.65	0.05	0.31	0.25	0.39	0.11
Uniform Delay, d1	14.9	7.7	22.3	7.3	12.2	1.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.0	0.6	0.2	0.4	0.1
Delay (s)	17.0	7.7	22.9	7.5	12.7	1.4
Level of Service	B	A	C	A	B	A
Approach Delay (s)	15.9			8.6	9.7	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2015 PM

Timings
1: Honoapiilani Highway & Waiko Road

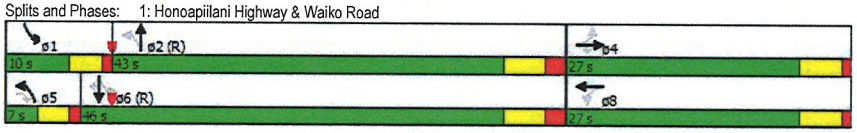
3/25/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	20	10	10	50	15	10	545	30	610	25
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	23.0	23.0		27.0	27.0	7.0	31.0	7.0	26.0	26.0
Total Split (s)	27.0	27.0		27.0	27.0	7.0	43.0	10.0	46.0	46.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%	8.8%	53.8%	12.5%	57.5%	57.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 30 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
1: Honoapiilani Highway & Waiko Road

3/25/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	10	10	50	15	45	10	545	45	30	610	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1886	1647		1724		1768	1836		1770	1863	1541
Flt Permitted		0.75	1.00		0.84		0.37	1.00		0.32	1.00	1.00
Satd. Flow (perm)		1449	1647		1475		683	1836		602	1863	1541
Peak-hour factor, PHF	0.69	0.41	0.40	0.77	0.58	0.73	0.58	0.93	0.72	0.76	0.98	0.75
Adj. Flow (vph)	29	24	25	65	26	62	17	586	62	39	622	33
RTOR Reduction (vph)	0	0	19	0	36	0	0	3	0	0	0	12
Lane Group Flow (vph)	0	53	6	0	117	0	17	645	0	39	622	21
Confl. Peds. (#/hr)							3					3
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		11.1	17.9		11.1		52.5	50.7		55.3	52.1	52.1
Effective Green, g (s)		11.1	17.9		11.1		52.5	50.7		55.3	52.1	52.1
Actuated g/C Ratio		0.14	0.22		0.14		0.66	0.63		0.69	0.65	0.65
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		201	368		204		472	1163		462	1213	1003
v/s Ratio Prot							0.00	c0.35		c0.00	0.33	
v/s Ratio Perm		0.04	0.00		c0.08		0.02			0.05		0.01
v/c Ratio		0.26	0.02		0.57		0.04	0.55		0.08	0.51	0.02
Uniform Delay, d1		30.8	24.2		32.2		5.1	8.3		4.8	7.3	4.9
Progression Factor		1.00	1.00		1.00		1.00	1.00		0.06	0.27	1.00
Incremental Delay, d2		0.3	0.0		2.4		0.0	1.9		0.0	1.4	0.0
Delay (s)		31.1	24.2		34.6		5.1	10.2		0.3	3.4	5.0
Level of Service		C	C		C		A	B		A	A	A
Approach Delay (s)		28.9			34.6			10.0			3.3	
Approach LOS		C			C			B			A	

Intersection Summary

HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Waiko Road & Waiale Road

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	55	45	75	95	60	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.78	0.83	0.92	0.84	0.75
Hourly flow rate (vph)	83	58	90	103	71	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	194				366	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	194				366	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				88	91
cM capacity (veh/h)	1380				595	906

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	141	194	151
Volume Left	83	0	71
Volume Right	0	103	80
cSH	1380	1700	727
Volume to Capacity	0.06	0.11	0.21
Queue Length 95th (ft)	5	0	20
Control Delay (s)	4.8	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	4.8	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

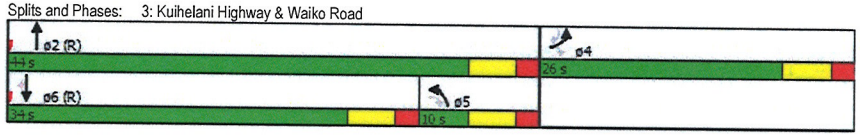
Timings
3: Kuihelani Highway & Waiko Road

3/25/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	125	15	25	535	625	115
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	24.0		10.0	24.0	24.0	
Total Split (s)	26.0		10.0	44.0	34.0	
Total Split (%)	37.1%		14.3%	62.9%	48.6%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kuihelani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
3: Kuihelani Highway & Waiko Road

3/25/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	125	15	25	535	625	115
Ideal Flow (vphpl)	1300	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1029	1346	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1029	1346	1770	3539	3539	1583
Peak-hour factor, PHF	0.81	0.62	0.88	0.82	0.91	0.88
Adj. Flow (vph)	154	24	28	652	687	131
RTOR Reduction (vph)	0	16	0	0	0	27
Lane Group Flow (vph)	154	8	28	652	687	104
Heavy Vehicles (%)	20%	20%	2%	2%	2%	2%
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	15.0	23.4	2.4	43.0	34.6	55.6
Effective Green, g (s)	15.0	23.4	2.4	43.0	34.6	55.6
Actuated g/C Ratio	0.21	0.33	0.03	0.61	0.49	0.79
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	220	449	60	2173	1749	1257
v/s Ratio Prot	c0.15		0.02	c0.18	c0.19	
v/s Ratio Perm		0.01				0.07
v/c Ratio	0.70	0.02	0.47	0.30	0.39	0.08
Uniform Delay, d1	25.4	15.6	33.2	6.4	11.1	1.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.4	0.0	5.6	0.4	0.7	0.0
Delay (s)	34.8	15.6	38.8	6.7	11.8	1.6
Level of Service	C	B	D	A	B	A
Approach Delay (s)	32.2			8.1	10.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Year 2015 AM

Timings
1: Honoapiilani Highway & Waiko Road

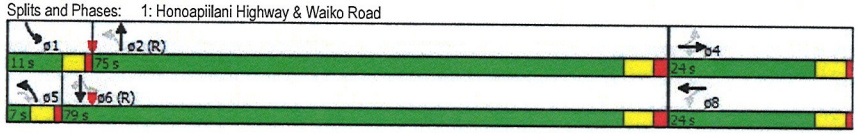
3/25/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	25	20	10	70	15	10	690	125	595	15
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	24.0	24.0		23.0	23.0	7.0	24.0	7.0	24.0	24.0
Total Split (s)	24.0	24.0		24.0	24.0	7.0	75.0	11.0	79.0	79.0
Total Split (%)	21.8%	21.8%		21.8%	21.8%	6.4%	68.2%	10.0%	71.8%	71.8%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
1: Honoapiilani Highway & Waiko Road

3/25/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	20	10	70	15	35	10	690	55	125	595	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1896	1647		1743		1768	1838		1770	1863	1542
Flt Permitted		0.79	1.00		0.80		0.39	1.00		0.15	1.00	1.00
Satd. Flow (perm)		1521	1647		1433		726	1838		289	1863	1542
Peak-hour factor, PHF	0.86	0.53	0.75	0.74	0.44	0.65	0.67	0.79	0.76	0.89	0.96	0.75
Adj. Flow (vph)	29	38	13	95	34	54	15	873	72	140	620	20
RTOR Reduction (vph)	0	0	10	0	15	0	0	2	0	0	0	6
Lane Group Flow (vph)	0	67	3	0	168	0	15	943	0	140	620	14
Confl. Peds. (#/hr)							2		1	1		2
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		16.0	22.8		16.0		74.5	72.7		83.0	77.2	77.2
Effective Green, g (s)		16.0	22.8		16.0		74.5	72.7		83.0	77.2	77.2
Actuated g/C Ratio		0.15	0.21		0.15		0.68	0.66		0.75	0.70	0.70
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		221	341		208		508	1214		302	1307	1082
v/s Ratio Prot							0.00	c0.51		c0.03	0.33	
v/s Ratio Perm		0.04	0.00		c0.12		0.02			0.32		0.01
v/c Ratio		0.30	0.01		0.81		0.03	0.78		0.46	0.47	0.01
Uniform Delay, d1		42.0	34.6		45.5		6.0	13.0		12.8	7.3	4.9
Progression Factor		1.00	1.00		1.00		1.00	1.00		2.22	0.71	1.00
Incremental Delay, d2		0.3	0.0		19.3		0.0	4.9		0.4	1.1	0.0
Delay (s)		42.3	34.6		64.8		6.0	17.9		28.8	6.4	5.0
Level of Service		D	C		E		A	B		C	A	A
Approach Delay (s)		41.1			64.8			17.7			10.4	
Approach LOS		D			E			B			B	

Intersection Summary

HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Waiko Road & Waiale Road

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	30	160	55	80	260	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.47	0.89	0.72	0.91	0.82	0.69
Hourly flow rate (vph)	64	180	76	88	317	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	164				428	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164				428	120
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				43	91
cM capacity (veh/h)	1414				558	931

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	244	164	404
Volume Left	64	0	317
Volume Right	0	88	87
cSH	1414	1700	610
Volume to Capacity	0.05	0.10	0.66
Queue Length 95th (ft)	4	0	123
Control Delay (s)	2.3	0.0	21.7
Lane LOS	A		C
Approach Delay (s)	2.3	0.0	21.7
Approach LOS			C

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Waiko Road & Element 1 and 2 Access

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	395	130	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	429	141	11	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	152				620	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	152				620	147
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	1429				445	900

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	451	152	11
Volume Left	22	0	5
Volume Right	0	11	5
cSH	1429	1700	596
Volume to Capacity	0.02	0.09	0.02
Queue Length 95th (ft)	1	0	1
Control Delay (s)	0.5	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	0.5	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Waiko Road & Main Access

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	325	130	15	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	353	141	16	5	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	158				579	149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158				579	149
tC, single (s)	4.6				7.4	7.2
tC, 2 stage (s)						
tF (s)	2.7				4.4	4.2
p0 queue free %	97				98	98
cM capacity (veh/h)	1176				336	693

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	391	158	16
Volume Left	38	0	5
Volume Right	0	16	11
cSH	1176	1700	512
Volume to Capacity	0.03	0.09	0.03
Queue Length 95th (ft)	3	0	2
Control Delay (s)	1.1	0.0	12.3
Lane LOS	A		B
Approach Delay (s)	1.1	0.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

Timings
5: Kuihelani Highway & Waiko Road

3/25/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	300	40	25	350	475	155
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	6.0		3.0	10.0	10.0	
Minimum Split (s)	32.0		7.0	24.0	24.0	
Total Split (s)	33.0		10.0	47.0	37.0	
Total Split (%)	41.3%		12.5%	58.8%	46.3%	
Yellow Time (s)	3.0		3.0	4.0	4.0	
All-Red Time (s)	1.0		1.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.0		4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Min	Min	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 64.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Kuihelani Highway & Waiko Road

HCM Signalized Intersection Capacity Analysis
5: Kuihelani Highway & Waiko Road

3/25/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	300	40	25	350	475	155
Ideal Flow (vphpl)	1300	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1029	1346	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1029	1346	1770	3539	3539	1583
Peak-hour factor, PHF	0.83	0.72	0.58	0.81	0.98	0.76
Adj. Flow (vph)	361	56	43	432	485	204
RTOR Reduction (vph)	0	12	0	0	0	39
Lane Group Flow (vph)	361	44	43	432	485	165
Heavy Vehicles (%)	20%	20%	2%	2%	2%	2%
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	27.9	36.2	4.3	26.8	18.5	52.4
Effective Green, g (s)	27.9	36.2	4.3	26.8	18.5	52.4
Actuated g/C Ratio	0.43	0.56	0.07	0.41	0.29	0.81
Clearance Time (s)	4.0		4.0	6.0	6.0	
Vehicle Extension (s)	2.0		2.0	5.0	5.0	
Lane Grp Cap (vph)	443	753	117	1465	1011	1282
v/s Ratio Prot	c0.35		0.02	c0.12	c0.14	
v/s Ratio Perm		0.03				0.10
v/c Ratio	0.81	0.06	0.37	0.29	0.48	0.13
Uniform Delay, d1	16.1	6.5	28.9	12.6	19.1	1.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.5	0.0	0.7	0.2	0.8	0.1
Delay (s)	26.6	6.5	29.6	12.9	19.9	1.4
Level of Service	C	A	C	B	B	A
Approach Delay (s)	23.9			14.4	14.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Year 2015 PM

Timings
1: Honoapiilani Highway & Waiko Road

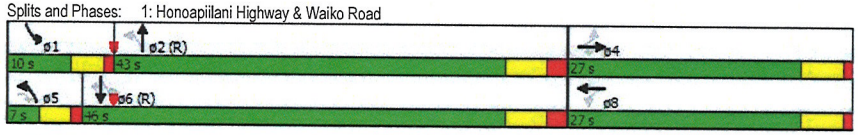
3/25/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	20	15	10	60	20	10	545	35	610	25
Turn Type	Perm	NA	custom	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4			8	5	2	1	6	
Permitted Phases	4		4 5	8		2		6		6
Detector Phase	4	4	4 5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	3.0	10.0	3.0	10.0	10.0
Minimum Split (s)	23.0	23.0		27.0	27.0	7.0	31.0	7.0	26.0	26.0
Total Split (s)	27.0	27.0		27.0	27.0	7.0	43.0	10.0	46.0	46.0
Total Split (%)	33.8%	33.8%		33.8%	33.8%	8.8%	53.8%	12.5%	57.5%	57.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	4.0	6.0	4.0	6.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Max	None	C-Max	C-Max

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 28 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Honoapiilani Highway & Waiko Road



HCM Signalized Intersection Capacity Analysis
1: Honoapiilani Highway & Waiko Road

3/25/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	15	10	60	20	55	10	545	55	35	610	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-8%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.95		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1896	1647		1726		1768	1831		1770	1863	1541
Flt Permitted		0.77	1.00		0.83		0.36	1.00		0.30	1.00	1.00
Satd. Flow (perm)		1498	1647		1470		670	1831		567	1863	1541
Peak-hour factor, PHF	0.69	0.41	0.40	0.77	0.58	0.73	0.58	0.93	0.72	0.76	0.98	0.75
Adj. Flow (vph)	29	37	25	78	34	75	17	586	76	46	622	33
RTOR Reduction (vph)	0	0	19	0	35	0	0	4	0	0	0	12
Lane Group Flow (vph)	0	66	6	0	152	0	17	658	0	46	622	21
Confl. Peds. (#/hr)							3					3
Turn Type	Perm	NA	custom	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4 5	8			2			6		6
Actuated Green, G (s)		12.4	19.2		12.4		51.1	49.3		54.1	50.8	50.8
Effective Green, g (s)		12.4	19.2		12.4		51.1	49.3		54.1	50.8	50.8
Actuated g/C Ratio		0.16	0.24		0.16		0.64	0.62		0.68	0.63	0.63
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		232	395		227		452	1128		433	1183	978
v/s Ratio Prot							0.00	c0.36		c0.00	0.33	
v/s Ratio Perm		0.04	0.00		c0.10		0.02			0.07		0.01
v/c Ratio		0.28	0.02		0.67		0.04	0.58		0.11	0.53	0.02
Uniform Delay, d1		29.9	23.2		31.9		5.7	9.2		5.5	8.0	5.4
Progression Factor		1.00	1.00		1.00		1.00	1.00		0.06	0.26	1.00
Incremental Delay, d2		0.2	0.0		5.6		0.0	2.2		0.0	1.5	0.0
Delay (s)		30.1	23.2		37.5		5.7	11.4		0.4	3.5	5.4
Level of Service		C	C		D		A	B		A	A	A
Approach Delay (s)		28.2			37.5			11.3			3.4	
Approach LOS		C			D			B			A	

Intersection Summary

HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Waiko Road & Waiale Road

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	55	50	90	115	65	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.78	0.83	0.92	0.84	0.75
Hourly flow rate (vph)	83	64	108	125	77	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	233				402	171
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	233				402	171
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				86	91
cM capacity (veh/h)	1334				567	873

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	147	233	157
Volume Left	83	0	77
Volume Right	0	125	80
cSH	1334	1700	690
Volume to Capacity	0.06	0.14	0.23
Queue Length 95th (ft)	5	0	22
Control Delay (s)	4.7	0.0	11.8
Lane LOS	A		B
Approach Delay (s)	4.7	0.0	11.8
Approach LOS			B

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Waiko Road & Element 1 and 2 Access

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	110	185	5	20	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	120	201	5	22	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	207				334	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	207				334	204
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1365				658	837

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	125	207	38
Volume Left	5	0	22
Volume Right	0	5	16
cSH	1365	1700	725
Volume to Capacity	0.00	0.12	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.4	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	10.2
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Waiko Road & Main Access

3/25/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	110	170	10	35	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	120	185	11	38	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196				321	190
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				321	190
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	97
cM capacity (veh/h)	1377				670	852

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	125	196	60
Volume Left	5	0	38
Volume Right	0	11	22
cSH	1377	1700	726
Volume to Capacity	0.00	0.12	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.4	0.0	10.4
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
5: Kuihelani Highway & Waiko Road

3/25/2013

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	175	25	30	535	625	130
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Detector Phase	4	4 5	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	34.0		10.0	24.0	24.0	
Total Split (s)	34.0		11.0	46.0	35.0	
Total Split (%)	42.5%		13.8%	57.5%	43.8%	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	Max	Max	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 74.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Kuihelani Highway & Waiko Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	175	25	30	535	625	130
Ideal Flow (vphpl)	1300	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1029	1346	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1029	1346	1770	3539	3539	1583
Peak-hour factor, PHF	0.81	0.62	0.88	0.82	0.91	0.88
Adj. Flow (vph)	216	40	34	652	687	148
RTOR Reduction (vph)	0	21	0	0	0	29
Lane Group Flow (vph)	216	19	34	652	687	119
Heavy Vehicles (%)	20%	20%	2%	2%	2%	2%
Turn Type	NA	custom	Prot	NA	NA	custom
Protected Phases	4		5	2	6	
Permitted Phases		4 5				6 4
Actuated Green, G (s)	20.0	29.0	3.0	45.3	36.3	62.3
Effective Green, g (s)	20.0	29.0	3.0	45.3	36.3	62.3
Actuated g/C Ratio	0.26	0.38	0.04	0.59	0.47	0.81
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	266	504	68	2073	1661	1275
v/s Ratio Prot	c0.21		0.02	c0.18	c0.19	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.81	0.04	0.50	0.31	0.41	0.09
Uniform Delay, d1	26.9	15.3	36.4	8.1	13.5	1.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.9	0.0	5.7	0.4	0.8	0.0
Delay (s)	43.8	15.3	42.1	8.5	14.3	1.6
Level of Service	D	B	D	A	B	A
Approach Delay (s)	39.4			10.2	12.0	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX F.

Community Information Meeting Summary

MUNEKIYO HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

February 11, 2013

MEETING MEMORANDUM

Date of Meeting: October 5, 2010

To: Carol Matsunaga, ABC Development, LLC
Leo Tanaka, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
Marietta Canty, Bureau Veritas North America, Inc.
Ian Sandison, Carlsmith Ball

From: Leilani Pulmano, Munekiyo & Hiraga, Inc.
Kimberly Skog, Munekiyo & Hiraga, Inc.

Subject: Community Information Meeting for the Proposed Waikapu Light Industrial Project, Wailuku Elementary School Cafeteria

The purpose of the meeting was to provide information about the proposed Waikapu Light Industrial project, and to receive comments and feedback about the proposed project from the Waikapu community. Two (2) members of the County Administration were in attendance at the meeting. See **Attachment A**.

The following is a summary of the key discussion points and issues raised during the meeting.

MAUI
305 High Street, Suite 104 Wailuku, Hawaii 96793
PH: *(808) 244-2015* FAX: *(808) 244-8729*
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: *(808) 983-1233*

www.mhplanning.com

1. L. Pulmano provided background information about the project site, which is located on East Waiko Road, adjacent to the Waiko Baseyard subdivision and nearby the Fong Construction Baseyard and Consolidated Baseyards subdivision. The project site is the former Maui Scrap Metal scrap yard, which was blanketed with scrap metal pieces, abandoned vehicles, white goods, and other debris when it was acquired by the applicant, ABC Development, LLC (ABC), in 2007. The State Department of Health (DOH) had ordered Maui Scrap to cease and desist operations and pursue clean up of the project site, and ABC complied with these orders after acquiring the site. After three (3) years of intensive clean up operations in coordination with DOH, the site is now suitable for productive use. It was noted that ABC, a private entity, utilized its own funds and resources to undertake the clean up, without assistance from either the State or County governments.

2. L. Pulmano introduced the proposed project, explaining that the applicants intend to create seven (7) light industrial lots on the 8.5-acre project site via a condominium regime. The condominium lots will range in size from approximately 0.8 to 1.5 acres in size. L. Pulmano explained that the applicants acquired the project site in seeking to relocate their Safety Systems, Inc. baseyard to a larger site that is more easily accessible for construction contractors. Thus, the applicants will be keeping one (1) of the seven (7) lots for this purpose. The applicants anticipate that the other six (6) lots will be rented to local light industrial businesses involved in warehousing and distribution types of enterprises.

3. K. Tanaka explained that access to the project site will be via an access road that runs along the eastern edge of the project site, extending off of East Waiko Road.

4. L. Pulmano pointed out that the project site is located in the State Agricultural District and is designated for agricultural use by the Wailuku-Kahului Community Plan and the Maui County zoning ordinance. In order for the project to proceed, a State Land Use District Boundary Amendment (DBA), County Community Plan Amendment (CPA), and County Change in Zoning (CIZ) will be required to establish the appropriate light industrial land use designations. Further, the CPA triggers the preparation of an Environmental Assessment (EA), pursuant to Chapter 343, Hawaii Revised Statutes. The Maui Planning Commission (MPC) will be the approving agency for the EA, while the County Council will be the approving agency for the DBA, CPA, and CIZ.

5. In closing, L. Pulmano expressed that the project site is ideally situated for continued light industrial use, given its previous use and its location amid other light industrial subdivisions along East Waiko Road. Moreover, with the site clean up activities completed and scrap metal debris cleared away, the project site is now prepared for a higher and better use.

6. A. Cua noted that the project site is situated within the proposed Urban Growth Boundary (UGB) of the draft Maui Island Plan that is currently under review by the Maui County Council. A. Cua further noted that both the General Plan Advisory Committee (GPAC) and the MPC included the project site in the UGB for the Central Maui region. This inclusion within the UGB by the GPAC, MPC, and Planning Department would lend support to the approval of the proposed project.

7. A. Cua noted that the EA would have to address the project's compliance with the provisions of Chapter 19.30A, Maui County Code, regarding the County's agricultural zoning district. L. Pulmano confirmed that the EA would address Chapter 19.30A.

8. A. Cua asked C. Matsunaga why a condominium regime would be pursued to create the seven (7) lots, rather than a subdivision. C. Matsunaga responded that condominium units would be easier for ABC to manage, and that the pursuit of a condominium regime would keep costs down for the end users of the lots, who ideally would be local businesses.

9. A. Cua asked K. Tanaka if the condominium action would require the provision of subdivision improvements. K. Tanaka stated that subdivision improvements would not be triggered because the condominium action would not produce separate parcels. K. Tanaka further explained that if the project site were subdivided, the provisions of the Show Me the Water ordinance would apply, such that the Department of Water Supply (DWS) would not grant water meters for the project. Alternatively, the DWS would be able to grant water meters for the condominium regime, and the applicants are currently in discussion with DWS to achieve this end. K. Tanaka noted that water for fire protection would also be provided by the DWS water system.

10. Recalling that landscaping was installed as part of the nearby Consolidated Baseyards project, A. Cua asked if landscaping would be installed as part of the proposed project. K. Tanaka responded that landscaping, specifically shade trees, must be planted in compliance with the provisions of the off-street parking ordinance. A. Cua suggested that landscaping along the frontage could be installed in relation to neighboring properties.

11. A. Cua inquired as to how setback requirements would apply to the condominium lots. K. Tanaka explained that because the 8.5-acre project site will not be subdivided, the setbacks would be measured from the outside boundaries of the project site, rather than from the internal boundaries of the condominium lots. At the same time, however, separation between buildings and internal and access roadways would still have to comply with the requirements set forth by the Fire Code.

12. D. Ramos inquired about the traffic impacts of the proposed project. L. Pulmano responded that a Traffic Impact Assessment Report (TIAR) is currently being prepared. Traffic counts taken as part of the TIAR show that traffic along East Waiko Road has dramatically decreased with the opening of Kuikahi Drive. The TIAR will be incorporated into the Draft EA.

13. A. Cua gathered that the Draft EA, DBA, CPA, and CIZ would be submitted for concurrent review and processing and asked when the application package would be filed. L. Pulmano confirmed that the Draft EA, DBA, CPA, and CIZ would be submitted for concurrent review, and anticipated that the application package would be filed before the end of the year.

Should you have any questions, please feel free to contact us at (808)244-2015.

Leilani Pulmano
Program Manager

LP:yp
Attachment
cc: Carol Matsunaga, ABC Development, LLC
Leo Tanaka, Realty Factors
Kirk Tanaka, R.T. Tanaka Engineering, Inc.
Ian Sandison, Carlsmith Ball
K:\DATA\ABC Dev\Waikapu LI\100510communitymeeting.memo2.wpd.doc

PROPOSED WAIKAPU LIGHT INDUSTRIAL PROJECT

Wailuku Elementary School Cafeteria
Community Meeting
Attendance Sheet
October 5, 2010
6:00 p. m.

PLEASE PRINT

Name	*Organization*	*Address*	*Telephone*
Arlene Ramos	M.P.D.		
Ann Cua	DPL		

MUNEKIYO HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR VICE PRESIDENT

MITSURU "MICH" HIRANO
SENIOR VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

July 12, 2013

MEETING MEMORANDUM

Date of Meeting: June 10, 2013

To: Albert Kanno, ABC Development, LLC
Carol Matsunaga, Realty Factors
Kirk Tanaka, RT Tanaka Engineering, Inc.

From: Cheryl K. Okuma, Senior Associate

Subject: Waikapu Community Association General Meeting at the Waikapu Community Center

Meeting Purpose: The purpose of the meeting was to provide an overview of ABC Development LLC's (ABC) proposed Waikapu Light Industrial project, and to receive comments and feedback about the project from the Waikapu Community Association.

The following is a summary of the key discussion points and issues raised during the meeting.

1. Waikapu Board President Randy Piltz opened the quarterly Waikapu Association Community Meeting. Leilani Pulmano provided an overview of ABC's proposed Waikapu Light Industrial Project, a low density project, creating seven (7) light industrial units on 8.5 acres. The overview provided the regional context for the project, the surrounding light industrial uses (e.g. Waiko baseyard), the 20 years of heavy industrial use for old scrap metal operation on agricultural designated lands and ABC's removal of the scrap metal. L. Pulmano explained that the project involves a District Boundary Amendment (DBA), Change in Zoning (CIZ) and Community Plan Amendment (CPA), which triggers an Environmental Assessment (EA) which will be reviewed by the Maui Planning Commission (MPC). The accepting authority for the EA is the MPC. The MPC reviews the

MAUI
305 High Street, Suite 104 Wailuku, Hawaii 96793
PH: *(808) 244-2015* FAX: *(808) 244-8729*
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | PH: *(808) 983-1233*

www.mhplanning.com

DBA, CIZ, and CPA and sends its recommendations to County Council, for approval.

2. Jacob Verkerke requested clarification on the environmental disclosure document: Environmental Impact Statement versus a EA. L. Pulmano explained that an EA also discloses the impacts of the proposed project and an EA process will be completed for this project. In addition the accepting authority is the MPC. Pulmano also added that there is opportunity for the public to provide comments during the EA comment period.

3. Questions were asked about the accessibility besides motorized traffic in the project design plan, the traffic impact on East Waiko Road and heavy truck traffic through the project area. L. Pulmano explained that the County is requiring other projects in the area to provide sidewalks and this involves discussion with the County. The traffic impact analysis for the project shows there is no adverse impact on East Waiko Road, and with the seven (7) light industrial units proposed the impact is minimal. Heavy trucks are anticipated to go to and from the project. The road within the Waikapu community on East Waiko Road to Honoapiilani Highway is restricted for heavy truck use based on weight. Heavy trucks would use Waiale Road or Kuheilani Highway.

4. As the proposed light industrial units allows wholesale business and retail operations, questions were asked as to whether the developer has approved any lessees, the hours of operation on the lots, and if this mix of various lot sizes is designed to attract retail businesses or geared towards attracting shop businesses which would bring in certain traffic. L. Pulmano and A. Kanno explained that ABC purchased the parcel in order to move his business to the Waikapu location. There is a lot of interest in light industrial lots, although there are no lessees at this time for these lots. This regional area will have a good mix of lease and fee simple industrial lots. Leased lots are less costly than fee simple industrial lots. As the lots have not been leased, the business hours of the light industrial lot are not known at this time. L. Pulmano explained that this light industrial land use designation allows for warehouse use or uses such as Waiko Baseyard. The types of businesses these lots will attract is not known at this time. The light industrial designation allows retail business, wholesale business as well as baseyards.

5. A. Kanno explained that his company sells or leases equipment for construction work (e.g. safety equipment, and he owned a wood shop supply company that used to be near Hashi's in Wailuku. Now he intends to return to Maui and set up operations on one of the seven (7) light industrial units.

   R. Piltz commented on the supply of light and heavy industrial properties that are coming online in the future near the project as well as in Kahului.

As there are few light industrial parcels, the commercial cost of purchasing such property is high because of limited supply.

6. Questions were asked about landscape requirements on the frontage along Waiko Road. It was commented that the Association should have a goal to ask for landscaping along the entire Waiko Road to make it a beautiful road to drive towards Kuihelani Highway. L. Pulmano explained that comments regarding landscape can be submitted during the preparation of the Draft EA. R. Piltz explained that industrial lots in the area had a requirement for landscape, but this has not been complied with. He suggested that the community should look into getting the industrial lots to comply with this requirement.

7. Questions were asked about the project's effect on the water line to and from Kihei. K. Tanaka explained there is a water main that runs on the property. There is an easement to accommodate the water main, and this will be coordinated with the County Department of Water Supply (DWS).

8. Questions were asked about drainage. R. Piltz explained that each property has to retain storm water runoff generated from the project.

9. J. Verkerke explained that he will send the community members the published Draft EA when he receives it. He requested that community members to send him comments so they can be included in the Draft EA process.

Cheryl K. Okuma
Senior Associate

CKO:la
K:\DATA\ABC Dev\Waikapu LI\061013 WCA Meeting.memo.docx