# HONUA'ULA

## FINAL ENVIRONMENTAL IMPACT STATEMENT

### VOLUME 4 OF 4
### (APPENDICES M-S)

Prepared for:

Accepting Authority

Maui Planning Department / Maui Planning Commission

Applicant:

Honua'ula Partners, LLC

Prepared by:

PBR HAWAII
& ASSOCIATES, INC.

June 2012

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## Transportation Management Plans

# Transportation Management Plan Approvals

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

HWY-PS
2.5154

May 4, 2010

RECEIVED
MAY 05 2010
PACIFIC RIM ENGINEERING

Mr. Charlie Jencks
Owner Representative
Honua'ula Partners, LLC
1300 N. Holopono Street, Suite 201
Kihei, Hawaii 96753

Dear Mr. Jencks: Charlie

Subject: Final Transportation Management Plan (TMP) for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honua'ula Project District, and Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District, Wailea, Maui, Hawaii

We apologize for the delay in response. We have reviewed your letter dated December 18, 2009, responding to our comments of November 12, 2009 and has determined your response to be acceptable. As required by Zoning Condition No. 28 of Maui County Ordinance 3554, this letter approves the project TMP's for Post-Construction of Kaonoulu Affordable Housing Project and Honua'ula Project District, and Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District. The approval is based on the condition that the specific details of the construction and traffic control plan, as part of the contractual agreements as mentioned in "Comment 1" of the aforementioned response letter, will be submitted later to our department for review and approval.

If you have any questions, please contact Ken Tatsuguchi, Head Planning Engineer, Highways Division, at (808) 587-1830.

Very truly yours,

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

CHARMAINE TAVARES
MAYOR

DON A. MEDEIROS
Director
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Telephone (808) 270-7511
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**DEPARTMENT OF TRANSPORTATION**

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

RECEIVED
DEC 27 2010
PACIFIC RIM LAND, INC.
MAUI - MAIN

December 21, 2010

Mr. Charles Jencks
Honua`ula Partners LLC
1300 N. Holopono Street, Suite 201
P.O. Box 220
Kihei, Hawaii 96753

Subject: Honua`ula Transportation Management Plan Corrections and Request for Approval

Dear Mr. Jencks,

The County of Maui Department of Transportation would like to thank you again for the effort you have made in incorporating the recommended requirements from our department.

The revisions to the TMP documents are acceptable and approved by the County of Maui Department of Transportation.

Sincerely,

Don Medeiros
Director

CHARMAINE TAVARES
Mayor

MILTON M. ARAKAWA, A.I.C.P.
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MICHAEL M. MIYAMOTO
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Telephone: (808) 270-7845
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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

RECEIVED
DEC 22 2009
PACIFIC RIM LAND, INC.
MAUI - MAIN

December 18, 2009

Mr. Charles Jencks
HONUA`ULA PARTNERS, LLC
P. O. Box 220
Kihei, Maui, Hawaii 96753

Dear Mr. Jencks:

**SUBJECT: HONUA`ULA DEVELOPMENT CONSTRUCTION AND POST-TRANSPORTATION MANAGEMENT PLANS**

We have reviewed the Transportation Management Plans. We have no further comments to offer and, therefore, approve the subject plans.

Please call Michael Miyamoto at 270-7845, if you should have any questions.

Sincerely,

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

MMA:MMM:jso
xc: Development Services Administration
s:\mike\cjencks_honuaula construction & post_transp mgmt plans

# Transportation Management Plan – Construction

# TRANSPORTATION MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

WAILEA, MAUI, HAWAII

**FINAL**

October 27, 2009
Revised November 2, 2010

Prepared for:

Honua'ula Partners LLC
381 Huku Li'i Place, Suite 202
Kihei, Hawaii 96753

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**TRANSPORTATION MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT**

Wailea, Maui, Hawaii

**FINAL**

Prepared for

**Honua'ula Partners LLC**

Prepared by
**Austin, Tsutsumi & Associates, Inc.**
Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

October 27, 2009
Revised November 2, 2010

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CIVIL ENGINEERS • SURVEYORS

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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
ADRIENNE W. L. H. WONG, P.E., LEED AP

# TRANSPORTATION MANAGEMENT PLAN

# FOR

# CONSTRUCTION OPERATIONS OF

# HONUAULA PROJECT DISTRICT, PIILANI HIGHWAY WIDENING PROJECT AND KAONOULU AFFORDABLE HOUSING PROECT

## Kihei, Maui, Hawaii

## I. INTRODUCTION

This Transportation Management Plan (TMP) proposes transportation management strategies to reduce construction related traffic for the construction operations of Honuaula (formally known as Wailea 670), Piilani Highway Widening Project and the Kaonoulu Affordable Housing Project in the Kihei-Wailea region of Maui. Figure 1 shows the locations of all three projects.

### A. Goals & Objectives

Zoning Condition No. 28 of the Honuaula project which requires a TMP is as follows:

> *"That, prior to commencement of any construction activity, Honuaula Partners, LLC, its successors and permitted assigns, shall develop and submit a Transportation Management Plan (TMP), to be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation. The purpose of the TMP shall be to reduce traffic generated by construction activity related to the Kaonoulu Light Industrial Subdivision and Kihei-Makena Project District 9, including traffic generated by the improvements to Piilani Highway between Kilohana Drive and Wailea Ike Drive. The TMP shall provide for*

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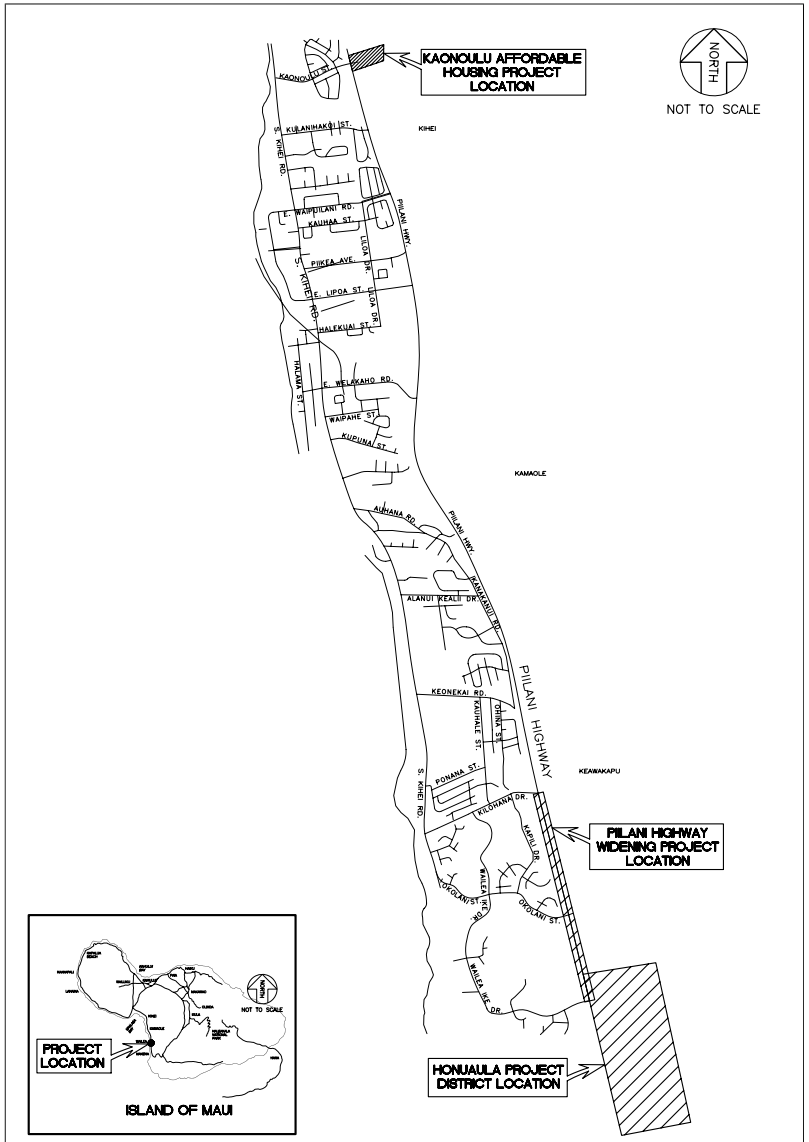
*programs such as park and ride, shuttles, and/or restrictions on worker access to ongoing construction activity during peak hour traffic. Upon approval, project contractors shall implement the TMP during construction activities. Honuaula Partners, LLC, its successors and permitted assigns, shall submit an annual report to the State Department of Transportation, the County Department of Public Works the County Department of Transportation and the Maui County Council to document the success of the TMP in meeting its benchmarks of reducing traffic during project construction."*

Compliance with Zoning Condition No. 28 will be achieved through implementation of transportation, parking, and construction management policies and practices geared towards consolidating and reducing the peak hour vehicle trips generated by construction activity. Implementation of this TMP is intended to reduce the impact on peak hour travel times in and around the subject project areas. This management plan will utilize the following goals and objectives in achieving the desired mitigation:

- Develop programs and initiatives for reducing peak hour trips generated by construction activity to achieve a benchmark of approximately 15 percent overall construction traffic reduction during the peak hours of traffic. At the height of construction, this equates to approximately 50 construction vehicles.
- Monitor and evaluate the effectiveness of this TMP.
- Coordinate construction activities with adjoining land owners.

The draft TMP for Construction operations was submitted to the State Department of Transportation (SDOT), the County Department of Public Works (DPW), and the County Department of Transportation (MDOT) on August 28, 2009. Comments letters from the agencies were received dated September 30, 2009 (SDOT), October 2, 2009 (DPW), and September 3, 2009 (MDOT), June 8, 2010 and October 6, 2010 (MDOT). These comment letters and the response letters to the reviewing agencies are included in the Appendix.





**B. Regional Location and Access**

Roadway System

The following are brief descriptions of the existing roadway network in the vicinity of the Projects:

Piilani Highway - is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Piilani Highway begins at its intersection with South/North Kihei Road and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway further south. Left-turn storage lanes are generally provided at major intersections on Piilani Highway. The posted speed limit on Piilani Highway is generally 40 miles per hour (mph). The speed limit on Piilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

Kilohana Drive - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Piilani Highway. Kilohana Drive intersects Piilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. The posted speed limit on Kilohana Drive is 25 mph.

Mapu Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway, across Kilohana Drive, to Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

Okolani Drive - is a four-lane, divided, east/west roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided roadway east of Wailea Alanui Drive to its intersection with Piilani Highway directly across of Mikioi Place. The posted speed limit on Okolani Drive is 30 mph.

Mikioi Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway, across Okolani Drive, to Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.



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Wailea Ike Drive is a four-lane, divided north-south roadway that is striped as a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main access and entry point to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. It is a divided roadway with a relatively steep grade and a posted speed limit of 30 mph.

Figure 1 shows the roadway system in the vicinity of the Projects.

**C. Approach & Methodology**

**1. Approach to TMP Formulation**

The approach and methodology for developing this TMP is based upon the following tasks and steps for each of the three projects referenced above:

- Determine Construction Labor Transportation Requirements

  An analysis of the types of projects anticipated, their individual needs and requirements relative to the labor, supervisory personnel, equipment, deliveries were evaluated. The summary of workers by project and type are summarized in section II.B.

  Included within this portion of the analysis are consideration of the time frames during which construction is permitted on state highways, limitations on noise generating activities and limitations on the number of dwelling units that can be constructed during a calendar year as imposed by zoning conditions.

- Develop Programs for Reducing and Consolidating Trips During the Peak Hours

  Programs, policies and actions that will positively address and mitigate the impact on peak hour travel are provided. Turning movement count data indicate that the weekday AM peak hour of traffic occurs between 7:00 a.m. and 8:00 a.m. and the weekday PM peak hour of traffic occurs between 4:00 p.m. and 5:00 p.m.

- Implementation, Monitoring, and Evaluation

  Appoint a Transportation Coordinator (TC) or designated representative to work with MDOT to monitor the TMP program approach, implement modifications to the program as the Projects evolve and construction needs change and provide a source of contact for the public.

**2. Construction Trip Data**

The three projects subject to this TMP each have distinct needs in terms of the type of work, number of workers, type of equipment needed, in addition to differentials on the type and quantity of materials needed to complete the work in a timely manner. Therefore, in compliance with Zoning Condition No. 28, it is projected that approximately 15 percent of the overall construction related trips generated by each project will be reduced during the AM peak hour (7:00 a.m. to 8:00 a.m.) and PM peak hour (4:00 p.m. to 5:00 p.m.) of traffic.

## II. PROJECT OVERVIEWS

### A. Project Descriptions

The following describes the various construction projects addressed in Zoning Condition No. 28:

**1. Piilani Highway Widening Project**

Currently, Piilani Highway is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway north of its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. The Piilani Highway corridor will be widened and improved consistent with the following requirements:

- Prior to commencement of any construction on the Honuaula Project site, upgrade Piilani Highway from Kilohana Drive to Wailea Ike Drive, to four lanes of traffic.



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- Prior to occupancy of the first unit in Honuaula, modify the Piilani Highway/Kilohana Drive/Mapu Place intersection to provide an exclusive left-turn lane, and the southbound Piilani Highway approach to provide an exclusive right-turn lane into Mapu Place.
- Prior to occupancy of the first unit in Honuaula, signalize Piilani Highway/Okolani Drive/Mikioi Place intersection and provide an exclusive left-turn lane on Okolani Drive.
- Prior to occupancy of the first unit in Honuaula, modify the Piilani Highway/Wailea Ike Drive intersection to provide a signalized intersection, a free right-turn lane from Piilani Highway to Wailea Ike Drive and a second right-turn lane from Wailea Ike Drive to northbound Piilani Highway.

Figure 2 shows the intersections and roadway segments affected by the Piilani Highway Widening Project.

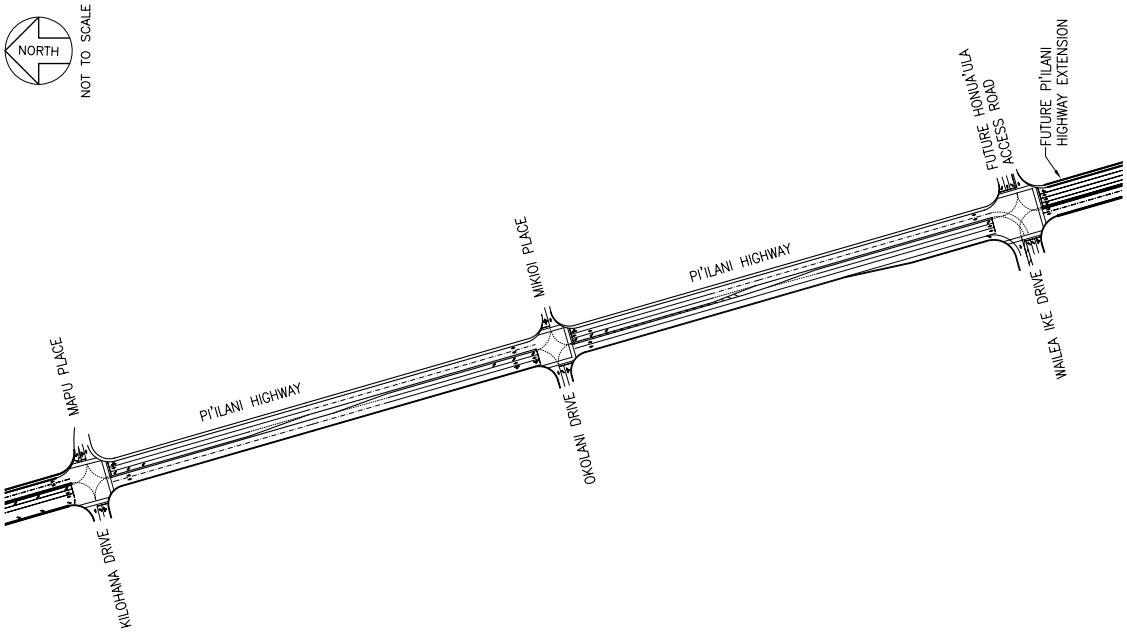
**2. Kaonoulu Affordable Housing Project**

The Kaonoulu Affordable Housing Project site is located on a 13-acre parcel located within the light industrial project with frontage on the proposed Kihei/Upcountry highway. The Kaonoulu Affordable Housing Project will construct 125 affordable rental and 125 owner occupied affordable housing units in a series of three story structures along with parking and a 2 acre park for the residents on the east side of Piilani Highway with access off of its intersection with Kaonoulu Street.

Figure 3 shows the conceptual site plan for the Kaonoulu Affordable Housing Project.




| | | |
|---|---|---|
| TRAFFIC MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII<br>KAONOULU AFFORDABLE HOUSING PROJECT SITE PLAN | FIGURE 3 |

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| TRAFFIC MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII<br>PI'ILANI HIGHWAY WIDENING PROJECT | FIGURE 2 |

### 3. Honuaula Project

The original plan for the Honuaula Project included more than 2,000 new single-family and multi-family residential units, two 18-hole golf courses and a commercial district. The Honuaula Project has since been scaled down and modified. The Honuaula Project currently proposes 1,150 new single-family and multi-family residential units of which, 450 will be affordable, an 18-hole private homeowner golf course and 100,000 square feet of commercial and office space. The following are the development phases for the Honuaula Project:

Honuaula Project Phase I (Year 2016)

By Year 2016, The Honuaula Project proposes to construct 26,000 square feet of Office Space, 74,000 square feet of Commercial space, and 400 residential units, with 75 units being affordable. With Phase I of the Project, the east leg of the Piilani Highway/Wailea Ike Drive intersection will be constructed and Kaukahi Street will be extended into the Project.

Honuaula Project Phase II (Year 2018)

By Year 2018, The Honuaula Project proposes to construct an additional 400 residential units, with half being affordable. With Phase II of the Project, Piilani Highway will be extended, forming the south leg of the Piilani Highway/Wailea Ike Drive intersection and extending to the Kaukahi Street extension.

Honuaula Project Phase III (Year 2022)

By Year 2022, the Honuaula Project proposes to construct the final 350 residential units, with 175 being affordable.

Figure 4 shows the conceptual site plan for the Honuaula Project.



TRAFFIC MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS/SURVEYORS HONOLULU, HAWAII

HONUAULA PROJECT SITE PLAN

FIGURE 4



**B. Construction Traffic**

**1. State of Hawaii and County of Maui Construction Regulations**

In accordance with Honuaula's zoning conditions, State Department of Health (DOH) and State Department of Transportation (SDOT) regulations, there are limitations to permitted construction work time frames, noise generating activities and number of dwelling units that can be constructed during a calendar year.

In compliance with DOH regulations, construction can only be performed between 7:00 a.m. and 6:00 p.m., Monday through Friday, and 9:00 a.m. and 6:00 p.m. on Saturdays. The use of certain demolition and construction equipment (such as pile drivers, hydraulic hammers, jackhammers, etc.) shall be limited to 9:00 a.m. to 5:30 p.m., Monday through Friday. In compliance with SDOT regulations, unless permitted by the District Engineer, work on State roadways can only be performed between 8:30 a.m. and 3:30 p.m., Monday through Friday. In accordance with the zoning conditions, the 250 Kaonoulu Affordable Housing Project units must be completed prior to any market rate units for Honua'ula. Honua'ula will also be limited to construct no more than 100 market rate units per year, with no limitations on the number of affordable housing units constructed each year based on Chapter 19.90A Section 020 of Maui County's Zoning Code. Additionally, limiting the number of market rate units per year will control the number of construction workers and deliveries required during construction; hence a limit on construction traffic

**2. Projected Construction Labor**

At the height of construction, it has been estimated that there will be approximately 330 construction vehicles and deliveries during the peak hours of traffic. A 15 percent reduction results in approximately 50 construction vehicles during the peak hours of traffic. The following is a breakdown of estimated construction vehicles per project.



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Piilani Highway Widening Project

The Piilani Highway Widening Project is required to be completed prior to any construction, with the exception of grading within the Honuaula Project. Construction of the Piilani Highway Widening Project is estimated to generate approximately 55 workers to the construction site, 20 percent of which will be supervisory personnel with an average of 6 truck deliveries per day.

Kaonoulu Affordable Housing Project

The Kaonoulu Affordable Housing Project is estimated to generate approximately 100 workers to the construction site, 20 percent of which will be supervisory personnel, with an average of 6 truck deliveries per day.

Honuaula Project

The main infrastructure and site development of the Honuaula Project is projected to be completed within four years. Based on this projection, the project is estimated to generate 90 workers to the construction site, 20 percent of which will be supervisory personnel and an average of 10 truck deliveries per day.

Residential building construction is estimated to generate 111 workers to the construction site, 20 percent of which will be supervisory personnel with an average of 10 truck deliveries per day.

## III. PEAK HOUR TRANSPORTATION MANAGEMENT INITIATIVES AND PROGRAMS

### A. Reduction of Construction Worker Traffic During Peak Hours of Traffic

Much of the construction related traffic will be a result of individual construction and trades workers arriving and leaving the construction site. The following are the proposed TMP strategies to reduce construction worker related traffic during the peak hours of traffic.

#### 1. Transportation Coordinator

The Transportation Coordinator (TC) will be responsible for overseeing, administering and reporting progress of this TMP. The following are duties that are recommended to be carried out by the TC:

- Work with MDOT, project managers, construction managers, and construction workers on-site to participate and effectuate the recommendations in the TMP.
- Enforce scheduling for arrival and departure of construction workers to occur during off-peak hours of traffic.
- Monitor the use of ridesharing/carpooling/vanpooling and provide incentives to construction workers who participate in ridesharing programs.
- Monitor surrounding residential areas to ensure construction workers are not parking in these areas utilizing the following strategies:
    - Busing of employees to the project area. Requiring within the project contract the provision of vanpooling for employees from off site construction facilities and monitoring of activity,
    - Establishment of parking areas within the Honuaula project area for both workers and delivery vehicles,
    - Active policing of worker parking and patrolling of off-site residential areas to ensure construction parking is not taking place outside the construction area,



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    - Notify the residents to report construction workers parking in the neighborhood by calling the “hotline”.
- Require construction supervisors to enforce parking violations and monitor parking lot.
- Encourage individual construction companies to utilize park-and-ride lots or have their employees meet at their own baseyard for carpooling or vanpooling.
- Schedule and arrange truck deliveries during off-peak hours of the day and coordinate truck deliveries within the projects.
- Notify motorists of lane or road closures to give them time to plan alternative routes to avoid possible roadway congestion.
- Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a website or written notices.
- Establish a “hotline” for inquiries, construction activities, and complaints.
- Conduct regular informational meetings with the surrounding communities to provide construction schedule information.
- Keep records of the number of construction workers on-site as well as the number of vehicles accessing the site during the peak hours of traffic to measure the effectiveness of the TMP.

#### 2. Schedule Off-Peak Arrivals/Departures

Typical work days are recommended to be scheduled so workers avoid travelling during peak hours of the day. Recommended work schedules would be from 6:30 am (prior to the AM peak hour of traffic) and end at 3:30 pm (prior to the PM peak hour of traffic). The TC will enforce the peak hour scheduling restrictions so that construction personnel can cycle on and off the construction site during off-peak hours so that vehicles do not impact the majority of traffic during the AM and PM peak hours of the day.

**3. Ridesharing/Carpooling/Vanpooling Programs**

Ridesharing, carpooling and vanpooling will be encouraged through various measures and incentives. The Project Manager and TC are recommended to provide incentives to construction workers who utilize these ridesharing programs, such as reimbursements for the costs of the ridesharing programs. For those who wish to carpool utilizing their personal cars, preferential parking in the designated employee parking lot will be provided as further described below.

**4. Guaranteed Ride Home Initiative**

To ensure that rideshare users are not restricted without a personal vehicle on-site, a Guaranteed Ride Home (GRH) program will accommodate their needs. This program offers a guaranteed free ride for a person who does not drive to work and who needs a ride for an emergency, unexpected situation, personal sickness, sickness of a family member, or if workers must stay late to work unscheduled overtime. This would guarantee the ride from a fellow coworker, paid taxi, rental car or shuttle service. The GRH program offers peace of mind for workers who worry about getting to a destination if unexpected events or emergencies occur.

**5. Employee Parking**

A parking lot will be designated for construction worker parking. The parking facility will be managed and regulated so as to promote ridesharing as follows:

- Limit the number of employee parking spaces on-site.
- All vehicles will be given parking passes to regulate vehicles permitted to park in the parking lot.



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- The TC will monitor surrounding residential areas to ensure workers are not parking off-site and are using parking provided by project. To monitor surrounding residential areas, the TC should utilize the following strategies:
    - Busing of employees to the project area. Requiring within the project contract the provision of vanpooling for employees from off site construction facilities and monitoring of activity,
    - Establishment of parking areas within the Honuaula project area for both workers and delivery vehicles,
    - Active policing of worker parking and patrolling of off-site residential areas to ensure construction parking is not taking place outside the construction area,
    - Notify the residents to report construction workers parking in the neighborhood by calling the "hotline".
- TC will inform the construction supervisors to deal with construction workers who violate the parking regulations.

**6. Implement Park-and-Ride Facility**

To facilitate ease of ridesharing/carpooling/vanpooling, a park-and-ride staging area can be a way for construction workers to meet at a central location to transport to the construction site. A park-and-ride facility would need to be located outside of the construction work zone. Currently, there is an existing park-and-ride facility in Kahului along Puunene Avenue near Kuihelani Highway and another facility in the Maalaea area along North Kihei Road near Honoapiilani Highway. Construction workers will be able to park their personal vehicles at the park-and-ride lot and either carpool, vanpool or use a shuttle to enter the project site. New park-and-ride facility locations should be determined in conjunction with other construction projects in the Kihei-Makena region and based on availability of open areas for lease and development of the facility.

**B. Reductions of Construction Traffic Delays and Delivery Trucks**

A small contribution of construction related traffic will be caused by construction improvements along Piilani Highway and delivery trucks arriving and leaving the construction site during peak hours of traffic. The following are the proposed TMP strategies to reduce traffic congestion as a result of the traffic delays and delivery trucks during the peak hours.

**1. Consolidate Deliveries**

Whenever possible, construction materials, fuel, supplies and equipment should be consolidated and delivered to the site during off-peak hours of the day. To the extent feasible, deliveries will be scheduled so that vehicle trips to and from the construction site do not disrupt or coincide with the AM peak hour (7:00 a.m. to 8:00 a.m.) and PM peak hours (4:00 p.m. to 5:00 p.m.). Deliveries that are required to be made during peak hours of the day will be arranged and monitored by the TC, so proper coordination, planning and regulation of truck flows can be made prior to the delivery.

**2. Reduce Traffic Delays and Reduction in Flow**

Unless absolutely necessary and for public safety reasons, lane or road closures will occur during off-peak hours in conjunction with SDOT regulations. Providing lane or road closures during off-peak hours will result in less congestion during peak hours and a reduction in the number of vehicles affected by detours. If lane or road closures do occur, the TC will notify motorists and provide alternate routes to avoid congested roadways. Lane or road closures will be specific to the area of work to reduce the number of roadways affected by the closure. The contractor will follow SDOT and County regulations when utilizing their roadway facilities. Additionally, the contractor will notify the appropriate agencies and the public at least five days prior to lane closures.



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**3. Public Information and Outreach Program**

To implement a public information and outreach program, the following are duties of the TC:

- Coordinate delivery schedules and roadway construction schedules with other projects in the area.
- Coordinate with unions, construction companies, developer and owner of properties affected by the TMP or construction operations, to establish a set of agreed upon TMP initiatives.
- Notify motorists of lane or road closures to give them time to plan different routes to avoid congested roadway.
- Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a website or written notices.
- Establish a “hotline” for inquiries, construction activities, and complaints. The TC will investigate and respond by taking appropriate action on the valid complaints received.
- Conduct regular information meetings with the surrounding communities to provide construction schedule information.

Information of the various construction activities will allow the public to utilize alternative routes or adjust their schedules to reach their destination in a timely fashion and limit the impact to the surrounding roadways.

## IV. PROJECT SPECIFIC PEAK HOUR TRANSPORTATION MANAGEMENT INITIATIVES AND PROGRAMS

### A. Piilani Highway Widening Project

With the exception of grading within the Honuaula Project, the widening of Piilani Highway between Kilohana Drive/Mapu Place and Wailea Ike Drive is required to be completed as described in the Zoning Conditions. During construction of the Piilani Highway Widening Project, the Honuaula Project site will be utilized as the contractor's staging area. The following are transportation initiatives and programs, as described in Section IV that are recommended to be implemented specific to the Piilani Highway Widening Project.

#### 1. Transportation Coordinator

As mentioned in Section IV.A.1 all duties and responsibilities carried out by the TC could be applied to the Piilani Highway Widening Project.

#### 2. Schedule Off-Peak Work

As mentioned in Section IV.A.2. all initiatives dealing with the consolidation of deliveries could be applied to the Piilani Highway Widening Project.

#### 3. Implement Park-and-Ride Facility

Due to the nature of the project, a majority of the construction work will be completed by one construction company. To the extent possible, construction workers will park their personal vehicles at the Contractor's baseyard and carpool to the Honuaula Project site where the construction staging area and construction vehicle parking will be located. The TC will restrict any construction related personal vehicles from parking at the Honua'ula staging area.

#### 4. Guaranteed Ride Home Initiative

As mentioned in Section IV.A.4, all initiatives dealing with a GRH program could be applied to the construction of the Piilani Highway Widening Project.



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#### 5. Employee Parking

A parking lot on the Honuaula Project site will be designated for construction worker parking. The parking facility will be regulated so as to promote ridesharing as follows:

- The TC will monitor surrounding residential areas to ensure construction workers are not parking in these areas utilizing the following strategies:
  - Busing of employees to the project area. Requiring within the project contract the provision of vanpooling for employees from off site construction facilities and monitoring of activity,
  - Establishment of parking areas within the Honuaula project area for both workers and delivery vehicles,
  - Active policing of worker parking and patrolling of off-site residential areas to ensure construction parking is not taking place outside the construction area,
  - Notify the residents to report construction workers parking in the neighborhood by calling the "hotline".
  - Limit the number of construction vehicle parking spaces on the Honuaula Project site as a disincentive.

#### 6. Consolidate Deliveries

In addition to consolidating deliveries, as mentioned in Section IV.B.1, the number of truck deliveries can be reduced by providing material handling and processing on the Honuaula Project site. For example, these activities could include rock crushing and processing, concrete material storage and batching, and material recycling. Utilizing materials available on-site will reduce the number of deliveries to the project site.

**7. Reduce Traffic Delays and Reduction in Flow**

In accordance with SDOT regulations, lane closures may only occur between 8:30 a.m. and 3:00 p.m., unless permitted by the District Engineer. The Contractor shall comply with traffic control and lane closure requirements, as required by the SDOT and County. The appropriate agencies and the public will be notified at least five days prior to lane closures

**8. Public Information and Outreach Program**

As mentioned in Section IV.B.3, all initiatives dealing with a public information and outreach program could be applied to the construction of the Piilani Highway Widening Project.

**B. Honuaula and Kaonoulu Affordable Housing Projects**

The Zoning Conditions for the Honuaula Project mandates that the Kaonoulu Affordable Housing Project be completed prior to any market rate units within the Honuaula Project site and that no work other than grading be initiated within the Honuaula Project prior to completion of the Piilani Highway Widening Project. Construction for the Piilani Highway Widening Project may occur during the same time Kaonoulu Affordable Housing Project is being constructed.

Once Piilani Highway is widened, construction within the Honuaula Project will commence. Therefore, when major construction activities occur on the Honuaula Project site, additional capacity will be provided along Piilani Highway. The following are transportation initiatives and programs that are recommended to be implemented specific to the Honuaula and Kaonoulu Affordable Housing Projects.

**1. Transportation Coordinator**

As mentioned in Section IV.A.1 all duties and responsibilities carried out by the TC could be applied to the Honuaula and Kaonoulu Affordable Housing Projects.



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**2. Schedule Off-Peak Work**

As mentioned in Section IV.A.2 all initiatives dealing with the consolidation of deliveries could be applied to the Honuaula and Kaonoulu Affordable Housing Projects.

**3. Ridesharing/Carpooling/Vanpooling programs**

As mentioned in Section IV.A.3 all initiatives dealing with ridesharing, carpooling and vanpooling could be applied to the Honuaula and Kaonoulu Affordable Housing Projects.

**4. Implement Park-and-Ride Facility**

To reduce regional traffic in the Kihei-Wailea region, workers should use existing park-and-ride facilities. Currently, there is an existing Kuihelani Highway park-and-ride facility in Kahului along Puunene Avenue near Kuihelani Highway and another facility in the Maalaea area along North Kihei Road near Honoapiilani Highway. Workers will be able to park their personal vehicle at these facilities and carpool to the Project sites.

Currently, the Maui Bus runs a few routes connecting the Wailea Makena Region to other regions on the Island of Maui. The Kihei Islander Route runs along South Kihei Road with its last stop on Wailea Ike Drive and the Haiku-Wailea Commuter route runs along Piilani Highway with its last stop in Makena. The TC will be responsible to coordinate with the Maui Bus to provide additional stops along the Haiku-Wailea Commuter route at the Kaonoulu Affordable Housing and Honuaula Projects.

New park-and-ride facility locations should be determined in conjunction with other construction projects in the Kihei-Makena region and based on availability of open areas for lease and development of the facility. Central Maui is known to be the main residential area on Maui; therefore, a park-and-ride facility would be most useful in that area, attracting construction workers in the Central, East and Upcountry Maui areas.

**5. Guaranteed Ride Home Initiative**

As mentioned in Section IV.A.4 all initiatives dealing with ridesharing, carpooling and vanpooling could be applied to the Honuaula and Kaonoulu Affordable Housing Projects.

**6. Employee Parking**

As mentioned in Section IV.A.5 all initiatives dealing with employee parking could be applied to the Honuaula and Kaonoulu Affordable Housing Projects.

**7. Consolidate Deliveries**

The Kaonoulu Affordable Housing Project will require delivery of all materials necessary for construction of on and offsite improvements. Therefore, to the extent feasible, the TC will schedule deliveries of material during off peak hours of traffic during the course of the construction.

For the Honuaula Project, the number of truck deliveries can be reduced by providing material handling and processing on the Honuaula Project site. For example, these activities could include rock crushing and processing, concrete material storage and batching, and material recycling. Utilizing materials available on-site will reduce the number of deliveries to the project site.

**8. Public Information and Outreach Program**

As mentioned in Section IV.B.3, all initiatives dealing with a public information and outreach program should apply to the Honuaula and Kaonoulu Affordable Housing Projects.



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## V. SUMMARY AND CONCLUSION

### A. Summary for Piilani Highway Widening Project

Implementing and regulating the construction transportation management initiatives should effectively reduce the traffic congestion due to the construction activities for the Piilani Highway Widening Project.

**1. Reduction of Construction Worker Traffic During Peak Hours**

- A TC will need to coordinate with MDOT, the developer, administrators, employees, officials and the general public in order to effectively implement the initiatives and programs.
- The TC will need to coordinate with construction managers and construction workers to make sure employee work shifts occur during off-peak hours to reduce the impacts to the AM and PM peak hours of traffic. Recommended work schedules would be from 6:30 am (prior to the AM peak hour of traffic) and end at 3:30 pm (prior to the PM peak hour of traffic).
- Since the majority of the construction work on Piilani Highway will be completed by one construction company, to the extent possible, construction workers will park their personal vehicles at the contractor's baseyard and carpool to the Honuaula Project site, where construction staging and construction vehicle parking will be located. Construction company vehicles will be used to transport construction workers from the Honuaula Project site to the designated work area along Piilani Highway.
- To ensure rideshare users are not prevented from attending to emergency or unexpected situations off-site, a guaranteed ride home will be provided to accommodate their needs.
- The number of parking spaces will be limited to construction vehicles. Additionally, the TC will monitor surrounding residential areas to ensure construction workers are not parking in these areas.

- The TC will monitor surrounding residential areas to ensure construction workers are not parking in these areas utilizing the following strategies:
    - Busing of employees to the project area. Requiring within the project contract the provision of vanpooling for employees from off site construction facilities and monitoring of activity,
    - Establishment of parking areas within the Honuaula project area for both workers and delivery vehicles,
    - Active policing of worker parking and patrolling of off-site residential areas to ensure construction parking is not taking place outside the construction area,
    - Notify the residents to report construction workers parking in the neighborhood by calling the "hotline".

**2. <u>Reduction of Traffic Delays and Delivery Trucks During Peak Hours</u>**

- Where feasible, all construction materials, equipment and supplies should be consolidated and delivered to the construction site during off-peak hours
- Where feasible, construction material should be handled and processed on-site to reduce the number of delivery trucks traveling to the construction site.
- Due to SDOT regulations, lane closures may only occur between 8:30 a.m. and 3:00 p.m., unless permitted by the District Engineer.
- The TC should implement a public information and outreach program to inform the public of the various construction activities and establish a "hotline" for inquiries, construction activities, and complaints



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**B. Summary for the Honuaula and Kaonoulu Affordable Housing Projects**

Implementing and regulating the construction transportation management initiatives should effectively reduce the traffic congestion due to the construction activities for the Honuaula and Kaonoulu Affordable Housing Projects.

**1. <u>Reduction of Construction Worker Traffic During Peak Hours</u>**

- A TC will need to coordinate with the developer, administrators, employees, officials and the general public in order to effectively implement the initiatives and programs.
- The TC will need to coordinate with construction managers and construction workers to make sure employee work shifts occur during off-peak hours to reduce the impacts to the AM and PM peak hours of traffic.
- Provide incentives for construction employees to participate in ridesharing programs.
- To ensure rideshare users are not restricted to attend an emergency or unexpected situation off-site will be guaranteed a ride home to accommodate their needs.
- The on-site construction worker parking lot should be limited to a set amount of stalls and managed to promote ridesharing and alternative modes of transportation.
- Limit the use of vehicles in the parking lot by putting a parking fee that varies based upon the amount of riders per vehicle.
- Where feasible, existing park-and-ride facilities in Kahului and Maalaea should be used as a staging area for construction workers to meet and carpool and vanpool to the construction site.

**2. Reduction to Traffic Delays and Delivery Trucks During Peak Hours**

- Where feasible, all construction materials, equipment and supplies should be consolidated and delivered to the construction site during off-peak hours
- For the Honuaula Project, construction material handling and processing be processed on site to reduce the number of delivery trucks entering and exiting the site.
- The TC should implement a public information and outreach program to inform the public of the various construction activities and establish a "hotline" for inquiries, construction activities, and complaints.

**C. Monitoring and Evaluation**

The TC will oversee and implement the transportation management initiatives and programs. The TC will have the responsibility to monitor and evaluate the effectiveness of the TMP initiatives to reduce construction generated traffic. The TC will keep records of the number of construction workers on-site as well as the number of vehicles accessing the site during the peak hours of traffic to evaluate the effectiveness of the TMP. All of the construction workforce will be encouraged to actively participate with the TMP programs. Employee feedback will be an important evaluation tool used to determine travel behaviors and successes and failures of the TMP. This can lead to modifications to the TMP initiatives.

**D. Agency Review and Approval**

Based on Zoning Condition No. 28, an annual report will be submitted to the SDOT, DPW, MDOT and Maui County Council to determine the effectiveness of the TMP as it relates to achieving traffic reductions during the AM and PM peak hours of traffic. However, by request of SDOT a semi-annual report of the TMP can be accommodated.

The draft TMP for Construction operations was submitted to the State Department of Transportation (SDOT), the County Department of Public Works (DPW), and the County Department of Transportation (MDOT) on August 28, 2009. Comments letters from the agencies were received dated September 30,



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2009 (SDOT), October 2, 2009 (DPW), and September 3, 2009, June 8, 2010 and October 6, 2010 (MDOT). These comment letters and the response letters to the reviewing agencies are included in the Appendix.

**REFERENCES**

1. Makena Resort Transportation Management Plan for Construction Operations Draft, prepared by Munekiyo, Hiraga, Inc., dated February 2009.

2. Traffic Impact Analysis Report for Kaanapali Ocean Resort, Lot 3, prepared by Austin, Tsutsumi & Association, Inc., dated July 13, 2006.

3. Construction Traffic Management Plan Royal Lahaina Resort Revitalization, prepared by Wilson Okamoto Corporation, dated May 2006.



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# APPENDIX

AGENCY REVIEW COMMENTS AND RESPONSES

LINDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:
HWY-PS
2.3454

September 30, 2009

RECEIVED
OCT 01 2009
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
Honolulu, Hawaii 96817-5031

Ms. Lee H. Yokomizo, P.E.
Traffic Engineer
Austin, Tsutsumi & Associates, Inc.
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031

Dear Ms. Yokomizo:

Subject: Transportation Management Plan (TMP) for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honuaula Project District and

Transportation Management Plan (TMP) for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honuaula Project District; Wailea, Maui

Thank you for your transmittal regarding the subject TMP's. We have the following comments:

GENERAL COMMENTS:

1. We suggest that the TMP include a discussion relating the implementation schedule/timetable or phased development with respective cost/funding to satisfactorily address the TMP goals and objectives.

2. The TMP should be expanded to include a discussion of the factors/criteria to be used in determining a reliable measure of effectiveness in implementing the various transportation management initiatives and programs for the respective projects.

3. We suggest that reporting on the effectiveness of the TMP be done semi-annually rather than annually. We recommend that the traffic monitoring report include discussion/evaluation of additional roadway mitigation measures (especially at major intersections) should implementation of the TMP not provide a satisfactory level of service (LOS) on Piilani Highway during peak hours.



***TMP for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honuaula Project District***

The TMP should incorporate a discussion on ENFORCEMENT, how compliance with Zoning Condition No. 28 will be accomplished that requires a reduction on the dependency on individual vehicular transportation mode. We suggest that the owner's deed/title of each residential dwelling unit/commercial and office space should incorporate these conditions regarding compliance to the TMP's programs, policies and actions.

***TMP for Construction Operations of Honuaula Project District, Piilani Highway Widening Project and Kaonoulu Affordable Housing Project***

Page 3 of the report states that one of the TMP objectives is reducing peak hour trips generated by construction activity to achieve a benchmark of 15 percent overall construction traffic reduction during the peak hours of traffic. This statement is more understandable if it relates to a number of peak hour traffic generated during construction or an equivalent generated (due to construction) traffic level of service (LOS) condition on Piilani Highway during peak hours.

If you have any questions, please contact Ken Tatsuguchi, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

Ken Tatsuguchi
Head Planning Engineer
Highways Division

HONUA'ULA

October 8, 2009

Mr. Ken Tatsuguchi
Head Planning Engineer,
Highways Division
State Department of Transportation
State of Hawaii
869 Punchbowl Street, Room 513
Honolulu, HI 96813

Subject: Transportation Management Plan (TMP) Comments for Construction and Post-Construction Operations: Kaonoulu Affordable Housing, Pi`ilani Highway Widening and Honua`ula Project District; Wailea, Maui

Dear Mr. Tatsuguchi:

Thank you for your comments received by Austin, Tsutsumi & Associates, Inc. (ATA) dated September 30, 2009 (reference HWY-PS 2.3454), , on the above referenced TMP documents submitted to your office for review. We have reviewed the comments provided by your office with ATA's traffic engineers and have the following responses for your consideration:

Comment 1 – All elements of the TMP programs, especially as they relate to construction projects, will be part of the contractual agreements between the landowners/funding partners and the contracting entity. Funding for the specific mitigation programs such as parking regulation, management of construction deliveries/personnel and implementation of park and ride facilities will be the responsibility of the individual contracting entities while enforcement of the programs the responsibility of the landowner/funding partners. At the time construction activities are scheduled for the projects analyzed in the TMP, the State Department of Transportation will be actively involved in the review of permits and plans for construction of the projects and through that oversight have the ability to also ensure the TMP programs are effective and implemented on schedule.

Comment 2 – The Construction TMP will be revised to include a paragraph discussing the criteria that should be used to determine measure of effectiveness. To determine the effectiveness of the measures, the transportation coordinator will keep records of the number of construction workers on-site as well as the number of vehicles accessing the site during the peak hours of traffic. The Conditions of Zoning does not require the Honua`ula Project to submit an annual report for the post construction TMP.

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Comment 3 – Condition 28 does request an annual TMP report to the State Department of Transportation and other governmental agencies. A request to provide semi-annual reporting of the construction TMP could be accommodated should the State of Hawaii, Department of Transportation (HDOT) request such a report. However, if this request is made we would hope that there will be timely reviews and meaningful input provided to assist us in managing the TMP. With regard to traffic mitigation measures, prior to construction of the Honua`ula project, improvements to Pi`ilani Highway and its intersections with Kilohana Drive/Mapu Place, Okolani Drive/Mikioi Street, and Wailea Ike Drive will be implemented as required by the Zoning Conditions and as agreed upon between HDOT and the three major developers in the Wailea Area (Honua`ula, Wailea Resort and Makena Resort). Additionally, the Traffic Impact Analysis Report for the Pi`ilani Highway Widening does not account for implementation of the Post-Construction TMP's for Honua`ula and the Makena Resort which will provide additional peak hour mitigation.

Comment 4 – Your comment regarding the future enforcement of TMP procedures and guidelines with the Honua`ula project is a good one. It is our intent to not only tie the TMP guidelines to any future sale of commercial properties (including multi-family residential properties) so that the guidelines can be handled by future management agencies but also continually encourage the County of Maui to effectively expand their current transit programs into the Wailea and Makena areas of south Maui. Discussions with the County Department of Transportation on the proposed TMP have and will continue to take place through future planning and permitting of the project area and it is expected that as demand and rider-ship continues to increase so will the availability of transit options for the project area.

Comment 5 – At the height of construction for Honua`ula, it has been estimated that there will be approximately 330 construction vehicles and deliveries during the peak hours of traffic. This will result in a reduction of approximately 50 construction vehicles during the peak hours of traffic. This reduction and any anticipated peak hour trips will be achieved through various programs, as stated in the TMP, such as scheduling construction workers and deliveries during off peak hours.

Mr. Tatsuguchi, should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya in the offices of ATA at 533-3646 or me personally in my office at 879-5205.

Sincerely,

Charles Jencks
Owner Representative
Honua `ula Partners, LLC

CHARMAINE TAVARES
Mayor

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

MICHAEL M. MIYAMOTO
Deputy Director

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

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

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

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

RECEIVED
OCT 07 2009
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
Honolulu, Hawaii 96817-5031

October 2, 2009

Mr. Lee H. Yokomizo, P.E.
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031

Dear Mr. Yokomizo:

**SUBJECT: TRANSPORTATION MANAGEMENT PLAN FOR CONSTRUCTION OPERATIONS OF PIILANI HIGHWAY WIDENING PROJECT, KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT**

We reviewed the subject plan and have the following comments:

1. "The TC will monitor surrounding residential areas to ensure workers are not parking off-site and are using parking provided by project."

   Can this actually be enforced? What is the plan?

2. "Typical work days are recommended to be scheduled so workers avoid traveling during peak hours of the day. The TC will enforce the peak hour scheduling restrictions so that construction personnel can cycle on and off the construction site during off-peak hours so that vehicles do not impact the majority of traffic during the AM and PM peak hours of the day."

   For clarity, give example: What would be a recommended schedule so impacts to AM/PM peaks are minimized?

3. "Unless absolutely necessary and for public safety reasons, lane or road closures will occur during off-peak hours in conjunction with SDOT regulations. Providing lane or road closures during off-peak



hours will result in less congestion during peak hours and a reduction in the number of vehicles affected by detours. If lane or road closures do occur, the TC will notify motorists and provide alternate routes to avoid congested roadways. Lane or road closures will be specific to the area of work to reduce the number of roadways affected by the closure. The contractor will follow SDOT and County regulations when utilizing their roadway facilities."

Recommend a number of days advance notice required prior to closing, if needed.

Please call Michael Miyamoto at (808) 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
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TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.

#08-048

October 9, 2009

Mr. Milton M. Arakawa, A.I.C.P.
Director
Department of Public Works
County of Maui
200 South High Street, Room 434
Wailuku, Hawaii 96793

**Subject: Response to Comments on the Transportation Management Plan (TMP) for Construction Operations of Pi`ilani Highway Widening Project, Kaonoulu Affordable Housing Project, and Honua`ula Project District; Wailea, Maui, Hawaii**

Dear Mr. Arakawa:

Thank you for your prompt review and comments (letter dated October 2, 2009) on the above referenced TMP. We have reviewed the comments provided by your office and have the following responses for your consideration:

1) *"The TC will monitor surrounding residential areas to ensure workers are not parking off-site and are using parking provided by project.*

*Can this actually be enforced? What is the plan?"*

The greatest project of concern is the widening of the Piilani Highway when it comes to parking for construction workers. It is certainly Honua`ula LLC's goal to not allow any construction parking in either the Wailea Resort or Maui Meadows communities during the course of construction on that project. Some of the measures to be employed to ensure this is not an issue are as follows:

a. Busing of employees to the project area. Requiring within the project contract the provision of vanpooling for employees from off site construction facilities and monitoring of activity;

b. Establishment of parking areas within the Honua`ula project area for both workers and delivery vehicles;

c. Active policing of worker parking and patrolling of off site residential areas to ensure construction parking is not taking place outside the construction area;

d. Notify the residents to report construction workers parking in the neighborhood by calling the "hotline".

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



Mr. Milton M. Arakawa, A.I.C.P.
Director
Department of Public Works
County of Maui

October 9, 2009

2) *"Typical work days are recommended to be scheduled so workers avoid traveling during peak hours of the day. The TC will enforce the peak hour scheduling restrictions so that construction personnel can cycle on and off the construction site during off-peak hours so that vehicles do not impact the majority of traffic during the AM and PM peak hours of the day.*

*For clarity, give example: What would be a recommended schedule so impact to AM/PM peaks are minimized?"*

Recommended work schedules would be from 6:30 am (prior to the AM peak hour of traffic) and end at 3:30 pm (prior to the PM peak hour of traffic). Through contract provisions, the Contractor and his Subcontractors will be required to restrict access to the construction area outside of the peak hour time frames for arrivals and departures.

3) *"Unless absolutely necessary and for public safety reasons, lane or road closures will occur during off-peak hours in conjunction with SDOT regulations. Providing lane or road closures during off-peak hours will result in less congestion during peak hours and a reduction in the number of vehicles affected by detours. If lane or road closures do occur, the TC will notify motorists and provide alternate routes to avoid congested roadways. Lane or road closures will be specific to the area of work to reduce the number of roadways affected by the closure. The contractor will follow SDOT and County regulations when utilizing their roadway facilities.*

*Recommend a number of days advance notice required prior to closing, if needed."*

The Contractors are required to follow the State Department of Transportation regulations during construction which requires an advance notice of five (5) days prior to lane closures or changes to lane closures. This requirement will also be accommodated within the project contract documents. Additionally, the Contractor will publicize, via website or written notices, construction schedules, roadway use, alternative routes, and alternative modes of transportation via a website or written notices to keep the public up-to-date on the upcoming construction work.

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

Mr. Milton M. Arakawa, A.I.C.P.
Director
Department of Public Works
County of Maui

October 9, 2009

The above responses are meant to address your concerns as stated on the comment letter and responses to your comments will be included in the TMP, as appropriate, and resubmitted. Should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya or myself at (808) 533-3646.

Sincerely,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By
LEE H. YOKOMIZO, P.E.
Traffic Engineer

LHY:mt

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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

September 3, 2009

Mr. Lee Yokomizo
Austin, Tsutsumi & Associates
501 Summer Street, Suite 5212
Honolulu, Hawaii 96817

Subject: Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project

Dear Mr. Yokomizo,

The County Department of Transportation is concerned with the assumptions made on page 9 of the abovementioned plan.

There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.

The proposed Transportation management strategy, however infers that the Maui Bus system will expand the existing system to accommodate the housing development.

Thank you for the opportunity to comment on the project. Please feel free to contact me if you have any questions.

Sincerely,

Don Medeiros
Director

## Lee H. Yokomizo

**From:** Don Medeiros [Don.Medeiros@co.maui.hi.us]
**Sent:** Monday, October 19, 2009 9:41 AM
**To:** Lee H. Yokomizo
**Subject:** RE: Construction and Post-Construction TMP for Honuaula

Good Morning Lee,

Although the letter addresses only the Affordable Housing Project. We do have the same concerns with the statements made on page 20 of the Project District document.

Don

>>> "Lee H. Yokomizo" <lyokomizo@atahawaii.com> 10/19/2009 9:22 AM >>>
Hi Don,

Our TMP for Post-Construction Operations addressed Kaonoulu Affordable Housing Project as well as the Honuaula Project District. Does this letter apply to both? Just verifying because the subject of the letter addresses Kaonoulu Affordable Housing Project but not the Honuaula Project.

Thanks!
Lee

-----Original Message-----
From: Don Medeiros [mailto:Don.Medeiros@co.maui.hi.us]
Sent: Monday, October 19, 2009 7:24 AM
To: Lee H. Yokomizo
Subject: RE: Construction and Post-Construction TMP for Honuaula

Good Morning Lee,

Please see the attached that was sent to you last month.

Mahalo,

Don Medeiros
Director
County of Maui
Department of Transportation
2145 Kaohu Street, Suite 102
Wailuku, HI. 96793

Phone: (808) 270-7511
Fax (808) 270-7505

>>> "Lee H. Yokomizo" <lyokomizo@atahawaii.com> 10/16/2009 1:10 PM >>>
Hi Don,

See attached pdf's for both TMP's for Honuaula project both dated August 27, 2009. The transmittal is dated August 28, 2009.

Thanks!
Lee

-----Original Message-----
From: Don Medeiros [mailto:Don.Medeiros@co.maui.hi.us]
Sent: Friday, October 16, 2009 11:43 AM
To: Lee H. Yokomizo
Subject: Re: Construction and Post-Construction TMP for Honuaula

Good Morning Lee,



AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.

#08-048

October 20, 2009

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

Dear Mr. Medeiros:

**Subject: Response to Comments for Transportation Management Plan (TMP) for Construction Operations of Piilani Highway Widening, Kaonoulu Affordable Housing Project and Honua`ula Project District; Wailea, Maui, Hawaii**

Thank you for your prompt review and comments (letter September 3, 2009 with follow up email dated October 19, 2009) on the above referenced TMP. We have reviewed the comments provided by your office and have the following response for your consideration.

*Comment:*
*"The County Department of Transportation is concerned with the assumptions made on page 9 of the Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honuaula Project District.*

*There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.*

*The proposed Transportation management strategy, however infers that the Maui Bus system will expand the existing system to accommodate the housing development.*

*Same concerns with the statements made on page 20 for the Honuaula Project (In regards to the subject project."*

Response:
Currently, the existing Maui Bus Haiku-Wailea Commuter route runs along Pi`ilani Highway. At the time of construction, if feasible, the developer and the County of Maui Department of Transportation could look into providing additional stops along the Haiku-Wailea Commuter route at the Kaonoulu Affordable Housing Project site and the Honua`ula Project site.

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

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

Mr. Don Medeiros
Director
Department of Transportation
County of Maui

October 20, 2009

The above responses are meant to address your concerns as stated on the comment letter. Should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya or myself at (808) 533-3646.

Very truly yours,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By
LEE H. YOKOMIZO, P.E.
Traffic Engineer

LHY:mt

Z:\2008\08-048\Honua'ula\Corresp\COM DOT -Resp to Comments -Post Constr Op 102009.doc



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

October 6, 2010

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

The County Department of Transpiration has reviewed the attached letter dated September 13, 2010, from Mr. Charles Jencks, Owner Representative, Honua'ula Partners, LLC. Based on our review, we grant preliminary approval of the plans below.

- Transportation Management Plan for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District; and

- Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honu'aula Project District.

For final approval, please revise the subject plans to incorporate the conditions that were stated in your letter dated August 26, 2010, that Honua'ula Partners, LLC will:

1. Design, finance, and construct a bus stop and park and ride facility within the Honua'ula Property; the parks and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekends and nights;

2. Design, finance, and construct a bus stop to serve the Ka'ono'ulu project; and

3. Appoint a Transportation Coordinator of designated representative to work with the County Department of Transportation to effectuate the recommendations. This is discussed in Section 4.4.5 (Transportation Management) of the [draft] EIS.

Feel free to grammatically insert the conditions as you see fit. Please contact us at 270-7511 if we may be of any assistance or clarification.

The County Department of Transportation looks forward to working with you on this matter. Thank you for your cooperation.

Sincerely,

DON MEDEIROS
Director of Transportation

cc: Mayor
Director of Public Works
Planning Director
Director of Transportation, State of Hawaii

Attachment

S:\WAB\LTRdongen100610

HONUA'ULA

September 13, 2010

Mr. Don Medeiros, Director
Department of Transportation,
County of Maui
200 South High Street
Wailuku, HI 96753

Subject: Transportation Management Plans

Dear Mr. Medeiros:
The attached letter from your office dated June 8, 2010 highlights conditions you wish to have addressed and incorporated into the design of Honua`ula as a result of your review of the subject transportation management plans developed for the project. In response to your letter of June 8, 2010, PBR Hawaii sent you a response date August 26, 2010 stating that the Honua`ula project will address each of your conditions by incorporating same into the project.

In order for PBR Hawaii to complete the responses to the draft project EIS it is important to have a response from your office accepting our proposal to comply with your requests and therefore approving the subject TMP documents. I would appreciate your sending a letter to Mr. Tom Schnell at PBR addressing this request and by doing so helping Mr. Schnell complete this portion of the work on the draft EIS document.

Thank you in advance for your consideration of my request. Should you have any questions please do not hesitate to contact me in my office at 879-5205, on my cell phone at 250-3178 or via email at charliej@pacificrimland.com.

Sincerely,

Charles Jencks
Owner Representative
Honua `ula Partners, LLC

Attachments

RECEIVED
9/17/10
DOT

1300 N. Holopono Street, Suite 201 • P.O. Box 220 • Kihei, Hawai'i 96753 • p: 808-879-5205 • f: 808-879-2557

PBR HAWAII
& ASSOCIATES, INC.

PRINCIPALS
THOMAS S. WITTEN, ASLA
*President*
R. STAN DUNCAN, ASLA
*Executive Vice-President*
RUSSELL Y. J. CHUNG, FASLA, LEED® AP
*Executive Vice-President*
VINCENT SHIGEKUNI
*Vice-President*
GRANT T. MURAKAMI, AICP, LEED® AP
*Principal*
W. FRANK BRANDT, FASLA
*Chairman Emeritus*

ASSOCIATES
TOM SCHNELL, AICP
*Senior Associate*
RAYMOND T. HIGA, ASLA
*Senior Associate*
KEVIN K. NISHIKAWA, ASLA
*Associate*
KIMI MIKAMI YUEN, LEED® AP
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SCOTT ALIKA ABRIGO, LEED® AP
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*Associate*
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KAPOLEI OFFICE
1001 Kamokila Boulevard
Kapolei Building, Suite 313
Kapolei, Hawai'i 96707-2005
Tel: (808) 521-5631
Fax: (808) 535-3163

August 26, 2010

Don Medeiros
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793-2155

**SUBJECT: HONUA'ULA DRAFT ENVIRONMENTAL IMPACT STATEMENT AND PROJECT DISTRICT PHASE II APPLICATION**

Dear Mr. Medeiros:

Thank you for your letter addressed to Charles Jencks dated June 8, 2010 regarding the Honua'ula Transportation Management Plans (TMPs) for Construction and Post-Construction operations. We have also received the transmittal from your Department to Ann Cua of the Maui Planning Department dated June 23, 2010 regarding the Honua'ula Draft Environmental Impact Statement (EIS) and Project District Phase II application. As the planning consultant for the landowner, Honua'ula Partners, LLC, we are responding to your comments.

We have reviewed the conditions of approval for the TMPs and Honua'ula Partners, LLC will comply with your recommendations, specifically Honua'ula Partners, LLC will:

1. Design, finance, and construct a bus stop and park and ride facility within the Honua'ula Property; the park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekend and nights;

2. Design, finance, and construct a bus stop to serve the Ka'ono'ulu project; and

3. Appoint a Transportation Coordinator or designated representative to work with the County Department of Transportation to effectuate the recommendations. This is discussed in Section 4.4.5 (Transportation Management) of the Draft EIS.





To include the above information regarding the bus stop and park and ride facility within Honua'ula in the Final EIS, in the Final EIS Section 4.4.5 (Transportation Management) will be revised as follows:

> **Coordinate Expansion of the Maui Bus** – For travel outside of the Kīhei-Mākena region, the Transportation Coordinator will coordinate with the Maui Department of Transportation to identify opportunities for expansion of bus service to Honua'ula. A bus stop will be provided within Honua'ula; ideally this bus stop would be located within the ~~Village Mixed Use area~~ VMX Town Center near the intersection of Pi'ilani Highway and Wailea Ike Drive. A park and ride facility ~~could~~ will also be located in this area. The park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekend and nights.

Thank you for reviewing the TMPs and Draft EIS. Your letter will be included in the Final EIS.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Kathleen Aoki, Maui Planning Department
Charles Jencks, Honua'ula Partners, LLC

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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

June 8, 2010

Mr. Charles Jencks
c/o Goodfellow Brothers, Inc.
P.O. Box 220
Kihei, Hawaii 96753

Dear Mr. Jencks:

By transmittal dated October 29, 2009 (and verbal communication) you requested approval of the following:

- Transportation Management Plan for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District; and
- Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honu'aula Project District.

Although the above-mentioned plans have not yet been approved, the County Department of Transportation (DOT) takes this opportunity to thank you for continuing to work with us on this matter.

We note that your request for approval is due to Condition No. 28, Zoning Ordinance No. 3554 (2008) relating to the establishment of the Kihei-Makena Project District 9, Wailea 670, which states:

> "That, prior to the commencement of any construction activity, Honua'ula Partners, LLC, its successors and permitted assigns, shall develop a Transportation Management Plan ("TMP"), to be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation. The purpose of the TMP shall be to reduce traffic generated by construction activity related to the Kaonoulu Light Industrial Subdivision and Kihei-Makena Project District 9, including traffic generated by improvements to Pi'ilani Highway between Kilohana Drive and Wailea Ike Drive. The TMP shall provide for programs such as park and ride, shuttles, and/or restrictions on worker access to ongoing construction activity during peak



> hour traffic. Upon approval, project contractors shall implement the TMP during construction activities. Honua'ula Partners, LLC, its successors and permitted assigns, shall submit an annual report to the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation, and the Maui County Council to document the success of the TMP in meeting its benchmarks of reducing traffic during project construction.
>
> That as part of the Project District Phase II application, Honua'ula Partners, LLC, its successors and permitted assigns, shall submit a TMP to reduce dependency on individual vehicle transportation modes. The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation prior to Project District Phase II approval."

By letter dated September 3, 2009, with follow up email dated October 19, 2009, the County DOT expressed concern with the TMPs, and made the following comments:

> "The County Department of Transportation is concerned with the assumptions made on page 9 of the abovementioned plan.
>
> There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.
>
> The proposed Transportation management strategy, however, infers that the Maui Bus system will expand the existing system to accommodate the housing development.
>
> We do have the same concerns with the statements made on page 20 of Project District document."

By letters dated October 9, 2009, Austin, Tsutsumi & Associates provided the following response to the County Department of Public Works, regarding mass transit serving the project sites:

> "The project team has met with the Maui Department of Transportation and discussed both the current and future transportation system in Maui County. Future expansion of the existing system will be dependent upon funding and ridership. It is hoped that as both the Kaonoulu Affordable housing and Honua'ula [develop], the system will be able to accommodate the needs of future residents in those areas."

By letters dated October 20, 2009, Austin, Tsutsumi & Associates provided the following response to the County DOT, regarding mass transit serving the project sites:

"Currently, the existing Maui Bus Haiku-Wailea Commuter route runs along Pi'ilani Highway. At the time of construction, if feasible, the developer and the County of Maui Department of Transportation could look into providing additional stops along the Haiku-Wailea Commuter route at the Kaonolulu Affordable Housing Project site and the Honua'ula Project site."

Finally, the TMPs and draft Honua'ula Environmental Impact Statement make reference to a "Transportation Coordinator," hired and provided by the developer, whose duties include:

"Coordinate with the Maui Department of Transportation to identify opportunities for expansion of bus service to Honua'ula. A bus stop within Honua'ula ideally located within the Village Mixed Use area near the intersection on Pi'ilani Highway and Wailea Ike Drive. A park and ride facility could also be located in this area."

Therefore, as conditions of approval of the TMPs, the County DOT RECOMMEDS that:

1. the Honua'ula Partners, LLC, its successors and permitted assigns, shall design, finance, and construct a bus stop and park and ride facility within the Honua'ula project;

2. the Honua'ula Partners, LLC, its successors and permitted assigns, shall design, finance, and construct a bus stop to serve the Kaonoulu project; and

3. the Honua'ula Partners, LLC, its successors and permitted assigns, shall appoint a Transportation Coordinator or designated representative to work with the County Department of Transportation to effectuate the recommendations herein.

Thank you for your cooperation and assistance. The County Department of Transportation looks forward to working with you on this matter for the long term benefit of mass transit in your project areas.

Sincerely,

DON MEDEIROS
Director of Transportation

xc: Mayor
Managing Director
Director of Public Works
Director of Transportation, State of Hawaii

S:\WAB\LTRdongen060810

# Transportation Management Plan – Permanent

# TRANSPORTATION MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

WAILEA, MAUI, HAWAII

**FINAL**

October 27, 2009
Revised November 2, 2010

Prepared for:

Honua'ula Partners LLC
381 Huku Li'i Place, Suite 202
Kihei, Hawaii 96753

*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

**TRANSPORTATION MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT**

Wailea, Maui, Hawaii

**FINAL**

Prepared for

**Honua'ula Partners LLC**

Prepared by
**Austin, Tsutsumi & Associates, Inc.**
Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

October 27, 2009
Revised November 2, 2010

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AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

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AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

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**AGENCY REVIEW COMMENTS AND RESPONSES**

AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
ADRIENNE W. L. H. WONG, P.E., LEED AP

# TRANSPORTATION MANAGEMENT PLAN
# FOR
# POST-CONSTRUCTION OPERATIONS OF
# KAONOULU AFFORDABLE HOUSING PROJECT
# AND HONUAULA PROJECT DISTRICT
# Kihei, Maui, Hawaii

## I. INTRODUCTION

This Transportation Management Plan (TMP) proposes transportation management strategies to reduce the dependency on individual vehicular transportation modes from the Honuaula (formally known as Wailea 670) Project and the Kaonoulu Affordable Housing Project in the Kihei-Wailea region of Maui. Figure 1 shows the location of both projects.

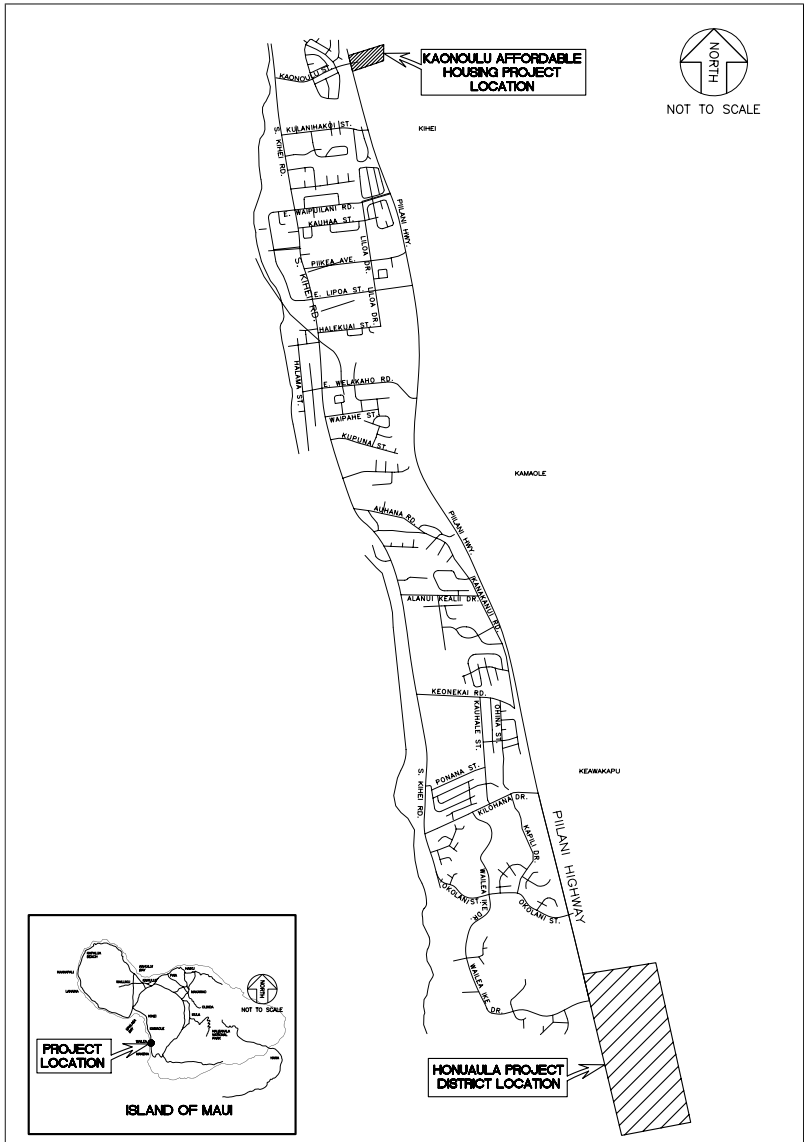
### A. Goals & Objectives

The following Zoning Condition No. 28 of the Honuaula Project is as follows:

> *"That as part of the Project District Phase II application, Honuaula Partners, LLC, its successors and permitted assigns, shall submit a TMP to reduce the dependency on individual vehicular transportation modes. The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation prior to Project District Phase II approval."*

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




TRAFFIC MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS,SURVEYORS • HONOLULU,HAWAII

PROJECT LOCATIONS

FIGURE 1

Compliance with Zoning Condition No. 28 will be achieved through implementation of specific transportation, parking, and management policies and practices geared towards consolidating and reducing vehicle trips generated by the Kaonoulu Affordable Housing and Honuaula Projects. This management plan will utilize the following goals and objectives in achieving the desired mitigation:

- Establish connectivity for a walkable and bicycle friendly community.
- Develop a mixed use community.
- Develop alternative transportation programs.

The draft TMP for Post-Construction operations was submitted to the State Department of Transportation (SDOT), the County Department of Public Works (DPW), and the County Department of Transportation (MDOT) on August 28, 2009. Comments letters from the agencies were received dated September 30, 2009 (SDOT), October 2, 2009 (DPW), and September 3, 2009, June 8, 2010 and October 6, 2010 (MDOT). These comment letters and the response letters to the reviewing agencies are included in Appendix A.

**B. Regional Location and Access**

Roadway System

The following are brief descriptions of the existing roadway network in the vicinity of the Projects:

Piilani Highway - is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Piilani Highway begins at its intersection with South/North Kihei Road and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway further south. Left-turn storage lanes are generally provided at major intersections on Piilani Highway. The posted speed limit on Piilani Highway is generally 40 miles per hour (mph). The speed limit on Piilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.



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Kilohana Drive - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Piilani Highway. Kilohana Drive intersects Piilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. The posted speed limit on Kilohana Drive is 25 mph.

Mapu Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway, across Kilohana Drive, to Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

Okolani Drive - is a four-lane, divided, east/west roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided roadway east of Wailea Alanui Drive to its intersection with Piilani Highway directly across of Mikioi Place. The posted speed limit on Okolani Drive is 30 mph.

Mikioi Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway, across Okolani Drive, to Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

Wailea Ike Drive is a four-lane, divided north-south roadway that is striped as a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main access and entry point to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. It is a divided roadway with a relatively steep grade and a posted speed limit of 30 mph.

Figure 1 shows the roadway system in the vicinity of the Projects.

**C. Approach and Methodology**

The approach and methodology for developing this TMP is based upon the following tasks and steps for each of the projects referenced above:

- Reduce the need for residents and employees of commercial spaces to use vehicles by encouraging walking, biking and use of mass transit operations, where available.
- Provide alternative modes of transportation and develop programs, policies and actions that will positively address and mitigate the impact on the surrounding roadways.

- Appoint a Transportation Coordinator (TC) or designated representative to work with MDOT to monitor the TMP program approach and implement modifications to the program to address the needs and wants of residents and employees.

## II. PROJECT OVERVIEW

### A. Project Descriptions

The following describes the Honuaula and Kaonoulu Affordable Housing Project site developments:

**1. <u>Kaonoulu Affordable Housing</u>**

The Kaonoulu Affordable Housing Project site is located on a 13 acre parcel located within the light industrial project with frontage on the proposed Kihei/Upcountry highway. The Kaonoulu Affordable Housing Project will construct 125 affordable rental and 125 owner occupied affordable housing units in a series of three story structures along with parking and a 2 acre park for the residents on the east side of Piilani Highway with access off of its intersection with Kaonoulu Street.

Figure 2 shows the conceptual site plan for the Kaonoulu Affordable Housing.






TRAFFIC MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS/SURVEYORS HONOLULU, HAWAII

KAONOULU AFFORDABLE HOUSING PROJECT SITE PLAN

FIGURE 2

**2. Honuaula**

The original plan for the Honuaula Project included more than 2,000 new single-family and multi-family residential units, two 18-hole golf courses and a commercial district. The Honuaula Project has since been scaled down and modified. The Honuaula Project currently proposes 1,150 new single-family and multi-family residential units of which, 450 will be affordable, an 18-hole private homeowner golf course and 100,000 square feet of commercial and office space. The following are the development phases for the Honuaula Project:

Honuaula Project Phase I (Year 2016)

By Year 2016, the Honuaula Project proposes to construct 26,000 square feet of Office Space, 74,000 square feet of Commercial Space, and 400 residential units, with 75 units being affordable. With Phase I of the Project, the east leg of the Piilani Highway/Wailea Ike Drive intersection will be constructed and Kaukahi Street will be extended into the Project.

Honuaula Project Phase II (Year 2018)

By Year 2018, the Honuaula Project proposes to construct an additional 400 residential units, with half being affordable. With Phase II of the Project, Piilani Highway will be extended, forming the south leg of the Piilani Highway/Wailea Ike Drive intersection and extending to the Kaukahi Street extension.

Honuaula Project Phase III (Year 2022)

By Year 2022, the Honuaula Project proposes to construct the final 350 residential units, with 175 being affordable.

Figure 3 shows the conceptual site plan for the Honuaula Project.



TRAFFIC MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT

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ENGINEERS, SURVEYORS
HONOLULU, HAWAII

HONUAULA PROJECT SITE PLAN

FIGURE 3



**B. Smart Growth Principles**

One of the key elements of smart growth is balancing development with transportation needs. Smart growth offers new approaches to transportation planning, by better coordinating land use and transportation, increasing transit services, promoting connectivity of road networks, pedestrian, bicycle, transit and road facilities and promoting multi modal transportation systems. Section IV of this TMP addresses some of the techniques and principles of smart growth that will encourage residents of the Honuaula and Kaonoulu Affordable Housing Projects to utilize alternative modes of transportation. The TMP also addresses initiatives of smart growth that will encourage employees of the Honuaula Project to utilize alternative modes of transportation.

## III. PROJECT SPECIFIC TRANSPORTATION MANAGEMENT INITIATIVES AND PROGRAMS

**A. Residents of Kaonoulu Affordable Housing Project**

The following are the proposed TMP strategies to provide an opportunity to the residents of the Kaonoulu Affordable Housing Project to utilize alternative modes of transportation:

**1. <u>Transportation Coordinator (TC)</u>**

A Transportation Coordinator (TC) will be appointed by Honuaula Partners LLC to work with MDOT to oversee, administer and report the progress of this TMP. The following are examples of the TC's duties to encourage and provide an opportunity for the residents of the Kaonoulu Affordable Housing Project to utilize alternative modes of transportation:

- Coordinate with the Maui Bus Service to expand the existing system to the vicinity of the Kaonoulu Affordable Housing Project.
- Coordinate with MDOT to develop a bus shelter in close proximity to the Kaonoulu Affordable Housing Project.



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**2. <u>Coordinate Expansion of the Sub-Regional Shuttle System</u>**

As mentioned above, for travel outside of the Kihei-Makena region, the TC will coordinate with MDOT to identify opportunities for expansion of bus service to the Kaonoulu Affordable Housing Project. Currently, the Maui Bus runs a few routes connecting the Wailea Makena Region to other regions on the Island of Maui. The Kihei Islander Route runs along South Kihei Road with its last stop on Wailea Ike Drive and the Haiku-Wailea Commuter route runs along Piilani Highway with its last stop in Makena. Changes to the existing bus plan could include increasing the frequency, service and number of bus stop locations. Currently there is only one bus stop in the proximity of the Kaonoulu Affordable Housing Project, located near the Kaonoulu Street/South Kihei Road intersection. Provisions for expansion of bus service by MDOT will give residents of the Kaonoulu Affordable Housing Project another option for travel outside of their development.

In addition to the Kaonoulu Affordable Housing Project, other developments are proposed on the mauka side of Piilani Highway, such as, A&B's North Kihei Residential Subdivision, Ohukai Villages, Kaonoulu Light Industrial Park/Village, Waiohuli Village, Kamaole Villages, etc. According to the County of Maui Long Range Planning Division, as of July 2008, approximately 7,156 single-family units and 2,254 multi-family units are either planned or proposed on the mauka side of Piilani Highway in South Maui. Therefore, in light of these proposed projects on the mauka side of Piilani Highway, it would be beneficial for the residents and County to provide a future bus route along Piilani Highway. When the projects near completion, Honuaula Partners LLC will design, finance and construct a bus stop to serve the Kaonoulu Affordable Housing Project and proposed light industrial area.

**B. Residents of the Honuaula Project**

With 1,150 new residential units proposed, much of the traffic generated by the Honuaula development will be residential traffic. The following are the proposed TMP strategies to encourage and provide an opportunity for the residents of the Honuaula Project to utilize alternative modes of transportation:

**1. Transportation Coordinator (TC)**

A Transportation Coordinator (TC) will be appointed by Honuaula Partners LLC and work with MDOT to oversee, administer and report the progress of this TMP. The following are examples of the TC's duties to encourage and provide an opportunity for the residents of the Honuaula Project to utilize alternative modes of transportation:

- Monitor and obtain feedback from residents on the frequency and usage of Honuaula's neighborhood business centers and mixed-use developments to evaluate the effectiveness in keeping Honuaula residential trips internal to the development.
- Encourage walking and biking within the Honuaula Project and promote multi-modal transportation outside of the development.
- Coordinate with MDOT to identify opportunities for expansion of bus service to the Honuaula Project.
- Coordinate with MDOT to construct a bus stop and park and ride facility within the Honuaula property in close proximity to commercial areas.

**2. Honuaula Project Mixed Land Uses**

One of the core smart growth principles involves integration of mixed land uses within a community. The current master plan for the Honuaula Project proposes to construct recreational areas, open space buffers, and small-scale neighborhoods that will promote walking and biking within the neighborhood. Neighborhood business centers and mixed-use developments will be located adjacent to single-family and



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multi-family lots. This reduces the walking and biking distances between residential lots and commercial services and allows for more trips by walking or biking. The integration of commercial and office land uses in the Honuaula Project will allow residents to remain in the development instead of making unnecessary trips outside of the development.

**3. Encourage the Development of a Walking/Biking Neighborhood**

The smart growth concept promotes connectivity of roadways and pathways that accommodates pedestrians and bicyclists. The Honuaula Project proposes to integrate this technique into the design of the development. Streetscape includes safe and accessible walkways, bicycle lanes and bicycle racks that will be used for temporary storage. The commercial and recreational facilities are strategically placed within the development to provide a maximum of ½ mile of walking and biking distance from residential areas to encourage use of pedestrian facilities within the development. The Honuaula Project is proposing to provide six to ten foot wide sidewalks for walking and biking purposes with landscaping buffers along residential and collector roadways within the development.

For travel beyond the Honuaula Project, a designated bus stop within walking or biking distance will be implemented in the neighborhood to promote multi-modal transportation. To facilitate bikers, bus stops should provide bike-racks for storage and the existing Maui Bus buses have mounted bike-racks.

**4. Coordinate Expansion of the Sub-Regional Shuttle System**

The TC will coordinate with the Wailea Resort Shuttle and Makena Resort Shuttle to identify opportunities for expansion of shuttle service to include the Honuaula Project. Akina Aloha Tours currently operates the Wailea Resort Shuttle that cycles every half an hour and runs daily from 6:38 a.m. to 5.57 p.m. Stops are made at the Grand Wailea Resort Lobby, Four Seasons Resort Maui Lobby, Wailea Gold & Emerald Golf Courses and the Wailea Tennis Club, in addition to requests for pick-up at the Shops at Wailea. The Wailea Tennis Club is the nearest shuttle stop

location to the Honuaula Project, located on Wailea Ike Place, north of Wailea Ike Drive.

For travel outside of the Kihei-Makena region, the TC will coordinate with MDOT to identify opportunities for expansion of bus service to include stops at the Honuaula Project. Currently, the Maui Bus runs a few routes connecting the Wailea Makena Region to other regions on the Island of Maui. The Kihei Islander Route runs along South Kihei Road with its last stop on Wailea Ike Drive and the Haiku-Wailea Commuter route runs along Piilani Highway with its last stop in Makena. Changes to the existing bus plan could include increasing the frequency, service and number of bus stop locations in the Kihei-Makena region. Currently there is only one bus stop in the proximity of the Honuaula Project, located on Wailea Ike Drive near Wailea Alanui Drive. Provisions for expansion of bus service by MDOT will give residents of the Honuaula Project another option for travel outside of their development without the use of their personal vehicles.

Honuaula Partners LLC will design, finance and construct a bus stop and park and ride facility within the Honuaula property. Ideally this bus stop would be located within the Village Mixed Use (VMX) Town Center near the intersection of Piilani Highway and Wailea Ike Drive. The proposed bus stop will be centrally located within a ¼ mile of the affordable housing units, since they typically provide high ridership on bus and shuttle services. Locating the bus stop within a ¼ mile of the affordable housing units will encourage the use of pedestrian facilities within the development. The park and ride facility will also be located in this area, to facilitate travel outside of the Honuaula Project and encourage multi-modal transportation. The park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekends and nights.



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The Honuaula Project is on a 13-year track to completion. In addition, other developments are proposed on the mauka side of Piilani Highway, such as, A&B's North Kihei Residential Subdivision, Ohukai Villages, Kaonoulu Light Industrial Park/Village, Waiohuli Village, Kamaole Villages, etc. According to the County of Maui Long Range Planning Division, as of July 2008, approximately 7,156 single-family units and 2,254 multi-family units are either planned or proposed on the mauka side of Piilani Highway in South Maui. Therefore, in light of these proposed projects on the mauka side of Piilani Highway, it would be beneficial for the residents and County to provide a future bus route along Piilani Highway. When the Honuaula Project nears completion, Honuaula Partners LLC will design, finance and construct the bus stop and park and ride facility, serving the Honuaula Project District area.

**C. Employees of the Honuaula Project's Commercial and Office Space**

The 100,000 square feet of commercial and office space proposed to be constructed in the Honuaula Project is expected to generate employee traffic. The following are the proposed TMP strategies to encourage and provide an opportunity for the employees of the commercial and office space to utilize alternative modes of transportation:

**1. <u>Transportation Coordinator (TC)</u>**

The following examples of the TC's duties to encourage and provide an opportunity for the employees of the commercial and office space to utilize alternative modes of transportation:

- Encourage business owners to implement flexible or staggered work shifts for employees to manage traffic impacts during peak hours of the day.
- Encourage business owners to provide incentives for employees who participate in ridesharing, carpooling and use of the Maui Bus.

- Manage the commercial and office space parking lots to encourage ridesharing and alternative modes of transportation.

**2. Active Retail/Commercial Participation**

To reduce individual commuter trips generated by employees of the commercial and office space, the TC's responsibilities will include recommending policies that work to integrate transportation management initiatives and provide incentives for employers who use alternative modes of transportation.

**3. Schedule Off-Peak Work**

To manage commercial and office employee commuter trips within the Honuaula Project, the TC will encourage employers to consider offering flexible work schedules to their employees to avoid travel during the peak hours of the day. For example, the employer may schedule an earlier start time from 7:00 a.m. to 3:30 p.m. workday or later start time from 9:00 a.m. to 5:30 p.m., to encourage employees to avoid traveling on the roadways during AM and PM peak hours of traffic. Staggering work shifts would allow a portion of employees to start work early while another group starts work later. This could provide companies additional coverage for an entire workday using the same total number of employees.

**4. Encourage Ridesharing/Carpooling/Vanpooling/Transit**

The TC will encourage employers to consider various measures and incentives for employees who rideshare, carpool and/or vanpool. Examples of such incentives include cash incentives and subsidies, which are commonly equal to a monthly bus pass fee, discounted/free bus passes, discounted/free parking spots for employees, or fuel costs for the carpool/rideshare vehicle. The TC will suggest to employers that cash disbursements be prorated based on the frequency each employee rideshares within a month in order to encourage frequent use of ridesharing.



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**5. Coordinate Expansion of the Sub-Regional Shuttle System**

The TC will coordinate with the Wailea Resort Shuttle and Makena Resort Shuttle to identify opportunities for expansion of shuttle service to the Honuaula Project. Employees who live in the Wailea and Makena area will strongly be encouraged to utilize the shuttles for transport to and from the Honuaula Project.

The TC will coordinate with MDOT to identify opportunities for expansion of bus service to the Honuaula Project for employees who live outside the Wailea-Makena region. Currently, the only bus route that extends to the Wailea-Makena region is the Haiku-Wailea Commuter Bus that travels along Wailea Alanui Drive and stops at Wailea Hotels. To facilitate travel for employees who reside in Central, East and Upcountry Maui areas, employees could utilize the existing park-and-ride facilities. The Kuihelani Highway park-and-ride lot is currently a stop location along the Haiku-Wailea Commuter Route with stop times occurring at 6:10 a.m. and 5:25 p.m. The existing Maalaea park-and-ride facility is currently not used as a bus stop on any Maui Bus routes, but could be a useful stop location for employees from the West Maui area.

Honuaula Partners LLC will design, finance and construct a bus stop and park and ride facility within the Honuaula property. Ideally this bus stop would be located within the VMX Town Center near the intersection of Piilani Highway and Wailea Ike Drive. The park and ride facility will also be located in this area, to facilitate travel outside of the Honuaula Project and encourage multi-modal transportation. The park and ride facility is envisioned as an overflow parking area in the Village Mixed Use (VMX) Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekends and nights.

As mentioned in Section III.B.4., with the number of proposed developments on the mauka side of Piilani Highway, a future bus route along Piilani Highway would be beneficial for the residents and County. Therefore, when the Honuaula Project nears completion, Honuaula

Partners LLC will design, finance and construct the bus stop and park and ride facility, serving the Honuaula Project District area.

**6. <u>Parking Management Program</u>**

The parking facilities should be managed and regulated in a way to encourage efficient use of parking and promote ridesharing and alternative modes of transportation. Examples of which include:

- A portion of on-site parking stalls at each commercial parking lot should be allotted for ridesharing vehicles.
- Ridesharing vehicles should be given parking passes to regulate vehicles permitted to park in ridesharing stalls.

## IV. SUMMARY AND CONCLUSION

Implementation of the proposed initiatives and programs discussed in this TMP is aimed to reduce the dependency on individual vehicular transportation modes. These initiatives and programs will encourage and provide opportunities for residents of the Kaonoulu Affordable Housing and the Honuaula Projects and employees of the commercial areas the use of alternative modes of transportation.

### A. Summary for Transportation Management Initiatives and Programs for Residents of the Kaonoulu Affordable Housing Project

- The TC will coordinate with MDOT to identify opportunities for expansion of bus service to include stops in the vicinity of the Kaonoulu Affordable Housing Project, for service outside the Kihei-Makena region.
- Honuaula Partners LLC will design, finance and construct a bus stop to serve the Kaonoulu Affordable Housing Project and proposed light industrial area.

### B. Summary for Transportation Management Initiatives and Programs for Residents of the Honuaula Project

- Mixed-use developments will be located adjacent to residential lots to promote walking or biking and allow residents to remain within the Honuaula Project instead of making unnecessary trips outside of the development.



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- The Honuaula Project will provide safe, accessible and connective pathways that will encourage walking and biking within their communities.
- The TC will coordinate with the Wailea Resort Shuttle and Makena Resort Shuttle to identify opportunities for expansion of shuttle service to include stops at the Honuaula Project, for service within the Kihei-Makena region.
- The TC will coordinate with MDOT to identify opportunities for expansion of bus service to include stops at the Honuaula Project, for service outside the Kihei-Makena region.
- Honuaula Partners LLC will design, finance and construct a bus stop and park and ride facility within the Honuaula property to serve residents, customers and employees of the Honuaula Project.

### C. Summary for Transportation Management Initiatives and Programs for Commercial Space Employees of the Honuaula Project

- The TC will promote policies that require employers to implement TMP initiatives to their employees.
- The TC will coordinate with employers to encourage the use of flexible or compressed work schedules to their employees to avoid travel during the peak hours of the day.
- The TC will coordinate with employers to encourage ridesharing, carpooling, and vanpooling as a means of transportation for their employees and suggest providing incentives to promote frequent use of ridesharing. Examples of such incentives include cash incentives and subsidies, which are commonly equal to a monthly bus pass fee, discounted/free bus passes, discounted/free parking spots for employees, or fuel costs for the carpool/rideshare vehicle.
- Honuaula Partners LLC will design, finance and construct a bus stop and park and ride facility within the Honuaula property. The park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekends and nights.

- TC will manage the commercial parking lots to encourage ridesharing and alternative modes of transportation.

**D. Monitoring and Evaluation**

Once the TMP is implemented, the initiatives and programs should be monitored and evaluated periodically by the TC to determine their effectiveness in reducing traffic generated. All residents and employees will be encouraged to actively participate with the TMP programs. Residential and employee feedback will be an important evaluation tool used to determine travel behaviors and successes and failures of the TMP. This can lead to modifications to TMP initiatives.

**E. Agency Review and Approval**

Based on Zoning Condition No. 28, Honuaula Partners, LLC will submit this TMP to the State Department of Transportation (SDOT), the County Department of Public Works (DPW), and the County Department of Transportation (MDOT) for review and approval.

The draft TMP for Post-Construction operations was submitted to the State Department of Transportation (SDOT), the County Department of Public Works (DPW), and the County Department of Transportation (MDOT) on August 28, 2009. Comments letters from the agencies were received dated September 30, 2009 (SDOT), October 2, 2009 (DPW) and September 3, 2009, June 8, 2010 and October 6, 2010 (MDOT). These comment letters and the response letters to the reviewing agencies are included in Appendix A.



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**REFERENCES**

1. Reducing Individual Vehicular Dependencies: A Transportation Management Plan For Post-Construction Operations of Makena Resort Draft, prepared by Munekiyo, Hiraga, Inc., dated April 2009.

2. Traffic Impact Analysis Report for Ka'anapali Ocean Resort, Lot 3, prepared by Austin, Tsutsumi & Association, Inc., dated July 13, 2006.

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# APPENDIX

AGENCY REVIEW COMMENTS AND RESPONSES

LINDA LINGLE
GOVERNOR



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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:
HWY-PS
2.3454

September 30, 2009




Ms. Lee H. Yokomizo, P.E.
Traffic Engineer
Austin, Tsutsumi & Associates, Inc.
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031

Dear Ms. Yokomizo:

Subject: Transportation Management Plan (TMP) for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honuaula Project District and

Transportation Management Plan (TMP) for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honuaula Project District; Wailea, Maui

Thank you for your transmittal regarding the subject TMP's. We have the following comments:

GENERAL COMMENTS:

1. We suggest that the TMP include a discussion relating the implementation schedule/timetable or phased development with respective cost/funding to satisfactorily address the TMP goals and objectives.

2. The TMP should be expanded to include a discussion of the factors/criteria to be used in determining a reliable measure of effectiveness in implementing the various transportation management initiatives and programs for the respective projects.

3. We suggest that reporting on the effectiveness of the TMP be done semi-annually rather than annually. We recommend that the traffic monitoring report include discussion/evaluation of additional roadway mitigation measures (especially at major intersections) should implementation of the TMP not provide a satisfactory level of service (LOS) on Piilani Highway during peak hours.

***TMP for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honuaula Project District***

The TMP should incorporate a discussion on ENFORCEMENT, how compliance with Zoning Condition No. 28 will be accomplished that requires a reduction on the dependency on individual vehicular transportation mode. We suggest that the owner's deed/title of each residential dwelling unit/commercial and office space should incorporate these conditions regarding compliance to the TMP's programs, policies and actions.

***TMP for Construction Operations of Honuaula Project District, Piilani Highway Widening Project and Kaonoulu Affordable Housing Project***

Page 3 of the report states that one of the TMP objectives is reducing peak hour trips generated by construction activity to achieve a benchmark of 15 percent overall construction traffic reduction during the peak hours of traffic. This statement is more understandable if it relates to a number of peak hour traffic generated during construction or an equivalent generated (due to construction) traffic level of service (LOS) condition on Piilani Highway during peak hours.

If you have any questions, please contact Ken Tatsuguchi, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

Ken Tatsuguchi
Head Planning Engineer
Highways Division

HONUA'ULA

October 8, 2009

Mr. Ken Tatsuguchi
Head Planning Engineer,
Highways Division
State Department of Transportation
State of Hawaii
869 Punchbowl Street, Room 513
Honolulu, HI 96813

Subject: Transportation Management Plan (TMP) Comments for Construction and Post-Construction Operations: Kaonoulu Affordable Housing, Pi`ilani Highway Widening and Honua`ula Project District; Wailea, Maui

Dear Mr. Tatsuguchi:

Thank you for your comments received by Austin, Tsutsumi & Associates, Inc. (ATA) dated September 30, 2009 (reference HWY-PS 2.3454), , on the above referenced TMP documents submitted to your office for review. We have reviewed the comments provided by your office with ATA's traffic engineers and have the following responses for your consideration:

Comment 1 – All elements of the TMP programs, especially as they relate to construction projects, will be part of the contractual agreements between the landowners/funding partners and the contracting entity. Funding for the specific mitigation programs such as parking regulation, management of construction deliveries/personnel and implementation of park and ride facilities will be the responsibility of the individual contracting entities while enforcement of the programs the responsibility of the landowner/funding partners. At the time construction activities are scheduled for the projects analyzed in the TMP, the State Department of Transportation will be actively involved in the review of permits and plans for construction of the projects and through that oversight have the ability to also ensure the TMP programs are effective and implemented on schedule.

Comment 2 – The Construction TMP will be revised to include a paragraph discussing the criteria that should be used to determine measure of effectiveness. To determine the effectiveness of the measures, the transportation coordinator will keep records of the number of construction workers on-site as well as the number of vehicles accessing the site during the peak hours of traffic. The Conditions of Zoning does not require the Honua`ula Project to submit an annual report for the post construction TMP.

1300 N. Holopono Street, Suite 201 • P.O. Box 220 • Kihei, Hawai'i 96753 • p: 808-879-5205 • f: 808-879-2557

Comment 3 – Condition 28 does request an annual TMP report to the State Department of Transportation and other governmental agencies. A request to provide semi-annual reporting of the construction TMP could be accommodated should the State of Hawaii, Department of Transportation (HDOT) request such a report. However, if this request is made we would hope that there will be timely reviews and meaningful input provided to assist us in managing the TMP. With regard to traffic mitigation measures, prior to construction of the Honua`ula project, improvements to Pi`ilani Highway and its intersections with Kilohana Drive/Mapu Place, Okolani Drive/Mikioi Street, and Wailea Ike Drive will be implemented as required by the Zoning Conditions and as agreed upon between HDOT and the three major developers in the Wailea Area (Honua`ula, Wailea Resort and Makena Resort). Additionally, the Traffic Impact Analysis Report for the Pi`ilani Highway Widening does not account for implementation of the Post-Construction TMP's for Honua`ula and the Makena Resort which will provide additional peak hour mitigation.

Comment 4 – Your comment regarding the future enforcement of TMP procedures and guidelines with the Honua`ula project is a good one. It is our intent to not only tie the TMP guidelines to any future sale of commercial properties (including multi-family residential properties) so that the guidelines can be handled by future management agencies but also continually encourage the County of Maui to effectively expand their current transit programs into the Wailea and Makena areas of south Maui. Discussions with the County Department of Transportation on the proposed TMP have and will continue to take place through future planning and permitting of the project area and it is expected that as demand and rider-ship continues to increase so will the availability of transit options for the project area.

Comment 5 – At the height of construction for Honua`ula, it has been estimated that there will be approximately 330 construction vehicles and deliveries during the peak hours of traffic. This will result in a reduction of approximately 50 construction vehicles during the peak hours of traffic. This reduction and any anticipated peak hour trips will be achieved through various programs, as stated in the TMP, such as scheduling construction workers and deliveries during off peak hours.

Mr. Tatsuguchi, should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya in the offices of ATA at 533-3646 or me personally in my office at 879-5205.

Sincerely,

Charles Jencks
Owner Representative
Honua `ula Partners, LLC

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

October 2, 2009

RECEIVED
OCT 07 2009
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
Honolulu, Hawaii 96817-5031

Mr. Lee H. Yokomizo, P.E.
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031

Dear Mr. Yokomizo:

**SUBJECT: TRANSPORTATION MANAGEMENT PLAN FOR POST-CONSTRUCTION OPERATIONS OF KAONOULU AFFORDABLE HOUSING PROJECT AND HONUAULA PROJECT DISTRICT**

We reviewed the subject application and have the following comments:

1. "Coordinate with the Maui Bus Service to expand the existing system to the vicinity of the Kaonoulu Affordable Housing project."

   Any discussions with County Department of Transportation (CDOT) to date? Current system only uses South Kihei Road, not Piilani Highway.

2. "Coordinate with CDOT to identify opportunities for expansion of bus service to the Honuaula Project.

   Coordinate with CDOT to develop bus shelters in close proximity to commercial areas."

   Any discussions to date on feasibility of expanding system mauka from current route?

3. "To reduce individual commuter trips generated by employees of the commercial and office space, the TC's responsibilities will include recommending policies that work to integrate transportation

management initiatives and provide incentives for employers who use alternative modes of transportation."

Any examples of incentives?

Please call Michael Miyamoto at (808) 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\Trans_mgmt_Kaonoulu_afford_hsg_ls.wpd

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CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.

#08-048

October 9, 2009

Mr. Milton M. Arakawa, A.I.C.P.
Director
Department of Public Works
County of Maui
200 South High Street, Room 434
Wailuku, Hawaii 96793

**Subject: Response to Comments on the Transportation Management Plan (TMP) for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honua`ula Project District; Wailea, Maui, Hawaii**

Dear Mr. Arakawa:

Thank you for your prompt review and comments (letter dated October 2, 2009) on the above referenced TMP. We have reviewed the comments provided by your office and have the following responses for your consideration:

1) *"Coordinate with the Maui Bus Service to expand the existing system to the vicinity of the Kaonoulu Affordable Housing project.*

*Any discussions with County Department of Transportation (CDOT) to date? Current system only uses South Kihei Road, not Piilani Highway."*

The project team has met with the Maui Department of Transportation and discussed both the current and future transportation system in Maui County. Future expansion of the existing transit system will be dependent upon funding and rider ship. It is hoped that as both the Kaonoulu Affordable housing and Honua`ula development, the system will be able to accommodate the needs of future residents in those areas. An important consideration relative to service for the Kaonoulu affordable housing is the adjacency of the Kihei/Upcountry highway connecting these two population centers. A logical expansion of the transit system would include this route as a way to service employment in south Maui as well as the residents of that project.

2) *"Coordinate with CDOT to identify opportunities for expansion of bus service to the Honuaula Project.*

*Coordinate with CDOT to develop bus shelters in close proximity to commercial areas.*

*Any discussions to date on feasibility of expanding system mauka from current route?"*

REPLY TO:
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PHONE (808) 533-3646 • FAX (808) 526-1267
EMAIL : atahnl@atahawaii.com

OFFICES IN:
HONOLULU, HAWAII
WAILUKU, MAUI, HAWAII
HILO, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

Mr. Milton M. Arakawa, A.I.C.P.
Director
Department of Public Works
County of Maui

October 9, 2009

Discussions with the Maui Department of Transportation did include the expansion into the Honua`ula development. Once again, this expansion is highly dependent upon funding and rider ship. Our planned location for commercial and multi-family affordable product will be such that access for transit, location of bus stops and the ability to serve the project without greatly expanded routing will assist in this effort.

3) *"To reduce individual commuter trips generated by employees of the commercial and office space, the TC's responsibilities will include recommending policies that work to integrate transportation management initiatives and provide incentives for employers who use alternative modes of transportation.*

*Any examples of incentives?"*

Examples of incentives for employers who use alternative modes of transportation include:

- Cash incentives and subsidies which are commonly equal to monthly bus pass fee for employees who carpool or vanpool
- Discounted/free bus passes
- Preferred parking spots for employees who carpool or vanpool
- Fuel subsidies for employees organizing and implementing carpooling and rideshare programs

These examples are also noted under Section III.C.4 on page 14

The above responses are meant to address your concerns as stated on the comment letter. Should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya or myself at (808) 533-3646.

Sincerely,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By

LEE H. YOKOMIZO, P.E.
Traffic Engineer

LHY:mt

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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

September 3, 2009

Mr. Lee Yokomizo
Austin, Tsutsumi & Associates
501 Summer Street, Suite 5212
Honolulu, Hawaii 96817

Subject: Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project

Dear Mr. Yokomizo,

The County Department of Transportation is concerned with the assumptions made on page 9 of the abovementioned plan.

There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.

The proposed Transportation management strategy, however infers that the Maui Bus system will expand the existing system to accommodate the housing development.

Thank you for the opportunity to comment on the project. Please feel free to contact me if you have any questions.

Sincerely,

Don Medeiros
Director

AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.

#08-048

October 20, 2009

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

Dear Mr. Medeiros:

**Subject: Response to Comments for Transportation Management Plan (TMP) for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honua`ula Project District; Wailea, Maui, Hawaii**

Thank you for your prompt review and comments (letter September 3, 2009 on the above referenced TMP. We have reviewed the comments provided by your office and have the following response for your consideration.

*Comment:*
*"The County Department of Transportation is concerned with the assumptions made on page 9 of the abovementioned plan.*

*There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.*

*The proposed Transportation management strategy, however infers that the Maui Bus system will expand the existing system to accommodate the housing development.*

*Same concerns with the statements made on page 12 for the Honuaula Project District."*

Response:
The Kaonolulu Affordable Housing Project and Honua`ula Project District are on a 13-year track to completion. In addition to these projects, other developments are proposed on the mauka side of Pi`ilani Highway, such as, A&B's North Kihei Residential Subdivision, Ohukai Villages, Kaonoulu Light Industrial Park/Village, Waiohuli Village, Kamaole Villages, etc. According to the County of Maui Long Range Planning Division, as of July 2008, approximately 7,156 single-family units and 2,254 multi-family units are either planned or proposed on the mauka side of Pi`ilani Highway in South Maui. Therefore, we feel that in light of these proposed projects on the mauka side of Pi`ilani

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HILO, HAWAII



Mr. Don Medeiros
Director
Department of Transportation
County of Maui

October 20, 2009

Highway, it would be beneficial for the residents and County to provide a future bus route along Pi`ilani Highway. When the projects near completion, Honua`ula Partners LLC will be available to coordinate with the Maui Bus Service to expand routes and provide bus shelters nearing the Projects.

The above responses are meant to address your concerns as stated on the comment letter. Should you have any questions with regard to the above responses please do not hesitate to contact Mr. Keith Niiya or myself at (808) 533-3646.

Very truly yours,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By
LEE H. YOKOMIZO, P.E.
Traffic Engineer

LHY:mt

Z:\2008\08-048\Honua'ula\Corresp\COM DOT -Resp to Comments -Post Constr Op 102009.doc

CHARMAINE TAVARES
MAYOR

DON A. MEDEIROS
Director
WAYNE A. BOTEILHO
Deputy Director
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**DEPARTMENT OF TRANSPORTATION**

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

October 6, 2010

Mr. Tom Schnell, AICP
Senior Associate
PBR Hawaii & Associates, Inc.
1001 Bishop Street, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

The County Department of Transpiration has reviewed the attached letter dated September 13, 2010, from Mr. Charles Jencks, Owner Representative, Honua'ula Partners, LLC. Based on our review, we grant preliminary approval of the plans below.

- Transportation Management Plan for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District; and

- Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honu'aula Project District.

For final approval, please revise the subject plans to incorporate the conditions that were stated in your letter dated August 26, 2010, that Honua'ula Partners, LLC will:

1. Design, finance, and construct a bus stop and park and ride facility within the Honua'ula Property; the parks and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekends and nights;

2. Design, finance, and construct a bus stop to serve the Ka'ono'ulu project; and

3. Appoint a Transportation Coordinator of designated representative to work with the County Department of Transportation to effectuate the recommendations. This is discussed in Section 4.4.5 (Transportation Management) of the [draft] EIS.



Feel free to grammatically insert the conditions as you see fit. Please contact us at 270-7511 if we may be of any assistance or clarification.

The County Department of Transportation looks forward to working with you on this matter. Thank you for your cooperation.

Sincerely,

DON MEDEIROS
Director of Transportation

cc: Mayor
Director of Public Works
Planning Director
Director of Transportation, State of Hawaii

Attachment

S:\WAB\LTRdongen100610

HONUA'ULA

September 13, 2010

Mr. Don Medeiros, Director
Department of Transportation,
County of Maui
200 South High Street
Wailuku, HI 96753

Subject: Transportation Management Plans

Dear Mr. Medeiros:
The attached letter from your office dated June 8, 2010 highlights conditions you wish to have addressed and incorporated into the design of Honua`ula as a result of your review of the subject transportation management plans developed for the project. In response to your letter of June 8, 2010, PBR Hawaii sent you a response date August 26, 2010 stating that the Honua`ula project will address each of your conditions by incorporating same into the project.

In order for PBR Hawaii to complete the responses to the draft project EIS it is important to have a response from your office accepting our proposal to comply with your requests and therefore approving the subject TMP documents. I would appreciate your sending a letter to Mr. Tom Schnell at PBR addressing this request and by doing so helping Mr. Schnell complete this portion of the work on the draft EIS document.

Thank you in advance for your consideration of my request. Should you have any questions please do not hesitate to contact me in my office at 879-5205, on my cell phone at 250-3178 or via email at charliej@pacificrimland.com.

Sincerely,

Charles Jencks
Owner Representative
Honua `ula Partners, LLC

Attachments

RECEIVED
9/17/10
DOT

1300 N. Holopono Street, Suite 201 • P.O. Box 220 • Kihei, Hawai'i 96753 • p: 808-879-5205 • f: 808-879-2557

PBR HAWAII
& ASSOCIATES, INC.

August 26, 2010

PRINCIPALS
THOMAS S. WITTEN, ASLA
*President*
R. STAN DUNCAN, ASLA
*Executive Vice-President*
RUSSELL Y. J. CHUNG, FASLA, LEED® AP
*Executive Vice-President*
VINCENT SHIGEKUNI
*Vice-President*
GRANT T. MURAKAMI, AICP, LEED® AP
*Principal*
W. FRANK BRANDT, FASLA
*Chairman Emeritus*

ASSOCIATES
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*Senior Associate*
RAYMOND T. HIGA, ASLA
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1001 Kamokila Boulevard
Kapolei Building, Suite 313
Kapolei, Hawai'i 96707-2005
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Fax: (808) 535-3163

Don Medeiros
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793-2155

**SUBJECT: HONUA'ULA DRAFT ENVIRONMENTAL IMPACT STATEMENT AND PROJECT DISTRICT PHASE II APPLICATION**

Dear Mr. Medeiros:

Thank you for your letter addressed to Charles Jencks dated June 8, 2010 regarding the Honua'ula Transportation Management Plans (TMPs) for Construction and Post-Construction operations. We have also received the transmittal from your Department to Ann Cua of the Maui Planning Department dated June 23, 2010 regarding the Honua'ula Draft Environmental Impact Statement (EIS) and Project District Phase II application. As the planning consultant for the landowner, Honua'ula Partners, LLC, we are responding to your comments.

We have reviewed the conditions of approval for the TMPs and Honua'ula Partners, LLC will comply with your recommendations, specifically Honua'ula Partners, LLC will:

1. Design, finance, and construct a bus stop and park and ride facility within the Honua'ula Property; the park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekend and nights;

2. Design, finance, and construct a bus stop to serve the Ka'ono'ulu project; and

3. Appoint a Transportation Coordinator or designated representative to work with the County Department of Transportation to effectuate the recommendations. This is discussed in Section 4.4.5 (Transportation Management) of the Draft EIS.

To include the above information regarding the bus stop and park and ride facility within Honua'ula in the Final EIS, in the Final EIS Section 4.4.5 (Transportation Management) will be revised as follows:

> **Coordinate Expansion of the Maui Bus** – For travel outside of the Kīhei-Mākena region, the Transportation Coordinator will coordinate with the Maui Department of Transportation to identify opportunities for expansion of bus service to Honua'ula. A bus stop will be provided within Honua'ula; ideally this bus stop would be located within the ~~Village Mixed Use area~~ VMX Town Center near the intersection of Pi'ilani Highway and Wailea Ike Drive. A park and ride facility ~~could~~ will also be located in this area. The park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and ride facility during normal working hours and either employee or customer overflow parking during weekend and nights.

Thank you for reviewing the TMPs and Draft EIS. Your letter will be included in the Final EIS.

Sincerely,

PBR HAWAII

Tom Schnell, AICP
Senior Associate

cc: Kathleen Aoki, Maui Planning Department
Charles Jencks, Honua'ula Partners, LLC

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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

June 8, 2010

Mr. Charles Jencks
c/o Goodfellow Brothers, Inc.
P.O. Box 220
Kihei, Hawaii 96753

Dear Mr. Jencks:

By transmittal dated October 29, 2009 (and verbal communication) you requested approval of the following:

- Transportation Management Plan for Construction Operations of Piilani Highway Widening Project, Kaonoulu Affordable Housing Project and Honua'ula Project District; and

- Transportation Management Plan for Post-Construction Operations of Kaonoulu Affordable Housing Project and Honu'aula Project District.

Although the above-mentioned plans have not yet been approved, the County Department of Transportation (DOT) takes this opportunity to thank you for continuing to work with us on this matter.

We note that your request for approval is due to Condition No. 28, Zoning Ordinance No. 3554 (2008) relating to the establishment of the Kihei-Makena Project District 9, Wailea 670, which states:

> "That, prior to the commencement of any construction activity, Honua'ula Partners, LLC, its successors and permitted assigns, shall develop a Transportation Management Plan ("TMP"), to be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation. The purpose of the TMP shall be to reduce traffic generated by construction activity related to the Kaonoulu Light Industrial Subdivision and Kihei-Makena Project District 9, including traffic generated by improvements to Pi'ilani Highway between Kilohana Drive and Wailea Ike Drive. The TMP shall provide for programs such as park and ride, shuttles, and/or restrictions on worker access to ongoing construction activity during peak

hour traffic. Upon approval, project contractors shall implement the TMP during construction activities. Honua'ula Partners, LLC, its successors and permitted assigns, shall submit an annual report to the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation, and the Maui County Council to document the success of the TMP in meeting its benchmarks of reducing traffic during project construction.

That as part of the Project District Phase II application, Honua'ula Partners, LLC, its successors and permitted assigns, shall submit a TMP to reduce dependency on individual vehicle transportation modes. The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation prior to Project District Phase II approval."

By letter dated September 3, 2009, with follow up email dated October 19, 2009, the County DOT expressed concern with the TMPs, and made the following comments:

"The County Department of Transportation is concerned with the assumptions made on page 9 of the abovementioned plan.

There is no flexibility in the existing Maui Bus system to accommodate this project. A new route would be required to incorporate this housing project into the Maui Bus system. The cost of this new route is not in the current or foreseeable DOT budget.

The proposed Transportation management strategy, however, infers that the Maui Bus system will expand the existing system to accommodate the housing development.

We do have the same concerns with the statements made on page 20 of Project District document."

By letters dated October 9, 2009, Austin, Tsutsumi & Associates provided the following response to the County Department of Public Works, regarding mass transit serving the project sites:

"The project team has met with the Maui Department of Transportation and discussed both the current and future transportation system in Maui County. Future expansion of the existing system will be dependent upon funding and ridership. It is hoped that as both the Kaonoulu Affordable housing and Honua'ula [develop], the system will be able to accommodate the needs of future residents in those areas."

By letters dated October 20, 2009, Austin, Tsutsumi & Associates provided the following response to the County DOT, regarding mass transit serving the project sites:



"Currently, the existing Maui Bus Haiku-Wailea Commuter route runs along Pi'ilani Highway. At the time of construction, if feasible, the developer and the County of Maui Department of Transportation could look into providing additional stops along the Haiku-Wailea Commuter route at the Kaonolulu Affordable Housing Project site and the Honua'ula Project site."

Finally, the TMPs and draft Honua'ula Environmental Impact Statement make reference to a "Transportation Coordinator," hired and provided by the developer, whose duties include:

"Coordinate with the Maui Department of Transportation to identify opportunities for expansion of bus service to Honua'ula. A bus stop within Honua'ula ideally located within the Village Mixed Use area near the intersection on Pi'ilani Highway and Wailea Ike Drive. A park and ride facility could also be located in this area."

Therefore, as conditions of approval of the TMPs, the County DOT RECOMMEDS that:

1. the Honua'ula Partners, LLC, its successors and permitted assigns, shall design, finance, and construct a bus stop and park and ride facility within the Honua'ula project;

2. the Honua'ula Partners, LLC, its successors and permitted assigns, shall design, finance, and construct a bus stop to serve the Kaonoulu project; and

3. the Honua'ula Partners, LLC, its successors and permitted assigns, shall appoint a Transportation Coordinator or designated representative to work with the County Department of Transportation to effectuate the recommendations herein.

Thank you for your cooperation and assistance. The County Department of Transportation looks forward to working with you on this matter for the long term benefit of mass transit in your project areas.

Sincerely,

DON MEDEIROS
Director of Transportation

xc: Mayor
Managing Director
Director of Public Works
Director of Transportation, State of Hawaii

S:\WAB\LTRdongen060810

# Appendix N

## Acoustic Study

# ACOUSTIC STUDY FOR THE HONUA`ULA DEVELOPMENT WAILEA, MAUI

Prepared for:

**HONUA`ULA PARTNERS, LLC**

Prepared by:

**Y. EBISU & ASSOCIATES**
**1126 12th Avenue, Room 305**
**Honolulu, Hawaii 96816**

**DECEMBER 22, 2009**

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## CHAPTER I. SUMMARY

The existing and future traffic noise levels in the environs of the proposed Honua`ula Project in Wailea on the island of Maui were studied to evaluate potential noise impacts associated with the project. Existing and future traffic noise levels associated with the widening of Piilani Highway from Kilohana Street to Wailea Ike Drive were evaluated in a separate report but also incorporated in this report because the Honua`ula Project cannot proceed without the widening of Piilani Highway. Noise measurements were obtained, traffic noise predictions developed, and noise abatement alternatives evaluated.

Existing traffic noise levels along the Piilani Highway south of Maui Meadows in the immediate vicinity of the proposed Honua`ula Development do not exceed the U.S. Federal Highway Administration (FHWA) and Hawaii State Department of Transportation, Highways Division (HDOT) noise abatement criteria. Existing traffic noise levels at two residences north of the Piilani Highway/Okalani Drive/Mikioi Place intersection currently exceed the Hawaii State Department of Transportation, Highways Division (HDOT) 66 Leq noise abatement criteria.

Existing traffic noise levels from Wailea Ike Drive do not exceed the 66 Leq HDOT noise abatement criteria at existing residences of Wailea Ekolu Village which are located on the south side of Wailea Ike Drive. Existing traffic noise levels from Wailea Ike Drive also do not exceed the 71 Leq HDOT noise abatement criteria at existing commercial buildings along Wailea Ike Drive.

The following general conclusions can be made in respect to the number of impacted structures and lands which can be expected by CY 2022 under the No Action and Action Alternatives. These conclusions are valid as long as the future vehicle mixes and average speeds do not differ from the assumed values.

- The HDOT's ">15 dB increase" criteria for substantial change in traffic noise levels will not be exceeded at any existing or planned noise sensitive structures. Maximum increases in traffic noise levels in the project area should not exceed 10.0 dB along Piilani Highway and 3.6 dB along Wailea Ike Drive as a result of the growth in traffic volumes, the Piilani Highway widening project, the construction of the Honua`ula Project, and the planned extension of Piilani Highway into the project.

- Scenario 1: If Piilani Highway is not widened and the Honua`ula Project is not built, 13 residences along Piilani Highway would be subject to noise levels exceeding the 66 Leq criteria in 2022 due to regional increases in traffic volumes along the existing highway.

- Scenario 2: If Piilani Highway is widened and the Honua`ula Project is not built, 14 residences along Piilani Highway would be subject to noise levels exceeding



the 66 Leq criteria for residential structures in 2022 due to regional increases in traffic volumes along the widened highway.

- Scenario 3: If Piilani Highway is widened and the Honua`ula Project is built, 16 residences along Plilani Highway would be subject to noise levels exceeding the 66 Leq criteria for residential structures in 2022 due to traffic increases associated with the Honua`ula Project plus regional increases in traffic volumes along the widened highway.

- Under all scenarios, future traffic noise levels from Wailea Ike Drive at Wailea Ekolu Village residential buildings should remain below the 66 Leq HDOT noise criteria.

- Under all scenarios, future traffic noise levels at the two commercial buildings under construction at the future Wailea Gateway Shopping Center on the makai side of the Piilani Highway will not exceed the 71 Leq criteria for commercial structures.

- Under all scenarios, future traffic noise levels from Wailea Ike Drive at the commercial buildings at the east and west ends of Wailea Ike Drive should remain below the 71 Leq HDOT noise criteria.

- Future traffic noise levels from the Piilani Highway extension into the Honua`ula Project should not exceed the 66 Leq HDOT noise criteria at planned residential developments along the highway extension, since adequate setback distances from the highway extension's centerline have been provided.

- Future traffic noise levels from the Piilani Highway extension into the Honua`ula Project should not exceed either the 66 Leq HDOT or "15 dB increase" noise criteria at existing residential developments at Wailea Ekolu Village or at the existing Diamond Resort. The increase in existing background ambient noise levels due to traffic noise from the Piilani Highway extension should not exceed 13 Leq at 100 feet distance from the highway extension's centerline.

- Exceedance of the 66 Leq noise mitigation criteria at public use structures are not expected to occur under the No Action or Action Alternatives.

Short-term noise impacts associated with construction activities may occur: 1) along the Piilani Highway Rights-of-Way in the area to be widened; 2) along the Piilani Highway extension; 3) within the Honua`ula Development; and 4) in surrounding areas. These impacts can occur as a result of the location of the proposed development in relationship to existing dwelling and resort units of Maui Meadows, Wailea Ekolu Village, and Diamond Resort. However, minimizing these types of noise impacts is possible using standard curfew periods, properly muffled equipment, administrative controls, and construction barriers as required.

## CHAPTER II. GENERAL STUDY METHODOLOGY

Noise Measurements. Existing traffic and background ambient noise levels at five locations in the project area were measured in March 2009. The traffic noise measurements were used to calibrate the traffic noise model which was used to calculate the Base Year (CY 2008) and future (CY 2022) traffic noise levels under the No Action and Action Alternatives. The background ambient noise measurements were used to define existing noise levels at noise sensitive receptors which may be affected by the project. Also, the measurements were used in conjunction with forecast traffic noise levels to determine if future traffic noise levels are predicted to "substantially exceed" existing background ambient noise levels at these noise sensitive receptors, and therefore exceed FHWA and HDOT noise standards and noise abatement criteria.

The noise measurement locations ("A1," "A2," "B1," "B2," "Y," and "Z") are shown in Figure 1. The results of the traffic and background noise measurements are summarized in Table 1. In the tables, Leq represents the average (or equivalent), A-Weighted, Sound Level. A list and description of the acoustical terminology used are contained in Appendix B.

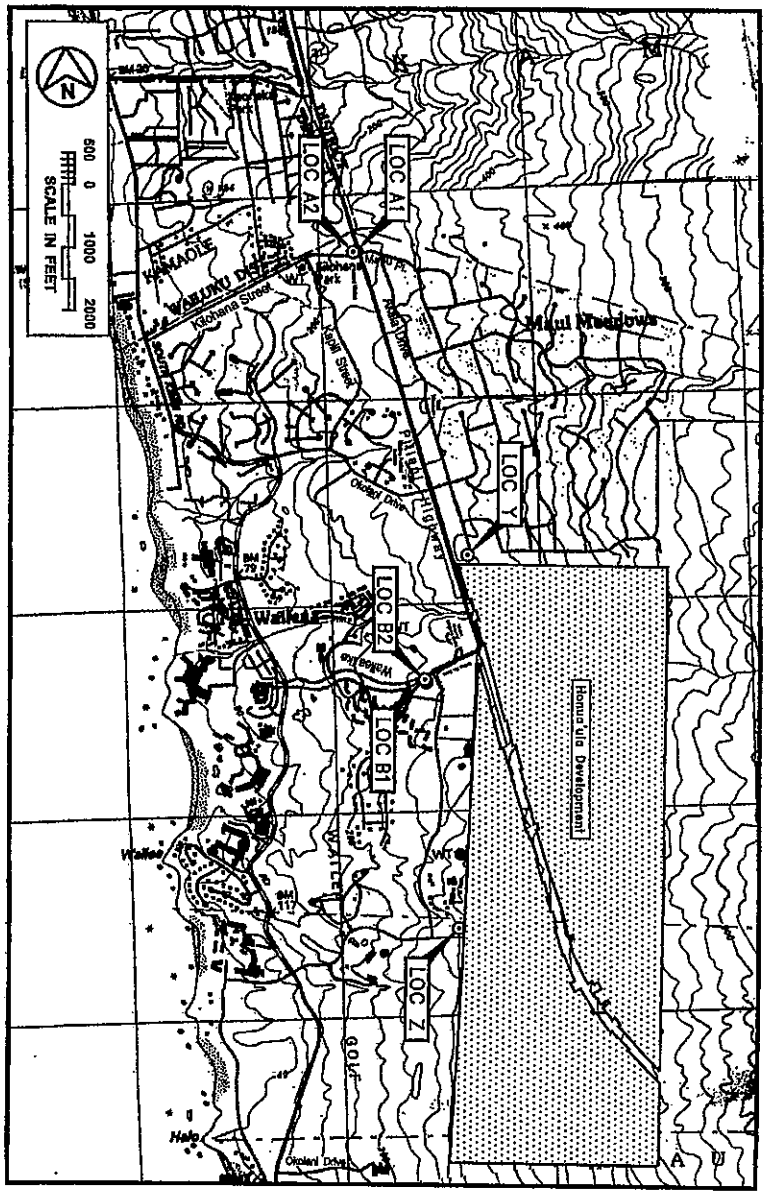
Traffic Noise Predictions. The Federal Highway Administration (FHWA) Traffic Noise Model, Version 2.5 (or TNM, see Reference 1) was used as the primary method of calculating Base Year and future traffic noise levels, with model parameters adjusted to reflect terrain, ground cover, and local shielding conditions. At all traffic noise measurement locations, the measured noise levels were compared with TNM model predictions to insure that measured and calculated noise levels for the existing conditions were consistent and in general agreement. As indicated in Table 1, spot counts of traffic volumes were also obtained during the measurement periods and were used to generate the Equivalent Sound Level (Leq) predictions shown in the table. The average vehicle speeds entered into the TNM were higher than posted speeds so as to achieve better agreement between measured noise levels and those calculated by the TNM. With these input speed adjustments, the agreement between measured and predicted traffic noise levels was considered to be good and sufficiently accurate to formulate the Base Year and future year traffic noise levels.

Base Year traffic noise levels were then calculated in the project environs using Base Year (2008) traffic volume data for the AM and PM peak hours from Reference 2. These traffic volumes are summarized in Appendices C1 through C4. Traffic mix by vehicle types and average vehicle speeds for the various sections of the existing and future roadways were derived from observations during the noise monitoring periods. Determinations of the periods of highest hourly traffic volumes in the project environs were made after reviewing the AM and PM peak hour traffic volumes from Reference 2 and the noise measurement results. Total two-way traffic volumes were generally highest during the PM peak hour. However, measured traffic noise levels were not significantly different for the AM, midday, and PM peak hours. For the purposes of this study, the PM peak hour was used to model the period with the highest traffic noise levels.





**PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATIONS**


N
SCALE IN FEET
500 0 1000 2000
LOC A1
LOC A2
LOC Y
LOC B2
LOC B1
LOC Z1
Wailuku Drive
Kaahaole
Ka'ahumanu Avenue
Kaahumanu Avenue
Ka'ahumanu Avenue
Ka'ahumanu Avenue
Ka'ahumanu Avenue
Waiehu Beach Park
Waiehu Golf Course
Maui Meadows
Honua'ula Development
Waiehu
Wailea
Wailea
Wailea

## TABLE 1 (CONTINUED)
## TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

| | LOCATION | Time of Day (HRS) | Ave. Speed (MPH) | Hourly Traffic Volume AUTO | M.TRUCK | H.TRUCK | Measured Leq (dB) | Predicted Leq (dB) |
|---|---|---|---|---|---|---|---|---|
| B2 | 100 FT from the center-line of Wailea Ike Dr. (3/16/09) | 0910 TO 1010 | 41 | 639 | 11 | 2 | 60.7 | 60.9 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1321 TO 1421 | 50 | 1,338 | 17 | 4 | 70.3 | 69.6 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1321 TO 1421 | 50 | 1,338 | 17 | 4 | 64.0 | 63.3 |
| Y | 260 FT from the center-line of Piilani Highway (3/16/09) | 1511 TO 1546 | 52 | 1,546 (Estimate) | 13 (Estimate) | 3 (Estimate) | 49.1 | 46.7 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1553 TO 1653 | 50 | 1,781 | 15 | 3 | 71.0 | 71.2 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1553 TO 1653 | 50 | 1,781 | 15 | 3 | 61.1 | 64.3 |



## TABLE 1
## TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

| | LOCATION | Time of Day (HRS) | Ave. Speed (MPH) | Hourly Traffic Volume AUTO | M.TRUCK | H.TRUCK | Measured Leq (dB) | Predicted Leq (dB) |
|---|---|---|---|---|---|---|---|---|
| Z | At east end of Kaukahi Street (3/15/09) | 1310 TO 1410 | N/A | N/A | N/A | N/A | 53.7 | N/A |
| Z | At east end of Kaukahi Street (3/15/09) | 1436 TO 1504 | N/A | N/A | N/A | N/A | 45.0 | N/A |
| Y | 260 FT from the center-line of Piilani Highway (3/15/09) | 1510 TO 1610 | 52 | 1,546 (Estimate) | 13 (Estimate) | 3 (Estimate) | 50.0 | 46.7 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0745 TO 0845 | 50 | 1,127 | 21 | 5 | 71.0 | 70.1 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0745 TO 0845 | 50 | 1,127 | 21 | 5 | 62.8 | 63.1 |
| B1 | 50 FT from the center-line of Wailea Ike Dr. (3/16/09) | 0910 TO 1010 | 41 | 639 | 11 | 2 | 65.4 | 65.4 |

The Equivalent (or Average) Hourly Sound Level [Leq(h)] noise descriptor was used to calculate the Base Year and CY 2022 traffic noise levels as required by Reference 3. Aerial photo maps, tax maps, and project plans (where available) of the area were used to determine terrain, ground cover, and local shielding effects and distances from building structures, which were entered into the noise prediction model. Topographic maps of the areas far beyond the highway Rights-of-Way were not available, so receptor elevations were assumed to be equal to the ground elevations shown on U.S. Geological Survey maps.

Future year (2022) traffic noise levels were then developed for the No Action and Action (Honua`ula Development) Alternatives using the future traffic assignments of Reference 2. Under the Action Alternative, it was assumed that the proposed Honua`ula Development would be in place. Forecast mixes of vehicle types were assumed to be identical for both existing and future traffic along Piilani Highway, with 98.7% automobiles, 1.0% medium trucks, 0.3% heavy trucks and buses. Forecast mixes of vehicle types along Wailea Ike Drive were also assumed to be identical for both existing and future traffic, with 98.0% automobiles, 1.7% medium trucks, 0.3% heavy trucks and buses. Vehicle speeds for Year 2022 were assumed to be identical to their Base Year values for the No Action Alternative (with speed reduction in the southbound lane of Piilani Highway at the approach to Wailea Ike Drive), and uniformly at 50 miles per hour in both directions along Piilani Highway under the Action Alternative. Future traffic conditions under the No Action Alternative may worsen, with average vehicle speeds declining as a result of increased congestion. Nevertheless, under the No Action Alternative, average vehicle speeds were assumed to remain the same as current values.

Impact Assessments and Mitigation. Following the calculation of the future traffic noise levels, evaluations of the future traffic noise levels and impacts at noise sensitive receptor locations along Piilani Highway and Wailea Ike Drive in the vicinity of the Honua`ula Development were made. Comparisons of predicted future traffic noise levels with FHWA and HDOT noise abatement criteria (see Table 2) were made to determine specific locations where the noise abatement criteria are expected to be exceeded.

The HDOT 66 Leq(h) noise abatement threshold criteria and the HDOT "greater than 15 dB increase" criteria were applied to all noise sensitive buildings in the vicinity of the Honua`ula Development. By Reference 4, the HDOT has replaced the FHWA 67 Leq(h) criteria with their 66 Leq(h) criteria. The HDOT 71 Leq(h) noise abatement threshold criteria and the HDOT "greater than 15 dB increase" criteria were applied to all commercial buildings in the vicinity of the Honua`ula Development. The locations of the 66 and 71 Leq(h) traffic noise contours, without the benefit of shielding from natural terrain or man-made sound barriers, were also used to identify noise sensitive and commercial receptor locations, respectively, where the HDOT's noise abatement criteria would not be exceeded, and which would not require more detailed evaluations. In addition, the HDOT's criteria of "greater than 15 dB increase above existing background





**TABLE 1 (CONTINUED)**
**TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS**

| | LOCATION | Time of Day (HRS) | Ave. Speed (MPH) | Hourly Traffic Volume ----- AUTO | M.TRUCK | H.TRUCK | Measured Leq (dB) | Predicted Leq (dB) |
|---|---|---|---|---|---|---|---|---|
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/17/09) | 0645 TO 0745 | 50 | 1,106 | 21 | 6 | 70.8 | 70.0 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0645 TO 0745 | 50 | 1,106 | 21 | 6 | 62.7 | 63.0 |

## TABLE 2

### FHWA & HDOT NOISE ABATEMENT CRITERIA
### [Hourly A–Weighted Sound Level––Decibels (dBA)]

| ACTIVITY CATEGORY | LEQ (h)* | DESCRIPTION OF ACTIVITY CATEGORY |
|---|---|---|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extra–ordinary significance and serve an important public need and where the preservation of those qualities is essential if the areas are to continue to serve their intended purpose. |
| B | 67 (Exterior) | Picnic areas, recreation areas, playgrounds, activity sports areas, parks, residences, motels, hotels, churches, libraries, and hospitals. |
| C | 72 (Exterior) | Developed lands, properties, or activities not included in Categories A or B above. |
| D | ------ | Undeveloped lands. |
| E | 52 (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums. |

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* The Hawaii State Department of Transportation, Highways Division, utilizes Leq criteria levels which are 1 Leq unit less than the FHWA values shown.



noise levels" was also used as a noise impact criteria for this project (from Reference 4).

## CHAPTER III. EXISTING ACOUSTICAL ENVIRONMENT

For the purposes of this study, 2008 was used as the Base Year for calculating changes in traffic noise levels with the future No Action and Action Alternatives. The Base Year noise environment in the project environs was described by calculating the Hourly Equivalent Sound Level [Leq(h)] along the existing roadways during the PM peak traffic hour for the 2008 time period. The hourly sound level, expressed in decibels, represents the average level of traffic noise along each roadway of interest during the PM peak hour of the study's Base Year.

Table 3 presents the traffic volume, speed, and mix assumptions used to calculate the Base Year noise levels during the PM peak hour along the existing Piilani Highway. Shown in Table 3 are the calculated peak hour Leq(h)'s at reference distances of 50, 100, and 150 FT from the geometrical center of the roadway. Along Wailea Ike Drive near Wailea Alanui Drive, because of the very large separation distances between the eastbound and westbound lanes, the 50, 100, and 150 FT distances were taken from the near curb. The calculated distances to the 66 and 71 Leq noise contour lines from the geometrical center of the roadway under unobstructed, line-of-sight conditions to the roadways are shown in Table 4 for the PM peak hour. The actual distances to the contour lines will generally be less than indicated in Table 4 when intervening structures or terrain obstructions exist between the roadway and a receptor. This reduction (or shrinkage) of the traffic noise contour distances from the roadway's centerline is the result of noise shielding (or attenuation) effects caused by the intervening structures or terrain features (such as highway cuts).

By using the traffic noise data shown in Tables 3 and 4, and aerial photo maps of the existing improvements on the west (makai) and east (mauka) sides of Piilani Highway and on the south side of Wailea Ike Drive, the relationship of the existing free-field traffic noise contours to existing noise sensitive dwellings and commercial buildings in the project area were determined.

Table 5 presents the Base Year traffic noise levels at the various noise sensitive and commercial structures along Piilani Highway and Wailea Ike Drive. The relationships of these receptor locations to the existing and future roadways are shown in Figure 2. The existing traffic noise levels do not exceed the 66 Leq criteria for residences in the immediate vicinity of the proposed Honua'ula Development. From Table 4, existing traffic noise levels could exceed the 66 Leq criteria at any residence located within 74 to 85 feet from the centerline of Piilani Highway or within 75 to 108 feet from the center of Wailea Ike Drive. Existing traffic noise levels do not exceed the 71 Leq criteria for commercial properties at the two commercial buildings under construction at the future Wailea Gateway Shopping Center or at the commercial establishments at the west end of Wailea Ike Drive.

Some existing residences presently benefit from the noise shielding effects of walls which have been constructed along the lot boundary lines along Piilani Highway,



TABLE 3

EXISTING (CY 2008) TRAFFIC VOLUMES AND NOISE LEVELS
ALONG VARIOUS SECTIONS OF PIILANI HIGHWAY
AND WAILEA IKE DRIVE ( PM PEAK HOUR )

| LOCATION | SPEED (MPH) | TOTAL VPH | ********** VOLUMES (VPH) ********** AUTOS | M.TRUCKS | H.TRUCKS | 50' Leq | 100' Leq | 150' Leq |
|---|---|---|---|---|---|---|---|---|
| Piilani Hwy. North of Kilohana Street | 50 | 1,880 | 1,855 | 19 | 6 | 70.9 | 64.5 | 61.5 |
| Piilani Hwy. from Kilohana St. to Okolani Dr. | 50 & 55* | 1,356 | 1,338 | 14 | 4 | 70.0 | 63.8 | 60.9 |
| Piilani Hwy. from Okolani Dr. to Wailea Ike Dr | 55 to 30** | 1,193 | 1,177 | 12 | 4 | 69.5 | 63.3 | 60.3 |
| Wailea Ike Dr. West of Piilani Hwy. | 41 | 1,213 | 1,188 | 21 | 4 | 68.8 | 64.0 | 61.7 |
| Wailea Ike Dr. East of Wailea Alanui Dr. | 41 | 1,135 | 1,113 | 19 | 3 | 63.2 | 60.7 | 59.2 |

Notes:
1. * 50 mph southbound; 55 mph northbound
2. ** 50 to 30 mph southbound; 55 mph northbound
3. All distances shown are from the center of roadway, except at Wailea Ike Drive east of Wailea Alanui Drive, which are from the near curb.
4. Calculated Leq's are for unobstructed line-of-sight conditions.

## TABLE 4

## YEAR 2008 AND 2022 DISTANCES TO 66 AND 71 LEQ CONTOURS ( PM PEAK HOUR )

| STREET SECTION | 66 Leq SETBACK (FT) EXISTING | 66 Leq SETBACK (FT) CY 2022 | 71 Leq SETBACK (FT) EXISTING | 71 Leq SETBACK (FT) CY 2022 |
|---|---|---|---|---|
| Piilani Hwy. North of Kilohana Street | 85 | 137 | 49 | 78 |
| Piilani Hwy. from Kilohana St. to Okolani Dr. | 78 | 127 | 45 | 72 |
| Piilani Hwy. from Okolani Dr. to Wailea Ike Dr. | 74 | 119 | 42 | 67 |
| Wailea Ike Dr. West of Piilani Hwy. | 75 | 126 | 36 | 61 |
| Wailea Ike Dr. East of Wailea Alanui Dr. | 108 | 140 | < 88 | 92 |
| Wailea Ike Dr. East of Piilani Hwy. | N/A | 45 | N/A | 17 |
| Piilani Hwy. from Wailea Ike to 1st Intersection | N/A | 31 | N/A | 12 |
| Piilani Hwy. from 1st to 2nd Intersection | N/A | 28 | N/A | < 12 |
| Piilani Hwy. from 2nd to 3rd Intersection | N/A | 28 | N/A | < 12 |
| Piilani Hwy. from 3rd to Kaukahi St. Intersection | N/A | 27 | N/A | < 12 |
| Piilani Hwy. from Kaukahi St. to 5th Intersection | N/A | 20 | N/A | < 12 |
| Piilani Hwy. south of 5th Intersection | N/A | < 12 | N/A | < 12 |

**Notes:**

1. All distances shown are from the center of roadway.
2. See TABLES 3 and 6 for traffic volume, speed, and mix assumptions.
3. Setback distances are for unobstructed line-of-sight conditions.



## TABLE 5

## EXISTING AND FUTURE TRAFFIC NOISE LEVELS AT VARIOUS RECEPTOR LOCATIONS ( 4.92 FT RECEPTOR, PM PEAK HOUR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE (CY 2022) Leq NO ACTION / (CHANGE) | | FUTURE (CY 2022) Leq ACTION / (CHANGE) | |
|---|---|---|---|---|---|
| PIILANI HIGHWAY (MAUKA): | | | | | |
| Receiver 2-1-13:012 (Vacant) | 58.9 | 61.4 | / 2.5 | 65.4 | / 6.5 |
| Location Y | 47.4 | 49.8 | / 2.4 | 52.8 | / 5.4 |
| Honua`ula Location A | 55.1 | 57.6 | / 2.5 | 61.3 | / 6.2 |
| Honua`ula Location B | 55.6 | 58.1 | / 2.5 | 62.9 | / 7.3 |
| PIILANI HIGHWAY (MAKAI): | | | | | |
| Location WG-1 | 56.2 | 58.7 | / 2.5 | 61.5 | / 5.3 |
| Location WG-2 | 48.8 | 51.3 | / 2.5 | 54.1 | / 5.3 |
| Location E | 47.0 | 47.0 | / 0.0 | 47.0 | / 0.0 |
| WAILEA IKE DRIVE (SOUTH): | | | | | |
| Wailea Ekolu Location C | 60.3 | 62.7 | / 2.4 | 63.2 | / 2.9 |
| Wailea Ekolu Location D | 58.9 | 61.3 | / 2.4 | 61.9 | / 3.0 |

**Notes:**

1. All receivers were assumed to be at 4.92 feet above ground level.

and other residences in the Maui Meadows subdivision on the mauka side of the highway benefit from the noise shielding effects of the large highway cuts. In general, if the visual lines of sight between the receptors at the residences are blocked by the walls or the highway cuts, the residences will experience lower traffic noise levels due to the sound attenuation effects of the obstructions.

At areas removed from Piilani Highway (such as at Location "Y"), Base Year noise levels are much lower than along the highway's Rights-of-Way due to distance factors and local shielding effects from buildings and terrain features. Base Year noise levels in areas removed from the highway are typically less than 66 Leq(h), and possibly as low as 45 Leq(h). For example, as shown in Table 1, the measured background noise level at Location "Y" during the period prior to the PM peak traffic hour was 49.1 Leq(h). Location "Y" was partially shielded from Piilani Highway traffic noise by the large highway cut. Other non-traffic noise sources (birds, distant construction, and foliage moving with the wind) were probably in the order of 45 to 46 Leq(h), with the estimated traffic noise contributions at 47 Leq(h).

At other areas removed from major roadways (such as at Location "Z" or in the now vacant interior areas of the proposed Honua'ula Development), Base Year noise levels tend to be controlled by local traffic or other noise sources such as birds, distant construction, and foliage moving with the wind. In these areas, existing noise levels are typically at least 15 dB less than the "66 Leq" HDOT noise abatement criteria. Therefore, by the current HDOT noise abatement policy (Reference 4), traffic noise impacts are possible in currently quiet areas where future traffic noise is less than 66 Leq but exceeds existing noise levels by 15 dB or more.






**LOCATIONS OF EXISTING AND FUTURE TRAFFIC NOISE CALCULATIONS**

**FIGURE 2**

## CHAPTER IV. DESCRIPTION OF FUTURE TRAFFIC NOISE LEVELS

The future traffic noise levels in the immediate vicinity of the proposed Honua'ula Project during CY 2022 were evaluated for the No Action and Action Alternatives. The same methodology that was used to calculate the Base Year noise levels was also used to calculate the Year 2022 noise levels. It should be noted that forecast traffic volumes along Piilani Highway and Wailea Ike Drive for the Year 2022 under the Action Alternative were greater than those under the No Action Alternative due to the addition of traffic from the proposed Honua'ula Development. Under both the No Action and Action Alternatives, vehicle mixes were assumed to be identical to the Base Year values. Average vehicle speeds along the planned extension of Piilani Highway and on roadways within the Honua'ula Development were assumed to range from 50 mph to 41 mph.

Tables 4, 5, 6, and 7 summarize the traffic conditions, noise levels, and setback distances for the Action Alternative during the PM peak hour in CY 2022. Table 7 also indicates the increases in future traffic noise levels expected under the No Action and Action Alternatives prior to the inclusion of any sound attenuation walls. As indicated in Table 7, future traffic noise levels in the immediate vicinity of the project are predicted to increase by approximately 2.4 to 2.8 dB between CY 2008 and CY 2022 solely as a result of projected traffic volume increases under the No Action Alternative without the Honua'ula Development. Under the No Action Alternative, the HDOT 66 noise abatement criteria will be exceeded at 12 existing dwelling units within 113 to 119 feet of the centerline of Piilani Highway which do not benefit from the noise shielding effects of walls or terrain features. Under the No Action Alternative, the HDOT 66 noise abatement criteria should not be exceeded at existing dwelling units along Wailea Ike Drive.

Under the Build Alternative, widening of the highway between Kilohana Street and Wailea Ike Drive by 2022 was assumed, so that the existing two, 12 foot wide lanes are replaced with four, 12 foot wide lanes plus turning lanes and 4 foot wide median. Figure 2 presents the noise sensitive receptor (or receiver) locations in the immediate vicinity of the proposed Honua'ula Development where future traffic noise levels were calculated for the Action Alternative using the FHWA Traffic Noise Model. The predicted CY 2022 traffic noise levels at the various receptor locations along Piilani Highway where traffic noise levels could exceed 66 Leq(h) were described in Reference 5. Also included in Reference 5 were the locations of sound attenuating walls which could be included as noise mitigation measures in the Piilani Highway Widening Project in accordance with the provisions of Reference 4.

The 66 Leq criteria should not be exceeded at any public use structures under the No Action or Action Alternatives. The 71 Leq criteria for commercial properties will not be exceeded at two multistory commercial buildings on the makai side of Piilani Highway at the Wailea Ike Drive intersection.

The following general conclusions can be made in respect to the impacted



## TABLE 6

## FUTURE (CY 2022) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF PIILANI HIGHWAY AND WAILEA IKE DRIVE ( PM PEAK HOUR )

| LOCATION | SPEED (MPH) | TOTAL VPH | ********** VOLUMES (VPH) ********** AUTOS | M.TRUCKS | H.TRUCKS | 50' Leq | 100' Leq | 150' Leq |
|---|---|---|---|---|---|---|---|---|
| Piilani Hwy. North of Kilohana Street | 50 | 4,335 | 4,279 | 43 | 13 | 74.9 | 68.8 | 65.8 |
| Piilani Hwy. from Kilohana St. to Okolani Dr. | 50 | 3,648 | 3,601 | 36 | 11 | 74.1 | 68.1 | 65.0 |
| Piilani Hwy. from Okolani Dr. to Wailea Ike Dr | 50 | 3,208 | 3,166 | 32 | 10 | 73.6 | 67.5 | 64.5 |
| Wailea Ike Dr. West of Piilani Hwy. | 41 | 2,825 | 2,769 | 48 | 8 | 72.4 | 67.6 | 65.4 |
| Wailea Ike Dr. East of Wailea Alanui Dr. | 41 | 2,205 | 2,161 | 37 | 7 | 66.1 | 63.7 | 62.1 |
| Wailea Ike Dr. East of Piilani Hwy. | 41 | 850 | 833 | 14 | 3 | 65.5 | 61.9 | 59.9 |
| Piilani Hwy. from Wailea Ike to 1st Intersection | 50 | 295 | 289 | 5 | 1 | 63.5 | 59.8 | 57.8 |
| Piilani Hwy. from 1st to 2nd Intersection | 50 | 255 | 250 | 4 | 1 | 62.9 | 59.2 | 57.1 |
| Piilani Hwy. from 2nd to 3rd Intersection | 50 | 258 | 253 | 4 | 1 | 62.9 | 59.3 | 57.2 |
| Piilani Hwy. from 3rd to Kaukahi St. Intersectio | 50 | 245 | 240 | 4 | 1 | 62.7 | 59.0 | 57.0 |
| Piilani Hwy. from Kaukahi to 5th Intersection | 50 | 170 | 166 | 3 | 1 | 61.2 | 57.5 | 55.5 |
| Piilani Hwy. South of 5th Intersection | 41 | 72 | 71 | 1 | 0 | 54.5 | 51.0 | 48.9 |

Notes:

1. All distances shown are from the center of roadway, except at Wailea Ike Drive east of Wailea Alanui Drive, which are from the near curb.
2. Calculated Leq's are for unobstructed line-of-sight conditions.

## TABLE 7

## CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS ( CY 2022 ) ( PM PEAK HOUR )

| PIILANI HIGHWAY SECTION | NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC | PROJECT TRAFFIC |
|---|---|---|
| Piilani Hwy. North of Kilohana Street | 3.10 | 0.90 |
| Piilani Hwy. from Kilohana St. to Okolani Dr. | 3.10 | 1.00 |
| Piilani Hwy. from Okolani Dr. to Wailea Ike Dr. | 2.60 | 1.50 |
| Wailea Ike Dr. West of Piilani Hwy. | 2.80 | 0.80 |
| Wailea Ike Dr. East of Wailea Alanui Dr. | 2.40 | 0.50 |
| Wailea Ike Dr. East of Piilani Hwy. * | N./A | 11.90 |
| Piilani Hwy. from Wailea Ike to 1st Intersection * | N./A | 12.80 |
| Piilani Hwy. from 1st to 2nd Intersection * | N./A | 12.20 |
| Piilani Hwy. from 2nd to 3rd Intersection * | N./A | 12.30 |
| Piilani Hwy. from 3rd to Kaukahi St. Intersection * | N./A | 12.00 |
| Piilani Hwy.from Kaukahi St. to 5th Intersection * | N./A | 10.50 |
| Piilani Hwy. South of 5th Intersection * | N./A | 4.00 |

Note:
* Increase shown is above existing background noise level at 100 feet from roadway centerline.



structures and lands which can be expected by CY 2022 under the Action Alternative. These conclusions are valid as long as the future vehicle mixes and average speeds do not differ from the assumed values.

- The HDOT's ">15 dB increase" criteria for substantial change in traffic noise levels will not be exceeded at any noise sensitive structure. Maximum increases in traffic noise levels in the project area should not exceed 5.5 dB as a result of growth in traffic volumes and widening of Piilani Highway. Increases in future traffic noise levels without the Honua`ula Development are expected to range from 1.1 to 3.2 dB. Increases in future noise levels attributable to the Honua`ula Development are expected to range from 0.5 to 1.3 dB along Piilani Highway and Wailea Ike Drive in the immediate vicinity of the Honua`ula Development

- Under the No Action or Action Alternatives, future traffic noise levels at existing single and multifamily dwellings on both sides of Piilani Highway will continue to exceed the 66 Leq criteria. At least 12 residential structures are predicted to be affected by future traffic noise levels which exceed the 66 Leq HDOT noise criteria under the No Action Alternative. At least 15 residential structures are predicted to be affected by future traffic noise levels which exceed the 66 Leq HDOT noise criteria under the Action Alternative. At the two commercial buildings under construction at the future Wailea Gateway Shopping Center on the makai side of the highway, future traffic noise levels will not exceed the 71 Leq criteria for commercial structures under the Action Alternative.

- Future traffic noise levels from Wailea Ike Drive at Wailea Ekolu Village residential buildings should remain below the 66 Leq HDOT noise criteria under the No Action or Action Alternatives. Future traffic noise levels from Wailea Ike Drive at Wailea Ekolu Village commercial buildings should remain below the 71 Leq HDOT noise criteria under the No Action or Action Alternatives.

- Future traffic noise levels from the Piilani Highway extension into the Honua`ula Development should not exceed the 66 Leq HDOT noise criteria at planned residential developments along the highway extension, since adequate setback distances from the highway extension's centerline have been provided.

- Future traffic noise levels from the Piilani Highway extension into the Honua`ula Development should not exceed either the 66 Leq HDOT or "15 dB increase" noise criteria at exsting residential developments at Wailea Ekolu Village or at the existing Diamond Resort. The increase in existing background ambient noise levels due to traffic noise from the Piilani Highway extension should not exceed 13 Leq at 100 feet distance from the highway extension's centerline.

- Exceedance of the 66 Leq noise mitigation criteria at public use structures are not expected to occur under the No Action or Action Alternatives.

## CHAPTER V. FUTURE TRAFFIC NOISE IMPACTS AND POSSIBLE NOISE MITIGATION MEASURES

Future traffic noise levels are predicted to exceed the HDOT 66 Leq(h) noise abatement criteria by CY 2022 under the Action Alternative at existing noise sensitive structures on both sides of Piilani Highway between Kilohana Street and Wailea Ike Drive. Mitigation of potential noise impacts associated with the Piilani Highway Widening project are planned to be included in the highway widening project in accordance with HDOT noise abatement criteria (see References 4 and 5). Mitigation of potential noise impacts at existing residences will occur as part of the highway widening project in the form of sound attenuating walls along the Piilani Highway Rights-of-Way.

Within the Honua`ula Development and along the planned extension of Piilani Highway, traffic noise mitigation measures have been incorporated into the Honua`ula Development Plan in the form of adequate setback distances of the proposed noise sensitive properties from the planned highway extension. Because adequate setback distances have been provided for the planned noise sensitive properties within the Honua`ula Development, as well as for the existing Wailea Ekolu Village and Diamond Resort properties, additional traffic noise mitigation measures should not be required along the Piilani Highway extension south of Wailea Ike Drive.

Along Wailea Ike Drive, future traffic noise levels should remain below the 66 Leq HDOT noise abatement criteria through 2022 with or without the Honua`ula Development. In addition, forecasted increases in traffic noise levels along Wailea Ike Drive west of Piilani Highway and attributable to the Honua`ula Development are relatively small and less than 1.0 dB. The existing residential buildings of Wailea Ekolu Village along Wailea Ike Drive are partially shielded from the roadway noise due to their perpendicular orientation to the roadway, which provides approximately 3 dB of sound attenuation to each of the long faces of the buildings. For all of these reasons, traffic noise mitigation measures should not be required at the Wailea Ekolu residences which are located along Wailea Ike Drive.



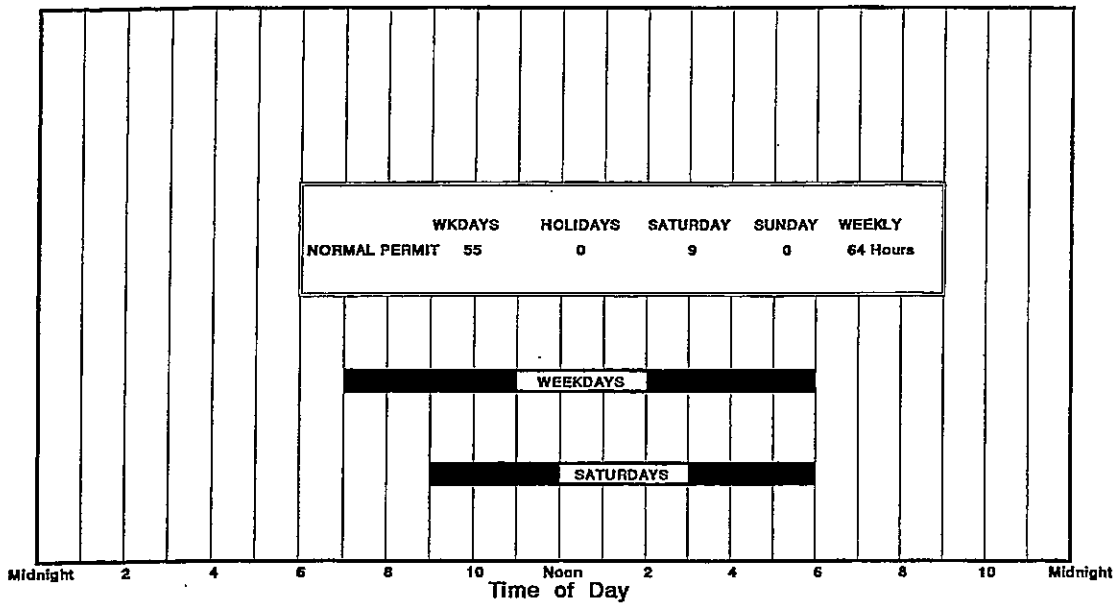
## CHAPTER VI. CONSTRUCTION NOISE IMPACTS

Short-term noise impacts associated with construction activities along the Piilani Highway extension and within the Honua`ula Development and surrounding areas may occur. These impacts can occur as a result of the location of the proposed development in relationship to existing dwelling and resort units of Maui Meadows, Wailea Ekolu Village, and Diamond Resort. The total duration of the construction period for the proposed project is not known, but noise exposure from construction activities at any one receptor location is not expected to be continuous during the total construction period.

Noise levels of diesel powered construction equipment typically range from 80 to 90 dB at 50 FT distance. Typical levels of noise from construction activity (excluding pile driving activity) are shown in Figure 3. The maximum impulsive noise levels of rock breaking equipment (such as hoe rams) can be 5 to 8 dB greater than those shown in Figure 3. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

Construction noise levels at existing structures can intermittently exceed 85 dB when work is being performed at close distances in front of these structures. Along the north and west boundaries of the project site, distances between the construction sites and receptors may intermittently be 100 FT or less, and construction noise levels may intermittently exceed 85 dB. The State Department of Health currently regulates noise from construction activities under a permit system (Reference 6). Under current permit procedures (see Figure 4), noisy construction activities are restricted to hours between 7:00 AM and 6:00 PM, from Monday through Friday, and exclude certain holidays. Noisy construction activities are normally restricted to the hours of 9:00 AM to 6:00 PM on Saturdays, with construction not permitted on Sundays. These restrictions minimize construction noise impacts on noise sensitive receptors, and have generally been successfully applied. In this way, construction noise impacts on noise sensitive receptors at adjacent properties as well as within the Honua`ula Development can be minimized.

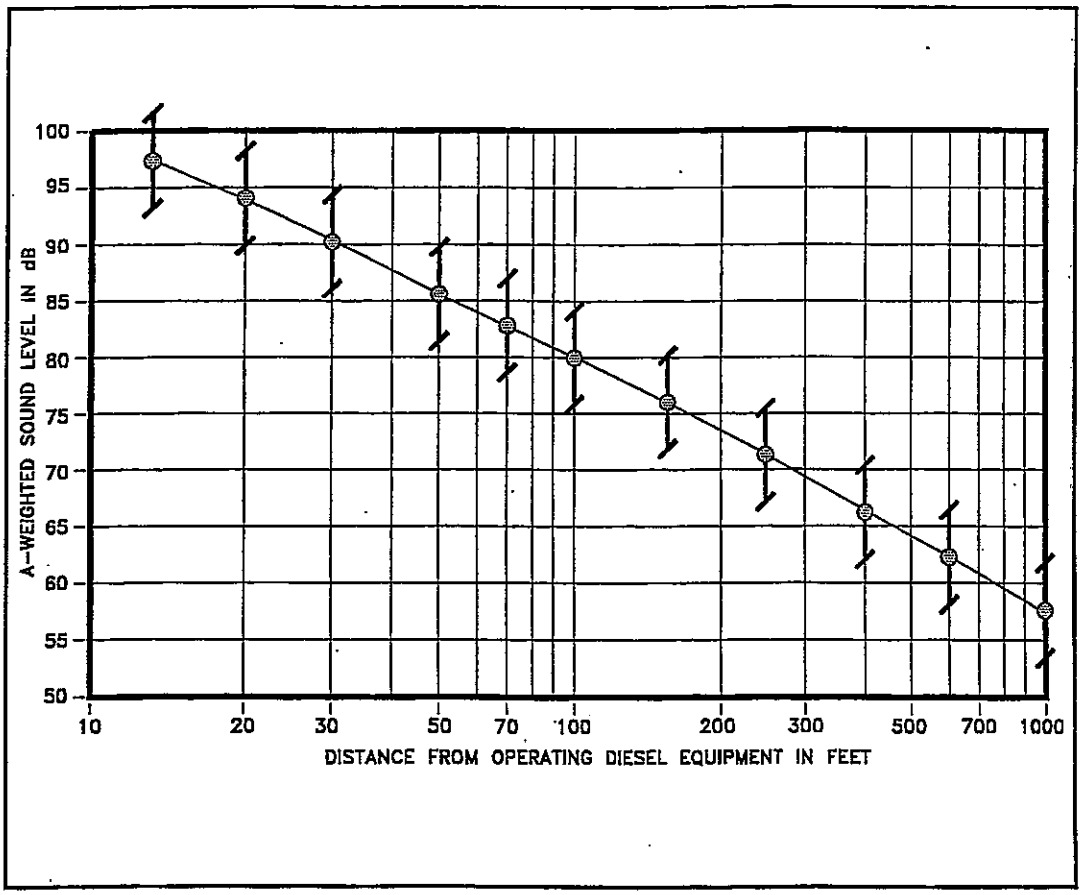
In addition, the use of quieted portable engine generators and diesel equipment should be specified for use within 500 FT of noise sensitive properties. Heavy truck and equipment staging areas should also be located at areas which are at least 500 FT from noise sensitive properties whenever possible. Truck routes which avoid residential communities should be identified wherever possible. The use of 8 to 12 FT high construction noise barriers may also be used where close-in construction work to noise sensitive structures is unavoidable.




AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

FIGURE 4






ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE 3

## APPENDIX A. REFERENCES


(1) "FHWA Highway Traffic Noise Model User's Guide;" FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).

(2) Traffic Impact Analysis Report - Honua'ula; Austin, Tsutsumi & Associates, Inc.; November 13, 2009.

(3) Federal Highway Administration; "Procedures for Abatement of Highway Traffic Noise and Construction Noise;" 23 CFR Chapter I, Subchapter H, Part 772;" April 1, 1995.

(4) "Noise Analysis and Abatement Policy;" Hawaii State Department of Transportation, Highways Division, Materials Testing and Research Branch; June 1997.

(5) "Acoustic Study for the Piilani Highway Widening, Kilohana Street to Wailea Ike Drive;" Y. Ebisu & Associates; August 2009.

(6) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.




## APPENDIX B

## EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

## APPENDIX B (CONTINUED)

### TABLE I

### A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

| | TERM | SYMBOL |
|---|---|---|
| 1. | A-Weighted Sound Level | $L_A$ |
| 2. | A-Weighted Sound Power Level | $L_{WA}$ |
| 3. | Maximum A-Weighted Sound Level | $L_{max}$ |
| 4. | Peak A-Weighted Sound Level | $L_{Apk}$ |
| 5. | Level Exceeded x% of the Time | $L_x$ |
| 6. | Equivalent Sound Level | $L_{eq}$ |
| 7. | Equivalent Sound Level over Time (T) (1) | $L_{eq(T)}$ |
| 8. | Day Sound Level | $L_d$ |
| 9. | Night Sound Level | $L_n$ |
| 10. | Day-Night Sound Level | $L_{dn}$ |
| 11. | Yearly Day-Night Sound Level | $L_{dn(Y)}$ |
| 12. | Sound Exposure Level | $L_{SE}$ |

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78,



## APPENDIX B (CONTINUED)

### TABLE II

### RECOMMENDED DESCRIPTOR LIST

| | TERM | A-WEIGHTING | ALTERNATIVE(1) A-WEIGHTING | OTHER(2) WEIGHTING | UNWEIGHTED |
|---|---|---|---|---|---|
| 1. | Sound (Pressure)(3) Level | $L_A$ | $L_{pA}$ | $L_B$, $L_{pB}$ | $L_p$ |
| 2. | Sound Power Level | $L_{WA}$ | | $L_{WB}$ | $L_W$ |
| 3. | Max. Sound Level | $L_{max}$ | $L_{Amax}$ | $L_{Bmax}$ | $L_{pmax}$ |
| 4. | Peak Sound (Pressure) Level | $L_{Apk}$ | | $L_{Bpk}$ | $L_{pk}$ |
| 5. | Level Exceeded x% of the Time | $L_x$ | $L_{Ax}$ | $L_{Bx}$ | $L_{px}$ |
| 6. | Equivalent Sound Level | $L_{eq}$ | $L_{Aeq}$ | $L_{Beq}$ | $L_{peq}$ |
| 7. | Equivalent Sound Level (4) Over Time(T) | $L_{eq(T)}$ | $L_{Aeq(T)}$ | $L_{Beq(T)}$ | $L_{peq(T)}$ |
| 8. | Day Sound Level | $L_d$ | $L_{Ad}$ | $L_{Bd}$ | $L_{pd}$ |
| 9. | Night Sound Level | $L_n$ | $L_{An}$ | $L_{Bn}$ | $L_{pn}$ |
| 10. | Day-Night Sound Level | $L_{dn}$ | $L_{Adn}$ | $L_{Bdn}$ | $L_{pdn}$ |
| 11. | Yearly Day-Night Sound Level | $L_{dn(Y)}$ | $L_{Adn(Y)}$ | $L_{Bdn(Y)}$ | $L_{pdn(Y)}$ |
| 12. | Sound Exposure Level | $L_S$ | $L_{SA}$ | $L_{SB}$ | $L_{Sp}$ |
| 13. | Energy Average Value Over (Non-Time Domain) Set of Observations | $L_{eq(e)}$ | $L_{Aeq(e)}$ | $L_{Beq(e)}$ | $L_{peq(e)}$ |
| 14. | Level Exceeded x% of the Total Set of (Non-Time Domain) Observations | $L_{x(e)}$ | $L_{Ax(e)}$ | $L_{Bx(e)}$ | $L_{px(e)}$ |
| 15. | Average $L_x$ Value | $L_x$ | $L_{Ax}$ | $L_{Bx}$ | $L_{px}$ |

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

APPENDIX C1

SUMMARY OF BASE YEAR AND FUTURE YEAR (2016)
TRAFFIC VOLUMES ALONG PROJECT ROADWAYS

| ROADWAY LANES | ***** CY 2008 ***** AM VPH | PM VPH | CY 2016 (NO BUILD) AM VPH | PM VPH | CY 2016 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| Piilani Hwy., North of Kilohana Street (NB) | 502 | 1,043 | 895 | 1,665 | 1,115 | 1,960 |
| Piilani Hwy., North of Kilohana Street (SB) | 941 | 837 | 1,440 | 1,505 | 1,595 | 1,770 |
| Two-Way | 1,443 | 1,880 | 2,435 | 3,170 | 2,710 | 3,730 |
| Piilani Hwy., South of Kilohana Street (NB) | 296 | 821 | 695 | 1,390 | 815 | 1,685 |
| Piilani Hwy., South of Kilohana Street (SB) | 798 | 572 | 1,265 | 1,135 | 1,420 | 1,400 |
| Two-Way | 1,094 | 1,393 | 1,960 | 2,525 | 2,235 | 3,085 |
| Piilani Hwy., North of Okolani Drive (NB) | 290 | 770 | 695 | 1,330 | 815 | 1,625 |
| Piilani Hwy., North of Okolani Drive (SB) | 759 | 549 | 1,225 | 1,115 | 1,380 | 1,380 |
| Two-Way | 1,049 | 1,319 | 1,920 | 2,445 | 2,195 | 3,005 |
| Piilani Hwy., South of Okolani Drive (NB) | 214 | 711 | 465 | 1,115 | 585 | 1,410 |
| Piilani Hwy., South of Okolani Drive (SB) | 723 | 461 | 1,115 | 810 | 1,270 | 1,075 |
| Two-Way | 937 | 1,172 | 1,580 | 1,925 | 1,855 | 2,485 |
| Piilani Hwy., North of Wailea Ike Drive (NB) | 217 | 752 | 520 | 1,295 | 635 | 1,590 |
| Piilani Hwy., North of Wailea Ike Drive (SB) | 723 | 461 | 1,200 | 865 | 1,360 | 1,135 |
| Two-Way | 940 | 1,213 | 1,720 | 2,160 | 1,995 | 2,725 |
| Piilani Hwy., South of Wailea Ike Drive (NB) | N/A | N/A | N/A | N/A | N/A | N/A |
| Piilani Hwy., South of Wailea Ike Drive (SB) | N/A | N/A | N/A | N/A | N/A | N/A |
| Two-Way | N/A | N/A | N/A | N/A | N/A | N/A |
| Wailea Ike Dr., West of Piilani Hwy. (EB) | 217 | 752 | 520 | 1,295 | 580 | 1,385 |
| Wailea Ike Dr., West of Piilani Hwy. (WB) | 723 | 461 | 1,200 | 865 | 1,250 | 980 |
| Two-Way | 940 | 1,213 | 1,720 | 2,160 | 1,830 | 2,365 |
| Wailea Ike Dr., East of Piilani Hwy. (EB) | N/A | N/A | N/A | N/A | 205 | 335 |
| Wailea Ike Dr., East of Piilani Hwy. (WB) | N/A | N/A | N/A | N/A | 150 | 385 |
| Two-Way | N/A | N/A | N/A | N/A | 355 | 720 |
| Wailea Ike Dr., East of Kalai Waa St. (EB) | 217 | 752 | 485 | 1,185 | 535 | 1,270 |
| Wailea Ike Dr., East of Kalai Waa St. (WB) | 773 | 461 | 1,190 | 840 | 1,135 | 940 |
| Two-Way | 990 | 1,213 | 1,675 | 2,025 | 1,670 | 2,210 |
| Wailea Ike Dr., West of Kalai Waa St. (EB) | 189 | 637 | 440 | 1,110 | 480 | 1,185 |
| Wailea Ike Dr., West of Kalai Waa St. (WB) | 663 | 400 | 1,105 | 795 | 1,135 | 885 |
| Two-Way | 852 | 1,037 | 1,545 | 1,905 | 1,615 | 2,070 |
| Wailea Ike Dr., East of Wailea Alanui (EB) | 228 | 674 | 425 | 990 | 465 | 1,060 |
| Wailea Ike Dr., East of Wailea Alanui (WB) | 679 | 461 | 1,025 | 715 | 1,050 | 805 |
| Two-Way | 907 | 1,135 | 1,450 | 1,705 | 1,515 | 1,865 |



APPENDIX C2

SUMMARY OF BASE YEAR AND FUTURE YEAR (2018)
TRAFFIC VOLUMES ALONG PROJECT ROADWAYS

| ROADWAY LANES | ***** CY 2008 ***** AM VPH | PM VPH | CY 2018 (NO BUILD) AM VPH | PM VPH | CY 2018 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| Piilani Hwy., North of Kilohana Street (NB) | 502 | 1,043 | 1,060 | 1,825 | 1,260 | 2,170 |
| Piilani Hwy., North of Kilohana Street (SB) | 941 | 837 | 1,590 | 1,580 | 1,790 | 1,930 |
| Two-Way | 1,443 | 1,880 | 2,650 | 3,405 | 3,070 | 4,100 |
| Piilani Hwy., South of Kilohana Street (NB) | 296 | 821 | 760 | 1,545 | 980 | 1,890 |
| Piilani Hwy., South of Kilohana Street (SB) | 798 | 572 | 1,415 | 1,210 | 1,615 | 1,560 |
| Two-Way | 1,094 | 1,393 | 2,175 | 2,755 | 2,595 | 3,450 |
| Piilani Hwy., North of Okolani Drive (NB) | 290 | 770 | 760 | 1,490 | 980 | 1,835 |
| Piilani Hwy., North of Okolani Drive (SB) | 759 | 549 | 1,375 | 1,185 | 1,570 | 1,540 |
| Two-Way | 1,049 | 1,319 | 2,135 | 2,675 | 2,550 | 3,375 |
| Piilani Hwy., South of Okolani Drive (NB) | 214 | 711 | 530 | 1,270 | 750 | 1,615 |
| Piilani Hwy., South of Okolani Drive (SB) | 723 | 461 | 1,265 | 880 | 1,460 | 1,235 |
| Two-Way | 937 | 1,172 | 1,795 | 2,150 | 2,210 | 2,850 |
| Piilani Hwy., North of Wailea Ike Drive (NB) | 217 | 752 | 545 | 1,340 | 815 | 1,805 |
| Piilani Hwy., North of Wailea Ike Drive (SB) | 723 | 461 | 1,265 | 880 | 1,555 | 1,300 |
| Two-Way | 940 | 1,213 | 1,810 | 2,220 | 2,370 | 3,105 |
| Piilani Hwy., South of Wailea Ike Drive (NB) | N/A | N/A | N/A | N/A | 130 | 125 |
| Piilani Hwy., South of Wailea Ike Drive (SB) | N/A | N/A | N/A | N/A | 85 | 155 |
| Two-Way | N/A | N/A | N/A | N/A | 215 | 280 |
| Wailea Ike Dr., West of Piilani Hwy. (EB) | 217 | 752 | 545 | 1,340 | 670 | 1,580 |
| Wailea Ike Dr., West of Piilani Hwy. (WB) | 723 | 461 | 1,265 | 880 | 1,440 | 1,075 |
| Two-Way | 940 | 1,213 | 1,810 | 2,220 | 2,110 | 2,655 |
| Wailea Ike Dr., East of Piilani Hwy. (EB) | N/A | N/A | N/A | N/A | 205 | 335 |
| Wailea Ike Dr., East of Piilani Hwy. (WB) | N/A | N/A | N/A | N/A | 190 | 365 |
| Two-Way | N/A | N/A | N/A | N/A | 395 | 700 |
| Wailea Ike Dr., East of Kalai Waa St. (EB) | 217 | 752 | 545 | 1,340 | 545 | 1,340 |
| Wailea Ike Dr., East of Kalai Waa St. (WB) | 773 | 461 | 1,345 | 895 | 1,345 | 895 |
| Two-Way | 990 | 1,213 | 1,890 | 2,235 | 1,890 | 2,235 |
| Wailea Ike Dr., West of Kalai Waa St. (EB) | 189 | 637 | 490 | 1,985 | 490 | 1,155 |
| Wailea Ike Dr., West of Kalai Waa St. (WB) | 663 | 400 | 1,150 | 840 | 1,650 | 840 |
| Two-Way | 852 | 1,037 | 1,640 | 2,825 | 2,140 | 1,995 |
| Wailea Ike Dr., East of Wailea Alanui (EB) | 228 | 674 | 475 | 1,035 | 475 | 1,035 |
| Wailea Ike Dr., East of Wailea Alanui (WB) | 679 | 461 | 1,065 | 780 | 1,065 | 780 |
| Two-Way | 907 | 1,135 | 1,540 | 1,815 | 1,540 | 1,815 |

APPENDIX C3

SUMMARY OF BASE YEAR AND FUTURE YEAR (2022)
TRAFFIC VOLUMES ALONG PROJECT ROADWAYS

| ROADWAY LANES | **** CY 2008 ***** AM VPH | PM VPH | CY 2022 (NO BUILD) AM VPH | PM VPH | CY 2022 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| Piilani Hwy., North of Kilohana Street (NB) | 502 | 1,043 | 1,120 | 1,895 | 1,410 | 2,260 |
| Piilani Hwy., North of Kilohana Street (SB) | 941 | 837 | 1,670 | 1,640 | 1,910 | 2,055 |
| Two-Way | 1,443 | 1,880 | 2,790 | 3,535 | 3,320 | 4,335 |
| Piilani Hwy., South of Kilohana Street (NB) | 296 | 821 | 810 | 1,615 | 1,100 | 2,000 |
| Piilani Hwy., South of Kilohana Street (SB) | 798 | 572 | 1,490 | 1,270 | 1,730 | 1,685 |
| Two-Way | 1,094 | 1,393 | 2,300 | 2,885 | 2,830 | 3,685 |
| Piilani Hwy., North of Okolani Drive (NB) | 290 | 770 | 805 | 1,560 | 1,095 | 1,945 |
| Piilani Hwy., North of Okolani Drive (SB) | 759 | 549 | 1,450 | 1,250 | 1,690 | 1,665 |
| Two-Way | 1,049 | 1,319 | 2,255 | 2,810 | 2,785 | 3,610 |
| Piilani Hwy., South of Okolani Drive (NB) | 214 | 711 | 575 | 1,340 | 865 | 1,725 |
| Piilani Hwy., South of Okolani Drive (SB) | 723 | 461 | 1,340 | 940 | 1,580 | 1,355 |
| Two-Way | 937 | 1,172 | 1,915 | 2,280 | 2,445 | 3,080 |
| Piilani Hwy., North of Wailea Ike Drive (NB) | 217 | 752 | 595 | 1,410 | 930 | 1,910 |
| Piilani Hwy., North of Wailea Ike Drive (SB) | 723 | 461 | 1,340 | 940 | 1,670 | 1,425 |
| Two-Way | 940 | 1,213 | 1,935 | 2,350 | 2,600 | 3,335 |
| Piilani Hwy., South of Wailea Ike Drive (NB) | N/A | N/A | N/A | N/A | 130 | 125 |
| Piilani Hwy., South of Wailea Ike Drive (SB) | N/A | N/A | N/A | N/A | 85 | 155 |
| Two-Way | N/A | N/A | N/A | N/A | 215 | 280 |
| Wailea Ike Dr., West of Piilani Hwy. (EB) | 217 | 752 | 595 | 1,410 | 730 | 1,670 |
| Wailea Ike Dr., West of Piilani Hwy. (WB) | 723 | 461 | 1,340 | 940 | 1,540 | 1,155 |
| Two-Way | 940 | 1,213 | 1,935 | 2,350 | 2,270 | 2,825 |
| Wailea Ike Dr., East of Piilani Hwy. (EB) | N/A | N/A | N/A | N/A | 265 | 425 |
| Wailea Ike Dr., East of Piilani Hwy. (WB) | N/A | N/A | N/A | N/A | 290 | 425 |
| Two-Way | N/A | N/A | N/A | N/A | 555 | 850 |
| Wailea Ike Dr., East of Kalai Waa St. (EB) | 217 | 752 | 595 | 1,410 | 675 | 1,555 |
| Wailea Ike Dr., East of Kalai Waa St. (WB) | 773 | 461 | 1,415 | 955 | 1,510 | 1,090 |
| Two-Way | 990 | 1,213 | 2,010 | 2,365 | 2,185 | 2,645 |
| Wailea Ike Dr., West of Kalai Waa St. (EB) | 189 | 637 | 535 | 1,220 | 615 | 1,355 |
| Wailea Ike Dr., West of Kalai Waa St. (WB) | 663 | 400 | 1,220 | 895 | 1,305 | 1,025 |
| Two-Way | 852 | 1,037 | 1,755 | 2,115 | 1,920 | 2,380 |
| Wailea Ike Dr., East of Wailea Alanui (EB) | 228 | 674 | 520 | 1,100 | 600 | 1,235 |
| Wailea Ike Dr., East of Wailea Alanui (WB) | 679 | 461 | 930 | 835 | 1,225 | 970 |
| Two-Way | 907 | 1,135 | 1,450 | 1,935 | 1,825 | 2,205 |



APPENDIX C4

SUMMARY OF FUTURE YEAR (2022) TRAFFIC VOLUMES AT
PROJECT INTERSECTIONS ALONG PIILANI HIGHWAY EXTENSION

| ROADWAY LANES | **** CY 2008 ***** AM VPH | PM VPH | CY 2022 (NO BUILD) AM VPH | PM VPH | CY 2022 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| Piilani Hwy., North of 1st Intersection (NB) | N/A | N/A | N/A | N/A | 130 | 155 |
| Piilani Hwy., North of 1st Intersection (SB) | N/A | N/A | N/A | N/A | 85 | 155 |
| Two-Way | N/A | N/A | N/A | N/A | 215 | 310 |
| Piilani Hwy., South of 1st Intersection (NB) | N/A | N/A | N/A | N/A | 95 | 125 |
| Piilani Hwy., South of 1st Intersection (NB) | N/A | N/A | N/A | N/A | 85 | 135 |
| Two-Way | N/A | N/A | N/A | N/A | 180 | 260 |
| Project Rd., West of 1st Intersection (EB) | N/A | N/A | N/A | N/A | 50 | 50 |
| Project Rd., West of 1st Intersection (WB) | N/A | N/A | N/A | N/A | 15 | 40 |
| Two-Way | N/A | N/A | N/A | N/A | 65 | 90 |
| Piilani Hwy., North of 2nd Intersection (NB) | N/A | N/A | N/A | N/A | 95 | 120 |
| Piilani Hwy., North of 2nd Intersection (SB) | N/A | N/A | N/A | N/A | 80 | 130 |
| Two-Way | N/A | N/A | N/A | N/A | 175 | 250 |
| Piilani Hwy., South of 2nd Intersection (NB) | N/A | N/A | N/A | N/A | 95 | 120 |
| Piilani Hwy., South of 2nd Intersection (SB) | N/A | N/A | N/A | N/A | 80 | 130 |
| Two-Way | N/A | N/A | N/A | N/A | 175 | 250 |
| Project Rd., West of 2nd Intersection (EB) | N/A | N/A | N/A | N/A | 10 | 10 |
| Project Rd., West of 2nd Intersection (WB) | N/A | N/A | N/A | N/A | 10 | 10 |
| Two-Way | N/A | N/A | N/A | N/A | 20 | 20 |
| Piilani Hwy., North of 3rd Intersection (NB) | N/A | N/A | N/A | N/A | 95 | 140 |
| Piilani Hwy., North of 3rd Intersection (SB) | N/A | N/A | N/A | N/A | 85 | 125 |
| Two-Way | N/A | N/A | N/A | N/A | 180 | 265 |
| Piilani Hwy., South of 3rd Intersection (NB) | N/A | N/A | N/A | N/A | 75 | 125 |
| Piilani Hwy., South of 3rd Intersection (SB) | N/A | N/A | N/A | N/A | 85 | 120 |
| Two-Way | N/A | N/A | N/A | N/A | 160 | 245 |
| Project Rd., West of 3rd Intersection (EB) | N/A | N/A | N/A | N/A | 35 | 35 |
| Project Rd., West of 3rd Intersection (WB) | N/A | N/A | N/A | N/A | 15 | 35 |
| Two-Way | N/A | N/A | N/A | N/A | 50 | 70 |
| Piilani Hwy., North of Kaukahi St. (NB) | N/A | N/A | N/A | N/A | 75 | 125 |
| Piilani Hwy., North of Kaukahi St. (SB) | N/A | N/A | N/A | N/A | 85 | 120 |
| Two-Way | N/A | N/A | N/A | N/A | 160 | 245 |
| Piilani Hwy., South of Kaukahi St. (NB) | N/A | N/A | N/A | N/A | 55 | 100 |
| Piilani Hwy., South of Kaukahi St. (SB) | N/A | N/A | N/A | N/A | 50 | 80 |
| Two-Way | N/A | N/A | N/A | N/A | 105 | 180 |

APPENDIX C4 (CONTINUED)

SUMMARY OF FUTURE YEAR (2022) TRAFFIC VOLUMES AT
PROJECT INTERSECTIONS ALONG PIILANI HIGHWAY EXTENSION

| ROADWAY LANES | ***** CY 2008 ***** AM VPH | PM VPH | CY 2022 (NO BUILD) AM VPH | PM VPH | CY 2022 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| Kaukahi St., West of Piilani Hwy. (EB) | N/A | N/A | N/A | N/A | 50 | 65 |
| Kaukahi St., West of Piilani Hwy. (WB) | N/A | N/A | N/A | N/A | 65 | 80 |
| Two-Way | N/A | N/A | N/A | N/A | 115 | 145 |
| Piilani Hwy., North of 5th Intersection (NB) | N/A | N/A | N/A | N/A | 50 | 80 |
| Piilani Hwy., North of 5th Intersection (SB) | N/A | N/A | N/A | N/A | 50 | 80 |
| Two-Way | N/A | N/A | N/A | N/A | 100 | 160 |
| Piilani Hwy., South of 5th Intersection (NB) | N/A | N/A | N/A | N/A | 20 | 32 |
| Piilani Hwy., South of 5th Intersection (SB) | N/A | N/A | N/A | N/A | 20 | 40 |
| Two-Way | N/A | N/A | N/A | N/A | 40 | 72 |
| Project Rd., West of 5th Intersection (EB) | N/A | N/A | N/A | N/A | 45 | 70 |
| Project Rd., West of 5th Intersection (WB) | N/A | N/A | N/A | N/A | 35 | 50 |
| Two-Way | N/A | N/A | N/A | N/A | 80 | 120 |
| Project Rd., East of 5th Intersection (EB) | N/A | N/A | N/A | N/A | 25 | 20 |
| Project Rd., East of 5th Intersection (WB) | N/A | N/A | N/A | N/A | 20 | 25 |
| Two-Way | N/A | N/A | N/A | N/A | 45 | 45 |

# Appendix O

## Air Quality Study

# AIR QUALITY STUDY

# FOR THE PROPOSED

# HONUA'ULA PROJECT

**WAILEA, MAUI**

**Prepared for:**

**Honua'ula Partners, LLC**

**December 2009**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## 1.0 SUMMARY

Honua'ula Partners, LLC is proposing to develop the Honua'ula Project in the Wailea area on the island of Maui. The proposed project will include 1,150 residential units, commercial space, a golf course and other associated amenities and facilities. The project is expected to be completed and fully occupied by 2022. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities and suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

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

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the project area is very much affected by its elevation near sea level and by nearby mountains. Haleakala shelters the area from the northeast trade winds, and local winds (such as land/sea breezes and upslope/downslope winds) affect the wind flow in the area much of the time. Temperatures in the project area are generally very consistent and warm with average daily temperatures ranging from about 63°F to 86°F. Rainfall in the project area is minimal with an average of only about 12 inches per year.

Except for periodic impacts from volcanic emissions (vog) and possibly occasional localized impacts from traffic congestion and local agricultural sources, the present air quality of the project area is believed to be relatively good. There is very little air quality monitoring data from the Department of Health for the project area, but the limited data that are available suggest that concentrations are generally well within state and national air quality standards.

If the proposed project is given the necessary approvals to proceed, it is inevitable that some short- and long-term impacts on air quality will unavoidably occur either directly or indirectly as a consequence of project construction and use. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment and from the disruption of traffic may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the project boundary. Hence, an effective dust control plan should be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Excess exhaust emissions from traffic disruption can be mitigated by moving construction equipment and workers to and from the project area during off-peak traffic hours and by minimizing road closures during peak traffic



periods.

After construction, motor vehicles coming to and from the proposed development will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, a computerized air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at roadway intersections in the project vicinity and to predict future levels both with and without the proposed project. During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are well within both the state and the national ambient air quality standards. In the year 2022 without the project, carbon monoxide concentrations were predicted to increase at some locations in the project area, but concentrations should remain well within state and federal standards. With the project in the year 2022, carbon monoxide concentrations were estimated to increase by about 10 to 20 percent compared to the without-project case, but worst-case concentrations should remain within both national and state standards. Implementing mitigation measures for traffic-related air quality impacts is unnecessary and unwarranted.

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

## 2.0 INTRODUCTION

Honua'ula Partners, LLC is proposing to develop the Honua'ula Project on the island of Maui near Wailea (see Figure 1 for general project location). The proposed project would include the development of 1,150 single-family and multi-family residential units (including workforce affordable homes), an 18-hole private golf course, up to 100,000 square feet of commercial and office space, and other associated facilities and infrastructure. The proposed project is expected to be completed and fully occupied by 2022.

The purpose of this study was to evaluate the potential air quality impacts of the proposed project and recommend mitigative measures, if possible and appropriate, to reduce or eliminate any project-related degradation of air quality in the area. Before examining the potential impacts of the project, a discussion of ambient air quality standards is presented and background information concerning the regional and local climatology and the present air quality of the project area is provided.

## 3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter,



sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. The U.S. Environmental Protection

Agency (EPA) is currently working on a plan to phase out the



national 1-hour ozone standard in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards were challenged in federal court. A Supreme Court ruling was issued during February 2001, and as a result, the new standards for particulate were finally implemented during 2005. To date, the Hawaii Department of Health has not updated the state particulate standards. In September 2001, the state vacated the state 1-hour standard for ozone and an 8-hour standard was adopted.

During the latter part of 2008, EPA revised the standard for lead making the standard more stringent. So far, the Hawaii Department of Health has not revised the corresponding state standard for lead.

## 4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

The topography of Maui is dominated by the great volcanic masses of Haleakala (10,023 feet) and the West Maui Mountains (5,788 feet). The island consists entirely of the slopes of these mountains and of a connecting isthmus. Haleakala is still considered to be an active volcano and last erupted about 1790. The project site is located along the lower western slope of Haleakala at an elevation of about 300 feet.

Maui lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. Because the project area is located on the lower western slope of Haleakala, it is sheltered much of the time from the northeast trade winds. Local winds such as land/sea breezes and/or upslope/downslope winds also influence the wind pattern for the area. During the daytime, winds can typically be expected to move onshore because of seabreeze and/or upslope effects or because of the aerodynamic cavity caused by the trade winds flowing around Haleakala. At night, winds are often drainage winds that move downslope and out to sea. During winter, occasional strong winds from the south or southwest occur in association with the passage of winter storm systems.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depends to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas



exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The project site's lower elevation and leeward location results in warmer temperatures compared with many other parts of the island. At Puunene, which is a few miles to the north of the project area and at an elevation of about 130 feet, average daily minimum and maximum temperatures are 63°F and 86°F, respectively [1]. Temperatures at the project site can be expected to be similar to this or slightly cooler due to the slightly higher elevation.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 is the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Pukualani area, stability classes 5 or 6 typically occur during the nighttime or early morning hours when temperature inversions form due to radiational cooling or to drainage flow from the nearby mountains. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the

trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3,000 feet (1,000 meters).

Rainfall can have a beneficial affect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The climate of the project area is relatively dry due to the leeward location. Historical records from Kihei, a few miles to the north, show that this area of Maui averages about only 12 inches of precipitation per year with the summer months being the driest [1].

## 5.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural and/or agricultural sources. Table 2 presents an air pollutant emission summary for the island of Maui for calendar year 1993. This is the most recent year for which an island-wide emission inventory is available. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, most of the manmade particulate and sulfur oxides emissions on Maui originate from point sources, such as power plants and other fuel-burning industries. Nitrogen oxides emissions are roughly equally divided between point sources and area sources (mostly motor vehicle



traffic). The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic and sugar cane burning), while hydrocarbons are emitted mainly from point sources. Emissions today are probably higher than those shown in the table, but the proportional relationships are likely about the same.

The largest sources of air pollution in the immediate project area are most likely agricultural operations and automobile traffic using local roadways. Emissions from these sources consist primarily of particulate, carbon monoxide and nitrogen oxides. Power plants burning diesel fuel are located several miles away. These sources mostly emit sulfur dioxide, nitrogen oxides and particulate. Volcanic emissions from distant natural sources on the Big Island also affect the air quality at times during kona wind conditions. By the time the volcanic emissions reach the project area, they consist mostly of fine particulate sulfate.

The State Department of Health operates a network of air quality monitoring stations at various locations around the state, but only very limited data are available for Maui Island. The only air quality data for the project area consists of particulate measurements collected at Kihei, which is about 4 miles to the north. These data are probably at least semi-representative of the project area. Table 3 summarizes the data from the Kihei monitoring station. Annual second-highest 24-hour particulate concentrations (which are most relevant to the air quality standards) ranged from 63 to 119 $\mu g/m^3$ between 2002 and 2006. Average annual concentrations ranged from 19 to 25 $\mu g/m^3$. One exceedance of the state standard was recorded during 2005. This was reported to be due to agricultural tilling operations in the area.

Given the limited air pollution sources in the area, it is likely that air pollution concentrations are near natural background levels most of the time, except possibly for locations adjacent to agricultural operations or near traffic-congested intersections. Present concentrations of carbon monoxide in the project area are estimated later in this study based on computer modeling of motor vehicle emissions.

## 6.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur during project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site and from the disruption of traffic due to road construction.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with land clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [2] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity,



moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would likely be somewhere near this level or possibly lower due to the rocky nature of the soil in the area. In any case, State of Hawaii Air Pollution Control Regulations [3] prohibit visible emissions of fugitive dust from construction activities at the project boundary, and thus an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from

diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Indirectly, slow-moving construction vehicles on roadways leading to and from the project area could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, road closures during peak traffic periods should be avoided to the extent possible to minimize air pollution impacts from traffic disruption. Thus, with careful planning and attention to dust control, most potential short-term air quality impacts from project construction can be mitigated.

## 7.0 LONG-TERM IMPACTS OF PROJECT

### 7.1 Roadway Traffic

After construction is completed, use of the proposed facilities will result in increased motor vehicle traffic in the project area, potentially causing long-term impacts on ambient air quality. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminates.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This legislation requires further emission reductions, which have been phased in since 1994. More recently, additional restrictions were



signed into law during the Clinton administration. The added restrictions on emissions from new motor vehicles will lower average emissions each year as more and more older vehicles leave the state's roadways. It is estimated that carbon monoxide emissions, for example, will go down by an average of about 30 percent per vehicle during the next 10 years due to the replacement of older vehicles with newer and cleaner models.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas nitrogen oxides air pollution most often is a regional issue that cannot be addressed by a single new development.

For this project, three scenarios were selected for the carbon monoxide modeling study: (1) year 2009 with present conditions, (2) year 2022 without the project, and (3) year 2022 with the project. To begin the modeling study of the three scenarios, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. For this study, the several of the key intersections identified in the traffic study were also selected for air quality analysis. These included the following intersections:

- Piilani Highway at Kilohana Drive
- Piilani Highway at Okolani Drive
- Piilani Highway at Wailea Ike Drive
- Piilani Highway at Kaukahi Street
- Kaukahi Street at Wailea Alanui Drive
- Wailea Alanui Drive at Wailea Ike Drive

All of these intersections currently exist except for the intersection of Piilani Highway and Kaukahi Street (Piilani Highway currently ends at Wailea Iki Drive). The traffic impact report for the project [4] describes the projected future traffic conditions and laneage configurations of these intersections in detail. In performing the air quality impact analysis, it was assumed that all recommended traffic mitigation measures would be implemented.

The main objective of the modeling study was to estimate maximum 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can be made. Comparison of the estimated values to the national and state AAQS was also used to provide another measure of significance.

Traffic estimates for the project indicate that traffic volumes generally are or will be higher during the afternoon peak hour than during the morning peak period. However, worst-case emission and meteorological dispersion conditions typically occur during the morning hours at most locations. Thus, both morning and



afternoon peak-traffic hours were examined to ensure that worst-case concentrations were identified.

The EPA computer model MOBILE6.2 [5] was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILE6.2 is vehicle mix. Unless very detailed information is available, national average values are typically assumed, which is what was used for the present study. Based on national average vehicle mix figures, the present vehicle mix in the project area was estimated to be 40.9% light-duty gasoline-powered automobiles, 46.2% light-duty gasoline-powered trucks and vans, 3.6% heavy-duty gasoline-powered vehicles, 0.2% light-duty diesel-powered vehicles, 8.5% heavy-duty diesel-powered trucks and buses, and 0.6% motorcycles. For the future scenarios studied, the vehicle mix was estimated to change slightly with fewer light-duty gasoline-powered automobiles and more light-duty gasoline-powered trucks and vans.

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE6.2 generally have an inverse relationship to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE6.2, these data were then input to an atmospheric dispersion model. EPA air quality modeling guidelines [6] currently recommend that the computer model CAL3QHC [7] be used to assess carbon monoxide concentrations at roadway intersections, or in areas where its use has previously been established, CALINE4 [8] may be used. Until a few years ago,

CALINE4 was used extensively in Hawaii to assess air quality impacts at roadway intersections. In December 1997, the California Department of Transportation recommended that the intersection mode of CALINE4 no longer be used because it was thought the model has become outdated. Studies have shown that CALINE4 may tend to over-predict maximum concentrations in some situations. Therefore, CAL3QHC was used for the subject analysis.

CAL3QHC was developed for the U.S. EPA to simulate vehicular movement, vehicle queuing and atmospheric dispersion of vehicular emissions near roadway intersections. It is designed to predict 1-hour average pollutant concentrations near roadway intersections based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Although CAL3QHC is intended primarily for use in assessing atmospheric dispersion near signalized roadway intersections, it can also be used to evaluate unsignalized intersections. This is accomplished by manually estimating queue lengths and then applying the same techniques used by the model for signalized intersections. Currently, only two of the six study intersections are signalized.

Input peak-hour traffic data were obtained from the traffic study cited previously. This included vehicle approach volumes, saturation capacity estimates, intersection laneage and signal timings (where applicable). All emission factors that were input to CAL3QHC for free-flow traffic on roadways were obtained from MOBILE6.2 based on assumed free-flow vehicle speeds corresponding to the posted speed limits.



Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Concentrations predicted by air quality models generally are not considered valid within the roadway-mixing zone. The roadway-mixing zone is usually taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of a cross street. Model receptor sites were thus located at the edges of the mixing zones near all intersections that were studied for all scenarios. This implies that pedestrian sidewalks or public walkways either already exist or are assumed to exist in the future. All receptor heights were placed at 1.8 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is the atmospheric stability category. For these analyses, atmospheric stability category 6 was assumed for morning scenarios and stability category 4 was assumed for afternoon cases. These are the most conservative stability categories that are generally used for estimating pollutant dispersion at suburban locations for these time periods. For all cases, a surface roughness length of 100 cm was assumed and a mixing height of 300 meters was used. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. Concentration estimates were calculated at wind directions of every 5 degrees.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at relatively low levels. Hence, background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a small background concentration of

0.5 ppm to all predicted concentrations for 2009. Although at least moderate development and increased traffic are expected to occur within the project area within the next several years, background carbon monoxide concentrations may not change significantly since individual emissions from motor vehicles are forecast to decrease with time. Hence, a background value of 0.5 ppm was assumed to persist for the future scenarios studied.

Predicted Worst-Case 1-Hour Concentrations

Table 4 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations for 2009 and for each of the two future alternatives that were studied. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the highest estimated worst-case 1-hour concentration for the present (2009) scenario was 4.1 $mg/m^3$, and this occurred during the morning at the intersection of Kilohana Drive and Piilani Highway. Worst-case values for other locations and times ranged from 1.5 to 3.6 $mg/m^3$. These concentrations are well within both the national AAQS of 40 $mg/m^3$ and the state standard of 10 $mg/m^3$.

In the year 2022 without the proposed project, the predicted highest worst-case 1-hour concentration occurred again during the morning at the intersection of Kilohana Drive and Piilani Highway with a value of 4.0 $mg/m^3$. Other concentrations for this scenario at other times and locations ranged between 1.6 and 3.7 $mg/m^3$. Without the project, carbon monoxide concentrations in the year 2022 were predicted to increase somewhat at most locations in the



project area compared to the existing case, but even with the increase, worst-case values would likely remain well within the state and federal standards for this scenario.

Similar to the existing and 2022 without-project scenarios, the highest worst-case concentration with the project in the year 2022 was predicted to occur during the morning at the intersection of Kilohana Drive and Piilani Highway. A worst-case 1-hour concentration of 4.8 $mg/m^3$ was predicted to occur at this location and time. Worst-case concentrations at other locations and times ranged between about 0.7 and 4.4 $mg/m^3$. In the year 2022 with the project, carbon monoxide concentrations in the project area were predicted to increase by about 10 to 20 percent compared to the without project scenario at most of the locations studied, but the predicted worst-case 1-hour concentrations for the 2022 with-project alternative at all locations studied continued to remain well within both the national and state standards.

Predicted Worst-Case 8-Hour Concentrations

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One recent study based on modeling [9] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from about 0.4 to 0.5. EPA guidelines [10] recommend using a value of 0.6 to 0.7 unless a locally derived persistence factor is available. Recent

monitoring data for Honolulu reported by the Department of Health [11] suggest that this factor may range between about 0.35 and 0.55 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentrations. However, it should be noted that the 8-hour concentration estimates are generally less reliable than the 1-hour values due to the prediction methodology involved.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5. For the 2009 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the study locations ranged from 0.8 $mg/m^3$ to 2.0 $mg/m^3$, with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. The estimated worst-case concentrations for the existing case were well within both the national limit of 10 $mg/m^3$ and the state standard of 5 $mg/m^3$.

For the 2022 without project scenario in comparison to the existing case, worst-case concentrations generally increased but remained relatively low. Concentrations ranged from 1.0 $mg/m^3$ to 2.0 $mg/m^3$ with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. Despite the increase, all predicted 8-hour concentrations for this scenario were well within both the national and the state AAQS.

For the 2022 with-project scenario in comparison to the 2022 without-project case, worst-case concentrations increased by about 10 to 20 percent except at the intersection of Kaukahi Street and Wailea Alanui Drive where there was no change. Worst-case concentrations ranged from 0.5 $mg/m^3$ to 2.4 $mg/m^3$ with the highest



concentration occurring at the intersection of Kilohana Drive and Piilani Highway. All predicted 8-hour concentrations for this scenario were well within both the national and the state AAQS.

Conservativeness of Estimates

The results of this study reflect several assumptions that were made concerning both traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an hour is extremely unlikely and may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above. The 8-hour estimates are also conservative in that it is unlikely that anyone would occupy the assumed receptor sites (within 3 m of the roadways) for a period of 8 hours.

### 7.2 Electrical Demand

The proposed project also will cause indirect air pollution emissions from power generating facilities as a consequence of electrical power usage. The peak electrical demand of the project when fully developed is expected to reach about 9.5 megawatts [12]. Assuming the average demand is approximately one-half the peak demand, the annual electrical demand of the project will reach approximately 42 million kilowatt-hours. Electrical power for the project will most probably be provided mainly by oil-fired generating facilities, but some of the project power may also be derived from photovoltaic systems, wind power or other alternative energy sources. In order to meet the electrical power needs of the proposed project, power generating

facilities will likely be required to burn more fuel and hence more air pollution will be emitted at these facilities. Given in Table 6 are estimates of the indirect air pollution emissions that would result from the project electrical demand assuming all power is provided by burning more fuel oil at local power plants. These values can be compared to the island-wide emission estimates for 1993 given in Table 2. The estimated indirect emissions from project electrical demand amount to 2 percent or less of the present air pollution emissions occurring on Maui Island even if all power is assumed to be derived from oil.

### 7.3 Solid Waste Disposal

Solid waste generated by the proposed development when fully completed and occupied is not expected to exceed about 3,249 tons per year [13]. Currently, all solid waste on the island is buried at solid waste landfills. Thus, assuming this continues to be the method for solid waste disposal, the only associated air pollution emissions that will occur will be from trucking the waste to the landfill and burying it. These emissions should be relatively minor.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

**Existing Conditions**

Although very little ambient air quality data are available to characterize existing conditions, it is likely that state and federal ambient air quality standards are currently being met in the project area, except perhaps for occasional exceedances of the stringent state carbon monoxide standards within small areas near traffic-congested locations. Locations adjacent to large-scale agricultural activities may also be occasionally affected by dust.



**Short-Term Impacts and Mitigation**

The major potential short-term impact of the project on air quality will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall and other factors. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the project that have been disturbed could be controlled by mulching or chemical stabilization. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Establishment of landscaping early in the construction schedule will also help to control dust.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from the disruption of normal traffic flow. Increased vehicular emissions due to the disruption of traffic can be alleviated by minimizing road closures during peak traffic hours.

**Long-Term Impacts and Mitigation**

With the project in the year 2022, worst-case carbon monoxide concentrations would likely increase in the project area by about

10 to 20 percent at some locations. Even with the increased concentrations, worst-case concentrations should remain well within the state and federal standards through the year 2022 with the project.

Options available to mitigate long-term, traffic-related air pollution are generally to further improve roadways, to reduce traffic and/or to reduce individual vehicular emissions. Aside from providing added roadway improvements, air pollution impacts from vehicular emissions could conceivably be additionally mitigated by reducing traffic volumes through the promotion of bus service and car pooling in the project area and/or by adjusting local school and business hours to begin and end during off-peak times. This mitigation measure is generally considered only partially successful. Reduction of emissions from individual vehicles would have to be achieved through the promulgation of local, state or federal air pollution control regulations. For example, Hawaii currently does not require annual inspections of motor vehicle air pollution control equipment. However, at the present time there is no indication that the state is contemplating adopting such rules. Due to the predicted relatively small increases in carbon monoxide concentrations and the projected compliance with state and federal standards, mitigation measures for air pollution from project-related traffic are unnecessary and unwarranted.

Any long-term impacts on air quality due to indirect emissions from supplying the project with electricity and from the disposal of solid waste materials generated by the project will likely be small based on the relatively small magnitudes of these emissions. Nevertheless, indirect emissions from project electrical demand could likely be reduced somewhat by incorporating energy-saving features into project design requirements.



This might include the use of solar water heaters; designing building space so that window positions maximize indoor light without unduly increasing indoor heat; using landscaping where feasible to provide afternoon shade to cut down on the use of air conditioning; installation of insulation and double-glazed doors to reduce the effects of the sun and heat; providing movable, controlled openings for ventilation at opportune times; and possibly installing automated room occupancy sensors.

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# Figure 1 - Project Location




**Table 1**

**SUMMARY OF STATE OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS**

| Pollutant | Units | Averaging Time | Maximum Allowable Concentration | | |
|---|---|---|---|---|---|
| | | | National Primary | National Secondary | State of Hawaii |
| Particulate Matter (<10 microns) | µg/m$^3$ | Annual<br>24 Hours | -<br>150[a] | -<br>150[a] | 50<br>150[b] |
| Particulate Matter (<2.5 microns) | µg/m$^3$ | Annual<br>24 Hours | 15[c]<br>35[d] | 15[c]<br>35[d] | -<br>- |
| Sulfur Dioxide | µg/m$^3$ | Annual<br>24 Hours<br>3 Hours | 80<br>365[b]<br>- | -<br>-<br>1300[b] | 80<br>365[b]<br>1300[b] |
| Nitrogen Dioxide | µg/m$^3$ | Annual | 100 | 100 | 70 |
| Carbon Monoxide | mg/m$^3$ | 8 Hours<br>1 Hour | 10[b]<br>40[b] | -<br>- | 5[b]<br>10[b] |
| Ozone | µg/m$^3$ | 8 Hours<br>1 Hour | 157[e]<br>235[f] | 157[e]<br>235[f] | 157[e]<br>- |
| Lead | µg/m$^3$ | Calendar Quarter | 0.15[g] | 0.15[g] | 1.5 |
| Hydrogen Sulfide | µg/m$^3$ | 1 Hour | - | - | 35[b] |

[a] Not to be exceeded more than once per year on average over three years.
[B] Not to be exceeded more than once per year.
[C] Three-year average of the weighted annual arithmetic mean.
[D] 98th percentile value averaged over three years.
[E] Three-year average of fourth-highest daily 8-hour maximum.
[F] Standard is attained when the expected number of exceedances is less than or equal to 1.
[G] Rolling 3-month average.

**Table 2**

**AIR POLLUTION EMISSIONS INVENTORY FOR ISLAND OF MAUI, 1993**

| Air Pollutant | Point Sources (tons/year) | Area Sources (tons/year) | Total (tons/year) |
|---|---|---|---|
| Particulate | 63,275 | 7,030 | 70,305 |
| Sulfur Oxides | 6,419 | nil | 6,419 |
| Nitrogen Oxides | 7,312 | 8,618 | 15,930 |
| Carbon Monoxide | 4,612 | 20,050 | 24,662 |
| Hydrocarbons | 1,991 | 234 | 2,225 |

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

**Table 3**

**ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST HONUA'ULA PROJECT**

| Parameter / Location | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| **Particulate (PM-10) / Kihei** | | | | | |
| 24-Hour Averaging Period: | | | | | |
| No. of Samples | 352 | 340 | 308 | 337 | 337 |
| Highest Concentration ($\mu g/m^3$) | 95 | 78 | 65 | 155 | 72 |
| 2nd Highest Concentration ($\mu g/m^3$) | 80 | 72 | 63 | 119 | 66 |
| No. of State AAQS Exceedances | 0 | 0 | 0 | 1 | 0 |
| Annual Average Concentration ($\mu g/m^3$) | 20 | 23 | 19 | 25 | 22 |

Source: State of Hawaii Department of Health, "Annual Summaries, Hawaii Air Quality Data, 2002 - 2006"

**Table 4**

**ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR HONUA'ULA PROJECT (milligrams per cubic meter)**

| Roadway Intersection | Year/Scenario | | | | | |
|---|---|---|---|---|---|---|
| | 2009/Present | | 2022/Without Project | | 2022/With Project | |
| | AM | PM | AM | PM | AM | PM |
| Piilani Highway at Kilohana Drive | 4.1 | 3.1 | 4.0 | 2.6 | 4.8 | 3.0 |
| Piilani Highway at Okolani Drive | 2.4 | 2.1 | 4.0 | 2.5 | 4.4 | 3.0 |
| Piilani Highway at Wailea Ike Drive | 2.4 | 2.0 | 3.1 | 2.2 | 3.8 | 3.2 |
| Piilani Highway at Kaukahi Street | - | - | - | - | 0.9 | 0.7 |
| Kaukahi Street at Wailea Alanui Drive | 1.5 | 1.7 | 2.0 | 1.6 | 2.1[a] | 1.6[a] |
| Wailea Alanui Drive at Wailea Ike Drive | 3.6 | 2.2 | 3.7 | 2.3 | 3.9 | 2.5 |

Hawaii State AAQS: 10
National AAQS: 40

[a]Includes mitigation measures given in project traffic report.

**Table 5**

**ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR HONUA'ULA PROJECT (milligrams per cubic meter)**

| Roadway Intersection | Year/Scenario | | |
|---|---|---|---|
| | 2009/Present | 2022/Without Project | 2022/With Project |
| Piilani Highway at Kilohana Drive | 2.0 | 2.0 | 2.4 |
| Piilani Highway at Okolani Drive | 1.2 | 2.0 | 2.2 |
| Piilani Highway at Wailea Ike Drive | 1.2 | 1.6 | 2.0 |
| Piilani Highway at Kaukahi Street | - | - | 0.4 |
| Kaukahi Street at Wailea Alanui Drive | 0.8 | 1.0 | 1.0[a] |
| Wailea Alanui Drive at Wailea Ike Drive | 1.8 | 1.8 | 2.0 |

Hawaii State AAQS: 5
National AAQS: 10

[a]Includes mitigation measures given in project traffic report.

**Table 6**

**ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM HONUA'ULA PROJECT ELECTRICAL DEMAND[a]**

| Air Pollutant | Emission Rate (tons/year) |
|---|---|
| Particulate | 11 |
| Sulfur Dioxide | 109 |
| Carbon Monoxide | 11 |
| Volatile Organics | <1 |
| Nitrogen Oxides | 47 |

[a]Based on U.S. EPA emission factors for utility boilers [2]. Assumes demand of 42 million kw-hrs per year of electrical power use and low-sulfur oil used to generate power.

# Appendix P

## Preliminary Engineering Report

# H O N U A‘U L A

## Preliminary Engineering Report

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March 2010

**Preliminary Engineering Report**

**Honua‘ula**

**Wailea,Kīhei-Mākena, Maui**

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**March 2010**

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Appendix A Water Pipe Size Chart





# 1. INTRODUCTION

## 1.1 Project Location

Honua'ula is located in Wailea, Kīhei-Mākena, Maui on the relatively gentle lower slopes of Haleakalā with Wailea Resort to the west (makai), Mākena Resort to the south, 'Ulupalakua Ranch to the east (mauka), and the Maui Meadows subdivision to the north (see Figure 1-1). Honua'ula consists of 670 acres, herein referred to as the "project site", and is further identified as 2-1-008: 056 and 071. The project site is bisected by a portion (TMK: 2-1-008: 999) of the Pi'ilani Highway right-of-way previously reserved for a planned extension leading to upcountry Maui. However, the State Department of Transportation (DOT) is no longer planning to use the right-of-way for the extension. Approximately 370 acres of the project site are mauka of the right-of-way and 300 acres are makai. Honua'ula is designated as Project District 9 in the *Kīhei – Mākena Community Plan* and is also zoned Project District 9 under Chapter 19.90A of the Maui County Code (MCC).

Primary access to the project site is from the intersection of Pi'ilani Highway and Wailea Ike Drive. A secondary access is provided from Kaukahi Street.

Elevations across the site range from approximately 300 – 700 feet above mean sea level. The project site is characterized by generally even slopes of 4 to 12 percent with some variation on some of the knolls and gullies in excess of 14 to 16 percent.

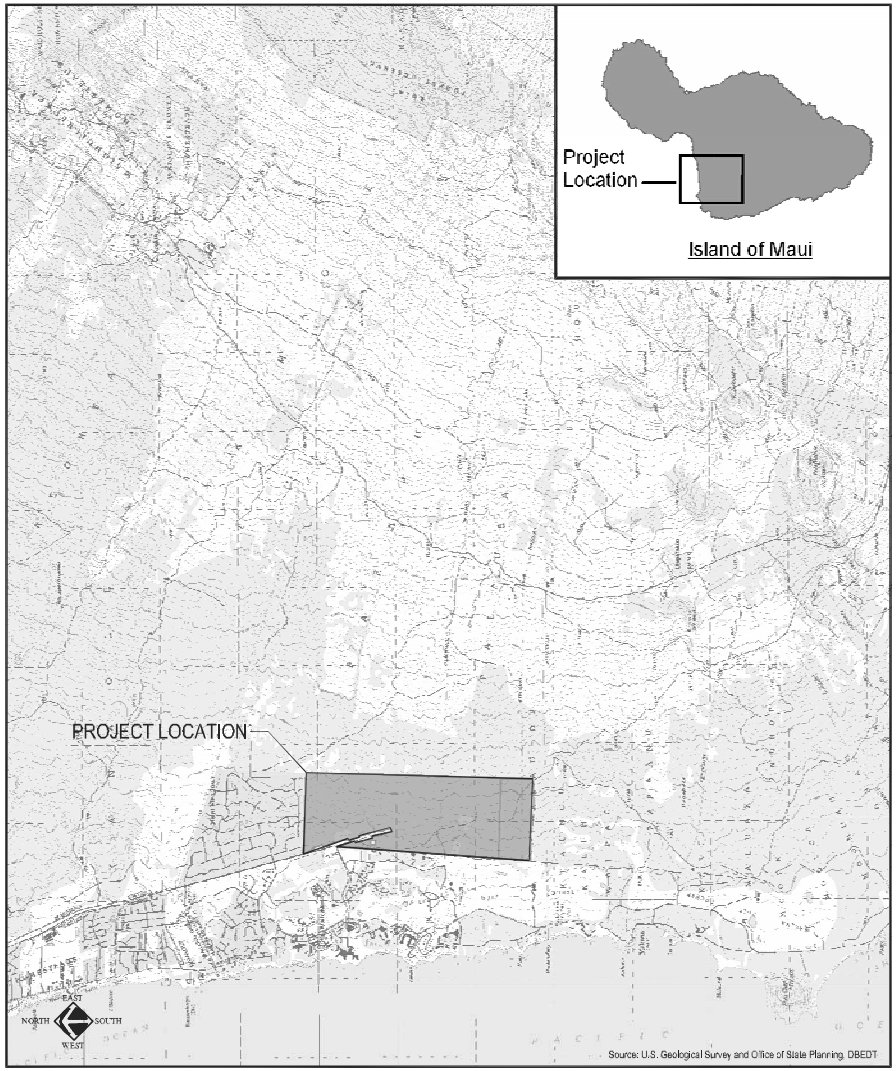
The northern 75 percent of the project site is characterized as a kiawe/buffel grass pastureland. The southern 25 percent of the parcel is 'a'ā land dissected by numerous gullies. The southern area is characterized as a mixed kiawe/wiliwili shrubland mixed with non-native kiawe trees, native wiliwili trees, and a dense understory of native 'ilima shrubs.

## 1.2 Project Description

Honua'ula will be a master-planned community embracing "smart growth" principles such as diverse residential opportunities, commercial mixed uses, on site recreational amenities, open space, and integrated bicycle and pedestrian networks. Honua'ula will also foster preservation of natural and cultural resources while contributing to Maui's social fabric and economic diversity.

In compliance with Chapter 19.90A MCC, Honua'ula will contain Single- and Multi- Family Residential, Village Mixed Use, and Recreation and Open Space/Utility sub-districts (see Figure 1-2).

Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 1-1 LOCATION MAP Plot date: Dec 30, 2009-07:33:34am CAD User: gtokita. Xref Filename: I Border Portrai

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HONUA'ULA

Location Map

FIGURE 1-1



Single and Multi-family Residential Sub-districts: The Single- and Multi- Family Residential sub-districts will contain Honua'ula's residential neighborhoods. The number of residences that may be constructed on-site in Honua'ula, together with any associated off-site residential workforce housing units, will not exceed 1,400.

Approximately 35 percent of homes will be single-family. The average density of the Single-Family Residential sub-district will be 2.5 units per acre or less, and the minimum lot area will be 7,500 square feet. Approximately 65 percent of the homes will be multi-family. The average density of the Multi-Family Residential sub-district will be 10 units per acre or less, and the minimum lot area will be 10,000 square feet.

Village Mixed Use Sub-district The Village Mixed Use sub-district is envisioned as a community center comprised of a mix of residential, commercial, and recreational and community facilities serving the needs of Honua'ula residents and guests.

Permitted uses in the village mixed use district include: retail food and beverage establishments; grocery stores; retail shops; offices; business services; minor medical offices; religious institutions; and public facilities, as stated in Chapter 19.90A of the Maui County Code (MCC).

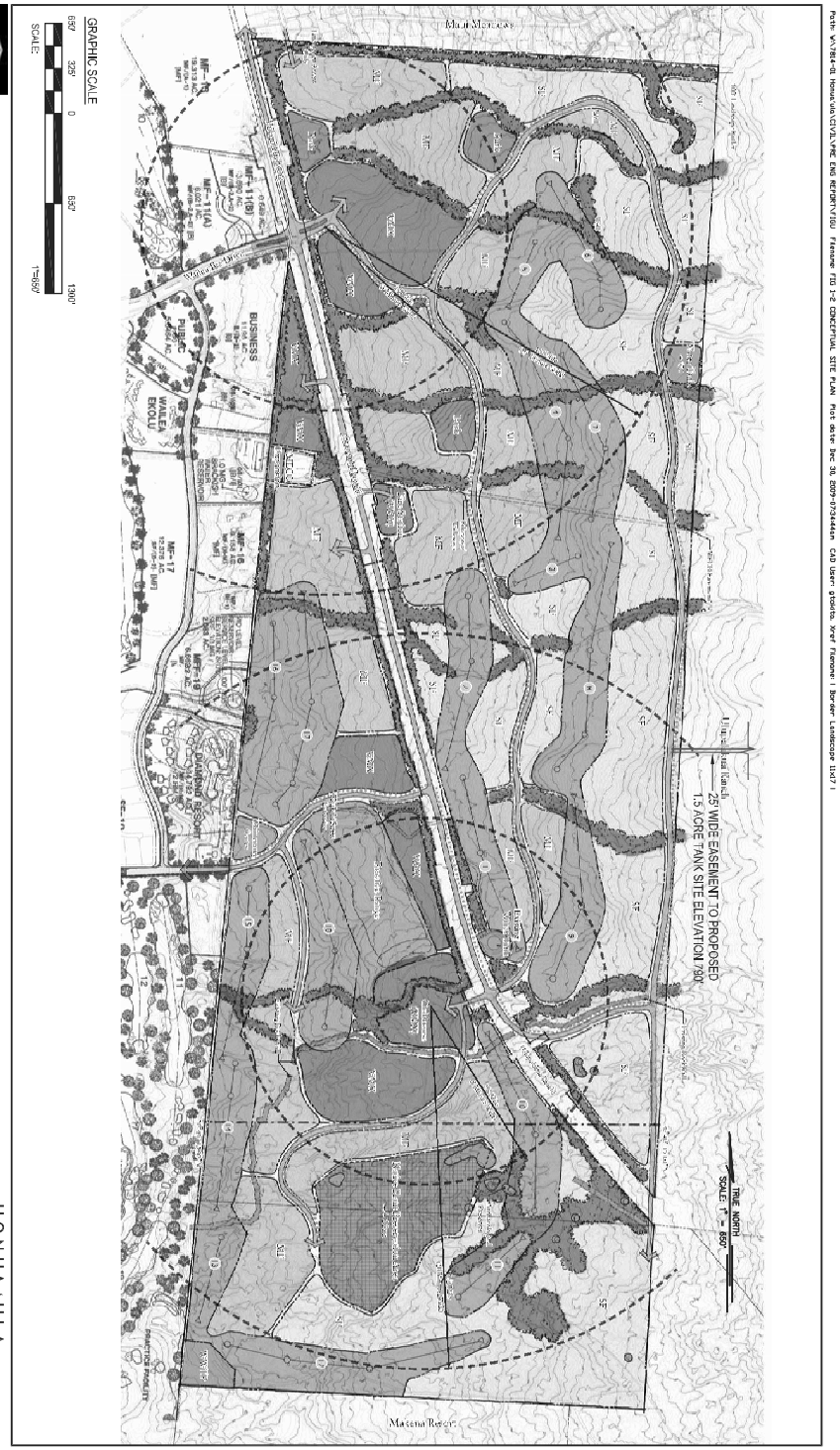
The total floor area of all structures commercial and retail structures within the village mixed use district will not exceed 100,000 square feet. The total land area of the Village Mixed Use sub-district will not exceed 53 acres.

Recreation and Open Space/Utility Sub-district: The Recreation and Open Space/Utility sub-district will include: the golf course and golf driving range; community and recreation centers; parks and playgrounds; native preservation and conservation areas; landscaped common or open space areas; trails and bike-pedestrian ways; drainage, utility, and erosion control systems; wells and reservoirs; and greenhouses and nurseries for the propagation of plants. The total land area of the Recreation and Open Space/Utility sub-district will not exceed 350 acres, including the golf course, as stated in Chapter 19.90A of the MCC.

Golf Course and Clubhouse: The 18-hole homeowner's golf course will include: a driving range; clubhouse facility with a restaurant; pro-shop; spa; and indoor and outdoor recreational amenities. The golf course and driving range will be part of the Recreation and Open Space/Utility sub-district, while the clubhouse and related facilities will be within the Village Mixed Use sub-district. Major portions of the golf course will be designed as an integral part of the community's drainage system.

**Table 1-1**
**Land Use Summary**

| Land Use Category | Approximate Acreage | Approximate No. of Units |
|---|---|---|
| Single-Family Residential | 274.1 | 504 |
| Multi-Family Residential | 59.7 | 196 |
| Multi-Family Affordable | 41.7 | 450 |
| Mixed Use Village | 7 | -- |
| Golf Course and Clubhouse | 182.1 | -- |
| Native Plant Preservation Area | 22 | -- |
| Neighborhood Collector roads | 49.6 | -- |
| Public Parks | 6 | -- |
| Water Tank Sites | 3.8 | -- |
| Fire Station | 2 | -- |
| Wastewater Treatment Plant | 2 | -- |
| MECO Expansion Area | 1 | -- |
| Open Space/Buffer/Detention Basins | 34 | -- |
| Total | 685 | 1,150 |




HONUA'ULA
CONCEPTUAL SITE PLAN

FIGURE 1-2

## 2. WASTEWATER

The Conditions of Zoning require that the project develop or participate in the operation of a private wastewater treatment facility and system. The following conditions are applicable to wastewater:

> *Condition 4: That Honua'ula Partners, LLC, its successors and permitted assigns, shall be responsible for all required infrastructural improvements for the project, including water source and system improvements for potable and non-potable use and fire protection, drainage improvements, traffic-related improvements, wastewater system improvements and utility upgrades, as determined by the appropriate governmental agencies and public utility companies. Except as otherwise provided by more specific conditions of zoning, said improvements shall be constructed and implemented concurrently with the development of each phase of Kīhei-Mākena Project District 9, and shall be completed prior to issuance of any certificate of occupancy or final subdivision approval, unless improvements are bonded by Honua'ula Partners, LLC, its successors and permitted assigns. Honua'ula Partners, LLC shall execute appropriate agreements with governmental agencies regarding participation in improvements of infrastructure and public facilities as determined by the agencies.*
>
> *Condition 14: That a nonpotable water supply system shall be utilized for all irrigation purposes.*
>
> *Condition 16: That Honuaula Partners, LLC, its successors and permitted assigns, shall provide a Sewage Disposal Analysis that has been reviewed and commented on by the State Department of Health, the State Department of Land and Natural Resources, the County Department of Environmental Management, and the County Department of Water Supply prior to Project District Phase II approval. The Sewage Disposal Analysis, along with reviews and comments, shall be submitted to the Maui County Council for review and the project shall be subject to additional conditions or amendments by the Maui County Council if warranted by the Sewage Disposal Analysis.*
>
> *Condition 17: The Honua'ula Partners LLC, its successors and permitted assigns, shall construct, maintain and/or participate in the operation of a private wastewater treatment facility and system that accommodate the needs of the entire Kīhei-Mākena Project District 9. All reclaimed water from the private wastewater treatment facility shall be utilized for irrigation, dust control, or other non-potable purposes, and none of the reclaimed water shall be placed into injection wells.*





The Wastewater Management Design Standards, Volume 1, City and County of Honolulu, July 1993 and Wastewater Flow Standards, County of Maui, February 2, 2006 were used to estimate wastewater flows.

This section reviews the existing wastewater system and describes proposed improvements to meet the demands of the project. The proposed improvements are subject to change based on the refinement of plans and availability of more detailed information.

### 2.1 Existing Conditions

#### 2.1.1 County Wastewater System

The Wailea area is serviced by the Kīhei Wastewater Reclamation Facility (WWRF) located approximately 4 miles northwest of the project site (see Figure 2-1). Sewage from the Wailea area is conveyed to the Kīhei WWRF via the South Kīhei Collection System, which consists of trunk sewer mains running along South Kīhei Road and Wailea Alanui Drive. Other Kīhei communities along this route are also served by this system.

Several sewer pump stations along the route provide necessary lifts to convey flows by gravity to the Kīhei WWRF, as shown in Figure 2-1.

The project site is not served by a wastewater collection system.

The Kīhei WWRF is an activated sludge treatment facility that currently has a peak dry weather capacity of 8 million gallons per day (mgd). The facility has undergone major upgrades in its treatment capabilities with the addition of flocculation and chemical feed units, effluent filtration, ultraviolet disinfection, and renovations to the operations building. The plant is capable of producing R-1 effluent, which is the highest quality of reclaimed water, as established by Hawai'i State Department of Health (DOH) Standards. Because R-1 reclaimed water must undergo a high level of treatment, it has minimal restrictions for reuse.

The Kīhei WWRF currently reclaims between 40 and 50 percent of the wastewater it treats, typically between 1.6 and 2.0 mgd. The rest of the R-1 reclaimed water is discharged through injection wells located on the WWRF site. It is envisioned that the Kīhei WWRF will eventually reclaim 100 percent of its flow as public acceptance, demand for the high quality effluent increases in the future, and the distribution system is developed.

The Kīhei WWRF does have unused capacity, however the collection/transmission system may not be adequate to support the project. The County desires to reserve the remaining unused plant capacity to accommodate "infill" development in the existing service area, rather than to extend the service area. Additionally, the County desires to move toward a more sustainable

approach to their operations. In regards to wastewater, this would mean more water reuse. The County's reuse system is much more limited in service area than their sewer system. Therefore, the reuse system would need to be extended much more to service the project site. From a sustainability perspective, it would be more desirable to have the reuse water source (treatment plant) closer to where the water will be used (project site). This would reduce pumping and energy costs.

### 2.1.2 Mākena Wastewater Reclamation Facility

The Mākena Wastewater Reclamation Facility (WWRF) is located approximately 1.5 miles south of Honua'ula and is owned and operated by Mākena Wastewater Corporation. The Mākena WWRF was constructed in 2001 to serve the Mākena Resort. The Mākena WWRF is presently sized to serve Increment 1 of the Mākena Resort. A portion of Increment 1 has been constructed. The current design capacity of the Mākena WWRF is 720,000 gallons per day (gpd), and was designed to be expandable to 1.54 mgd. Currently the Mākena WWRF has a wastewater flow of 391,413 gpd with an excess capacity of 328,587 gpd. Therefore, the wastewater volumes for which the reclamation facility was sized may not be achieved. Therefore the Mākena WWRF could provide wastewater treatment for the proposed Honua'ula Project.

Wastewater received at the reclamation facility is treated using an activated sludge process with ultraviolet radiation disinfection. The wastewater influent is initially screened as it comes into the plant. The screened wastewater flows to aeration lagoons where micro-organisms (activated sludge) consume the organic material in the wastewater. The wastewater then flows to a clarifier where these micro-organisms settle out. The wastewater is then filtered and disinfected using ultraviolet light.

## 2.2 Design Wastewater Flows

The design peak flows were calculated for each of the Project's parcels using the average wastewater flows, maximum wastewater flows, dry weather infiltration/inflow ("I/I"), design maximum flows, and wet weather I/I.

The County of Maui design standards set forth the definitions to be used to estimate wastewater flows from developments, as shown below:

1. Average Wastewater Flow: The average wastewater flow is the sum of the products of wastewater flow rates multiply by the number of residential units or lot areas.

2. Peaking Factor: The peaking factor was determined by using the Babbit equation to determine the maximum hour wastewater flow.



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HONUA'ULA

EXISTING WASTEWATER SYSTEM

FIGURE 2-1

$$MF = \frac{5}{p^{0.2}}$$

Where: MF = maximum flow peaking factor
$p$ = population in thousands

3. Maximum Wastewater Flow: The maximum wastewater flows were determined by multiplying the average wastewater flow by a County adopted flow factor. A flow factor was determined using the cumulative total of average daily flows for each phase.

4. Dry Weather I/I: Assuming that the sewerlines will be laid above the normal groundwater table, an additional factor of 5 gallons per capita per day ("gpcd") was assumed to account for water entering the collection system through pipe and manhole joints.

5. Design Maximum Flow: The design maximum flow is the sum of the maximum wastewater flow and dry weather I/I.

6. Wet Weather I/I: Assuming that the sewerlines will be laid above the normal groundwater table, an additional factor of 1,250 gallons per acre per day ("gad") was assumed to account for water entering the collection system through pipe joints and sewer structures.

7. Design Peak Flow: The design peak flow is the sum of the design maximum flow and wet weather I/I.

The average dry weather wastewater flow was calculated to be 0.38 MGD, as summarized in Table 2-1 Wastewater Flow Analysis

**Table 2-1**
**Wastewater Flow Analysis**

| Type | $Q_{avg}$ (MGD) |
|---|---|
| Average Dry Weather | 0.38 |
| Maximum Day Dry Weather | 0.91 |
| Maximum Hour Dry Weather | 1.37 |
| Peak Wet Weather | 2.19 |





## 2.3 Proposed Improvements

### 2.3.1 Collection System

### 2.3.2 Treatment System

The overarching consideration for the proposed improvements is to meet the Conditions of Zoning that the project is responsible for wastewater collection, treatment and disposal. Therefore, the County system serving the Wailea area cannot be used. As a result, connection to the Mākena WWRF or an on-site treatment plant were both considered as options:

1. Alternative 1 - On-Site Treatment Plant: The first alternative is to construct a facility that is capable of treating all of the flow to R-1 standards at the southwest corner of the project site on approximately 4 acres of land. The WWTP would first screen the wastewater for debris, then go through an equalization basin, next through a membrane bioreactor, and finally be disinfected using ultraviolet light. . The recycled water would be delivered to the Honua'ula golf course and other suitable users for irrigation reuse. Reverse Osmosis (RO) concentrate from an on-site desalination facility (see Section 3.2.2.5) would be blended with the R-1 water.

   A membrane bioreactor (MBR) wastewater treatment system is proposed for the on-site WWRF to produce R-1 quality water for non-potable use. The MBR process is a biological process (activated sludge process) combined with a separation process (membrane system). MBR systems are widely used throughout the world and are considered an industry standard for the production of reliable R-1 recycled water. In addition, MBR systems have the smallest footprint of the various biological treatment systems available and provide the highest quality recycled water.

   During the MBR process, wastewater is pumped into aeration basins, where a population of naturally-occurring microbes (activated sludge) treats the water by consuming organic matter. The activated sludge is separated from the water using membranes, located in the MBR basins. The activated sludge is pumped back to the head-end of the aeration basin to be used again.

   Periodically, excess activated sludge must be removed (wasted) from the treatment system. The activated sludge goes through a thickening process to form dewatered solids. The dewatered solids will be hauled to the County landfill for composting or disposal. At build-out the on-site WWRF is expected to produce approximately 17 wet tons of dewatered solids per week.

   The treated water will be disinfected using ultraviolet (UV) light. The treated water will flow through concrete channels containing banks of submerged UV light bulbs. The water will be disinfected as it passes by the bulbs and is

exposed to the UV light. The UV light penetrates the cells of pathogenic organisms, rendering them unable to replicate. The disinfected water exiting the channel will meet R-1 standards and will be suitable for reuse. A pump station located adjacent to the UV channel will deliver the R-1 water to the golf course.

Another potential approach to treating Honua'ula wastewater in lieu of the MBR is via an extended aeration activated sludge process, followed by addition of coagulant chemicals and granular media or cloth disk filtration. Additional land area within Honua'ula would have to be set aside for the WWRF if this approach is taken. The extended aeration activated sludge/coagulant/filtration approach is currently used at the Mākena Wastewater Reclamation Facility and the Kīhei Wastewater Reclamation Facility.

2. Alternative 2 - Mākena WWRF: The second alternative is to transport wastewater to the Mākena WWRF for treatment. Wastewater from Honua'ula would be conveyed to Mākena via a pump station and force main. R-1 recycled water would be pumped back to Honua'ula for use.

Either of the above options are feasible. Alternative 2 provides the benefit of consolidating wastewater services for both developments (Honua'ula and Mākena), allowing economies of scale in the treatment process and consolidated regulatory compliance. Sufficient irrigated golf course land is available within both developments to reuse 100 percent of the recycle water that will be produced.

Connection to the Mākena WWRF was chosen as the best option. Three alternative routes were considered to connect the project site to the Mākena WWRF. The most direct route was selected (R.M. Towill, Wailea 670 Wastewater Conveyance Alternatives: Analysis and Recommendations, April 16, 2008).

Wastewater will be treated at the Mākena WWRF (see Figure 2-2). It may be necessary to expand certain portions of the Mākena WWRF to provide a small amount of additional capacity to accommodate the total Honua'ula development wastewater flows along with the Mākena Resort flows (existing and proposed). As the developments will be phased, implementation of the improvements could be implemented at the appropriate phase.

#### 2.3.2.1 Sewerlines

The proposed wastewater improvements consist of a gravity collection system to collect flows from varying areas within the development. Pump stations will be utilized where the topography requires flows to travel upslope. The on-site wastewater collection system will essentially follow the proposed roadway system (see Figure 2-3). The network of 8-inch gravity sewer lines will collect





wastewater from the residential lots and developments throughout the project site within four service areas. In each of these service areas, the sewer lines will follow the topography and will flow by gravity to each of the five respective wastewater pump stations.

#### 2.3.2.2 Wastewater Pump Stations

The existing drainageways provide an obstacle to the gravity system. Therefore, four (4) wastewater pump stations will be utilized to transport the wastewater under the drainageways. Sewerlines may be 3 – 15 feet deep, depending upon the installation method used. A fifth wastewater pump station will be built to transport the wastewater from the project site to the existing Mākena WWRF. The locations of the WWPSs were selected based on the layout of the gravity sewerlines, topography, surrounding land uses, and phasing schedule. A layout of the pump station service zones can be found in Figure 2-4.

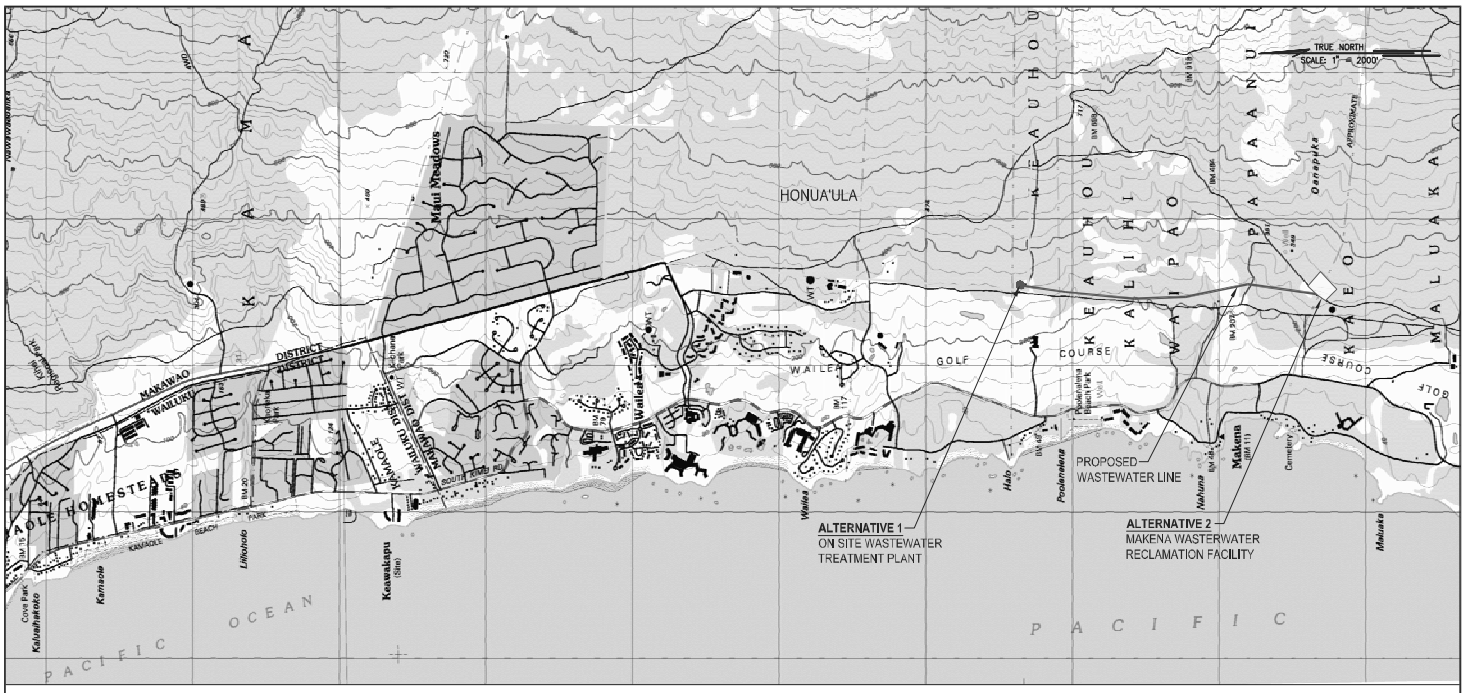
All the wastewater flows will be collected at the southwest corner of the project site. From here the flows will be pumped to the Mākena WWRF.

### 2.4 Wastewater Reuse

Wastewater treated to an R-1 level will be pumped back to the project site and stored in water features located on the golf course. The brine water from the reverse osmosis (RO) facility (see Section 3.2.2.5) will be mixed with the R-1 and other non-potable reclaimed water (see Figure 2-5). Water stored on the golf course will then be distributed for irrigation purposes as needed.

To meet County's current standards and Conditions of the Zoning to reuse reclaimed water, it is proposed to use the R-1 reclaimed water to irrigate portions of the project area such as the golf course and golf course landscaping.

Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 2-2 OFFSITE WASTEWATER ROUTE Plot date: Dec 30, 2009-0803:13am CAD User: gtokita. Xref Filename: | Border Landscape 11x17 | USGS |




GRAPHIC SCALE

2000' 1000' 0 2000' 4000'

SCALE: 1"=2000'

LEGEND

PROPOSED WASTEWATER LINE

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HONUA'ULA

FIGURE 2-2

OFFSITE WASTEWATER ROUTE

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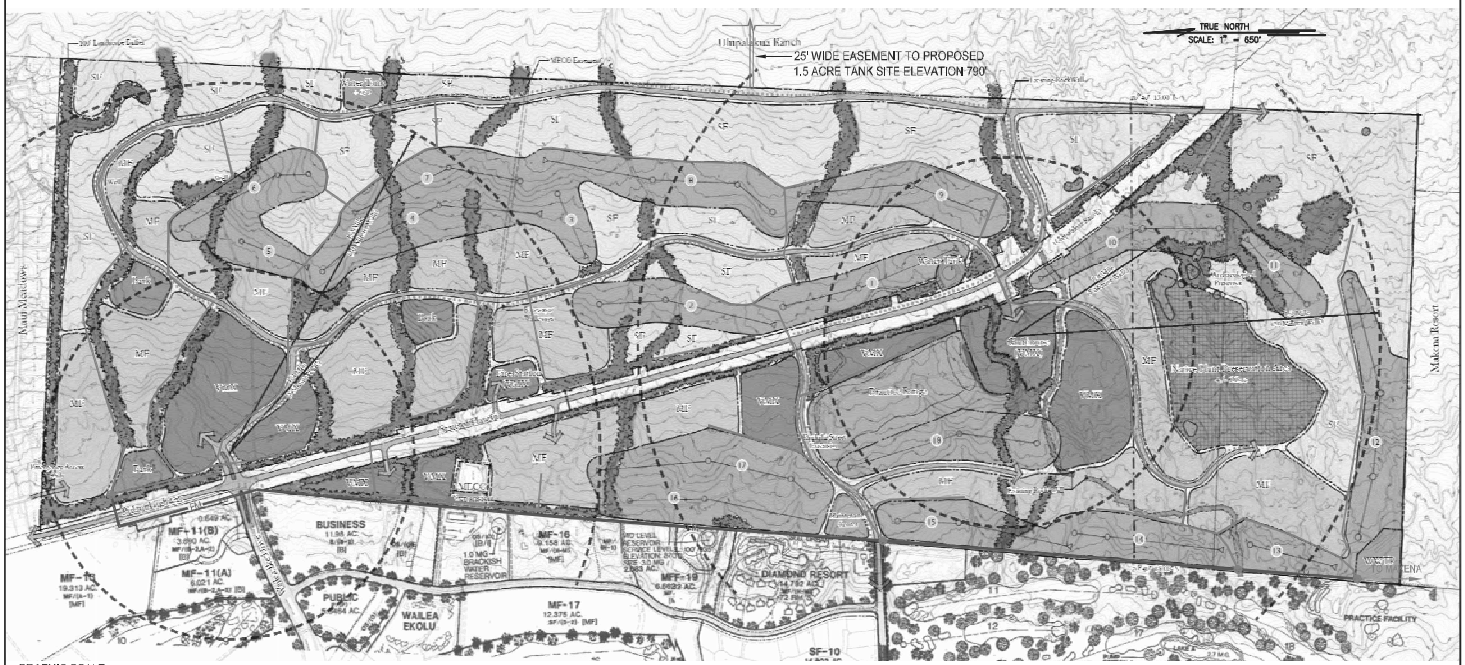


GRAPHIC SCALE

650' 325' 0 650' 1300'

SCALE: 1"=650'

LEGEND

FM SEWER FORCEMAIN

SL SEWERLINE

PUMP STATION

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HONUA'ULA

FIGURE 2-3

PROPOSED WASTEWATER LAYOUT PLAN

R-1 reclaimed water will be mixed with the brine water to irrigate the golf course and golf course landscaping. The non-potable water will be used to irrigate the roadway landscaping, individual residential lots, and other common areas to be in compliance with the Conditions of Zoning.

As a backup to the reclaimed water system (during periods where reclaimed water maybe unavailable), if necessary, brackish water will be pumped to the golf course. Reclaimed water will not be placed in injection wells (see Condition 17).

### 2.5 Summary

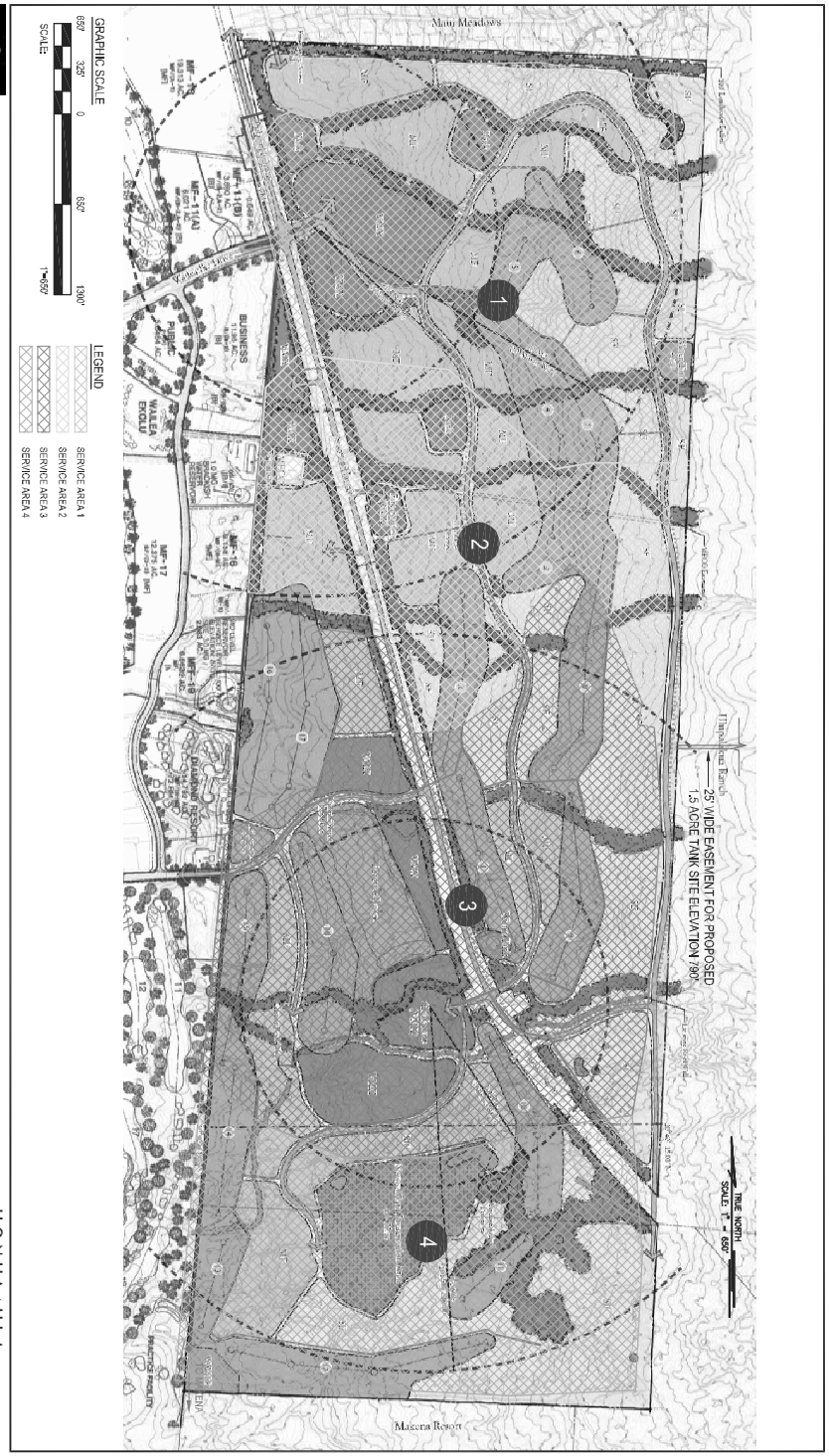
The overarching consideration for the proposed improvements is to meet the Conditions of Zoning that the project is responsible for wastewater collection, treatment and disposal. The County system serving the Wailea area cannot be used, therefore connection to the Mākena WWRF or an on-site treatment plant are potential options. Connection to the Mākena WWRF is the preferred option.

Both alternatives as discussed in the previous sections are feasible. However, Alternative 2 is recommended as it provides the benefit of consolidating wastewater services for both developments (Honua'ula and Mākena), allowing economies of scale in the treatment process and consolidated regulatory compliance.

The on-site wastewater collection system will essentially follow the proposed roadway systems. The network of 8-inch gravity sewer lines will collect wastewater from the residential lots and developments throughout the project site within four service areas. In each of these services areas, the sewer lines will flow to each of the four respective wastewater pump stations. The wastewater will be treated either on site or off site at the Mākena WWRF.

R-1 reclaimed water will be used to irrigate the golf course and golf course landscaping.






HONUA'ULA FIGURE 2-4
PUMP STATION SERVICE AREA

### 3. POTABLE AND NON-POTABLE WATER

The Conditions of Zoning require that the project develop a private water source, storage facilities, and transmission pipelines in accordance with Department of Water Supply standards:

*Condition 1: That Honua'ula Partners, LLC, its successors and permitted assigns, shall, at their own cost and expense, develop, maintain, and operate, or cause to be developed, maintained, and operated, a private water source, storage facilities, and transmission lines for the Wailea 670 project in accordance with Department of Water Supply standards and all applicable community plans. Honua'ula Partners, LLC, its successors and permitted assigns, shall comply with all reporting requirements of the State Commission on Water Resource Management.*

*In addition, Honua'ula Partners, LLC, its successors and permitted assigns, shall comply with applicable water ordinances that pertain to the supply and transmission of water from the island of Maui when such ordinances are enacted.*

*At the time the project water system is completed, Honua'ula Partners, LLC, its successors and permitted assigns, shall offer to the County the right to purchase the project water system at the cost of development of such system.*

*The water rates for the residential workforce housing units shall be no higher than the general water consumer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, Maui County Code.*

*Condition 4: That Honua'ula Partners, LLC, its successors and permitted assigns, shall be responsible for all required infrastructural improvements for the project, including water source and system improvements for potable and non-potable use and fire protection, drainage improvements, traffic-related improvements, wastewater system improvements and utility upgrades, as determined by the appropriate governmental agencies and public utility companies. Except as otherwise provided by more specific conditions of zoning, said improvements shall be constructed and implemented concurrently with the development of each phase of Kīhei-Mākena Project District 9, and shall be completed prior to issuance of any certificate of occupancy or final subdivision approval, unless improvements are bonded by Honua'ula Partners, LLC, its successors and permitted assigns. Honua'ula Partners, LLC shall execute appropriate agreements with governmental agencies regarding participation in improvements of infrastructure and public facilities as determined by the agencies.*



Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 2-5 R-1 PROCESS Plot date: Feb 22, 2010-08:58:44am CAD User: gtokita. Xref Filename: I Border Landscape 8x11 I




SCHEMATIC OF MAJOR COMPONENTS OF THE HONUA'ULA POTABLE AND NON-POTABLE SYSTEMS

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HONUA'ULA

NON-POTABLE WATER PROCESS

FIGURE 2-5

*Condition 14: That a non-potable water supply system shall be utilized for all irrigation purposes.*

*Water Systems Master Plan for the Honua'ula Project in Wailea, Maui (*TNWRE, December 2009) was used to estimate water demand.

This section documents the assumptions and process for designing the proposed potable and non-potable improvements to meet the demands of the project.

### 3.1 Existing Conditions

The project site falls within the Kamaole aquifer which extends west along Waiakoa Gulch to Kīhei; south to Cape Kina'u; Cape Kina'u northeast along crest of southwest rift of Haleakalā to Kolekole. The Kama'ole aquifer has a sustainable yield of 11 mgd and the total aquifer pumpage is on the order of 3.5 to 4.0 mgd at present (Mink and Lau, 1990). In 1990, the CWRM set the sustainable yield of the Kama'ole Aquifer at 11 million gallons per day (MGD). This was based on a computed groundwater recharge of 25 MGD and the assumption that 44 percent of the recharge could be withdrawn by wells without adversely impacting the integrity of aquifer. However, several far more detailed and sophisticated studies on the aquifer's recharge have been completed since then (USGS 1999; Waimea Water Services Inc. 2004; USGS 2007). These studies indicate that the recharge amount on which the CWRM's sustainable yield is based is substantially underestimated; the actual sustainable yield of the aquifer may be as much as 50 percent greater than the 1990 CWRM estimate. Current actual aquifer pumpage is estimated to be approximately 4.0 MGD (TNWRE 2010).

#### 3.1.1 County System

The Kīhei-Wailea area is part of the Central Maui Water System. Potable water is supplied entirely by the Iao Aquifer, which also supplies the Wailuku-Kahului region. A 36-inch transmission main and an 18-inch main extending along Mokulele Highway delivers water to the Kīhei-Wailea area. Existing water systems in the vicinity of the project site include the Maui Meadows System to the north and Wailea Resort System to the west.

Although the project will not be served by the County Water System, adjacent developments are served by the County.

The County's Maui Meadows System consists of a 0.5 million gallon (MG) high-level tank located at the 799 foot elevation and a 1.0 MG mid-level tank located at the 563 foot elevation (see Figure 3-1). Both 0.5 MG and 1.0 MG tanks are fed by the Kilohana 1.0 MG low-level tank through a 12-inch transmission line.





There is also an existing 1.0 MG water tank that will be dedicated to the County of Maui located on the project site above Kaukahi Street. This tank provides service to developments below the project site.

The potable Wailea Resort System is a County system that consists of a low-level 2.0 MG tank south of Wailea Ike Drive at the 210 foot elevation and a 3.0 MG mid-level tank at the 374 foot elevation. The Wailea 3.0 MG tank is located to the west of the Honua'ula project and serves most of the subdivisions below the project site.

#### 3.1.2 Private Water System

The Wailea Resort operates a private non potable system for golf course irrigation.

The project has four brackish wells. Two of these are on site (Wailea 670 Nos. 1 and 2). The other two are off site wells (Kama'ole 1 and 2) located on Haleakalā Ranch property north of Maui Meadows within a water source development area designated for well development for Honua'ula (see Figure 3-2). The total safe yield of the four wells, with one as standby, is 1.296 MGD (TNWRE 2009).

In compliance with Conditions 4 and 14, the project will develop and operate a private water system providing both potable and non-potable water for use within the project. The potable system will provide source and supply for all domestic needs through a series of wells, a delivery system, a reverse osmosis water treatment plant and storage tanks. The non-potable water system will utilize water from wells, reclaimed water from the wastewater treatment facility as well as all water/brine byproduct from the reverse osmosis treatment facility

The projected brackish supply needed to address both potable and non-potable water needs for the project at build-out is approximately 2.490 MGD. This demand will be served by the existing and proposed wells located within the Haleakala Ranch source development area (two more wells within this area will be developed as demand is projected within the project).

### 3.2 Potable Water System

#### 3.2.1 Projected Potable Water Use

Based upon the *Water Systems Master Plan for the Honua'ula Project* (TNWRE, December 2009), the average daily potable water use for the project was estimated to be 0.342 MGD. The average use with the inclusion of the 10% allowance for leakage and unmetered use is estimated to be 0.3766 MGD.

### 3.2.2 Proposed Potable Water System Improvements

The proposed potable and non-potable water system will be part of a larger system integrating use of brackish well water and reclaimed water from the WWRF.

#### 3.2.2.1 Pressure Zones

The elevation of the project site ranges from 320 to 710 feet. To provide service over this range of elevation, the project site was divided into two pressure zones, correlating with a high and low water storage system approximately divided by the 530-foot elevation.

The service pressure zones were established by storage reservoirs with spillway elevations of 640 and 810 feet. The 640-foot reservoirs will be on site and the 810-foot reservoirs will be mauka of the project site on land owned by Ulupalakua Ranch.

The overriding consideration for the potable water system is the condition of zoning requiring a system independent of the County water system.

#### 3.2.2.2 Source and Transmission

Service from the County DWS is not available for the project, therefore the following three private water systems will be developed:

1. a non-potable system supplied by brackish wells will provide water for irrigation of common areas and within development parcels;
2. a potable system supplied by RO- treated water, using brackish groundwater as the feedwater supply, will provide drinking water and other, within building potable uses; and
3. a golf course irrigation system supplied by treated wastewater (R-1 quality), concentrate from the RO treatment of the potable supply, and brackish groundwater from the non-potable irrigation system.

To provide potable and non-potable water service to the project, two new brackish water wells (Kama'ole 3 and 4) will be developed in a well field to the north of Maui Meadows which is approximately 2.5 miles away at an elevation of 600 feet (in Haleakalā Ranch property) (see Figure 3-2). A well field is an area designated for well development. Depending on actual water use rates that materialize, an additional well may be required with the well field (in Haleakalā Ranch property). The new wells will all be within the Kamaole aquifer and within the Kīhei-Mākena Community Plan area. The brackish water will be pumped through a 12" – 20" pipeline to the project site. A total supply of 2.49- MGD would be provided at full build-out.





The alignment will route brackish water from Kama'ole Wells 3 and 4 through the well field directly to the water treatment and storage facilities located within and outside the project area. This system will require pumping to deliver the water to the treatment facility. The alignment and these facilities fall along the eastern (mauka) boundary of Meadow Meadows and Honua'ula.

### 3.2.2.3 Storage

Water storage will be required for each of the pressure zones. According to the report by TNWRE (2009), the lower tank (at approximate elevation 640-foot), servicing the lower portion of the site, will be located along the eastern border of the project adjacent to a reverse osmosis plant (see Figure 3-2). The lower tank will be a 0.5 MG tank. The high tank (at approximate elevation 810-foot), located off-site and east (mauka) of the project site, will service the upper portion of the project site. The upper tank will be a 0.2 MG tank. Both tanks were sized to provide the projected maximum day use including the 10% allowance for leakage and unmetered use with no credit for source inflow.

As described above in section 3.2.2.2, storage for the upper delivery system will be established through a pressurized system using storage tanks for supply and the lower level system using storage and gravity for service.

### 3.2.2.4 Distribution

The on-site upper level and lower level potable water distribution system, respectively will largely follow the proposed roadway system (see Figure 3-3). An 8" potable waterline will be used for potable water distribution. Waterline sizes were determined from the tables provided in the Sizing Water Service Lines and Meters of the American Water Works Association. Tables can be found in Appendix A. Some assumptions were noted to determine the size of the waterlines:

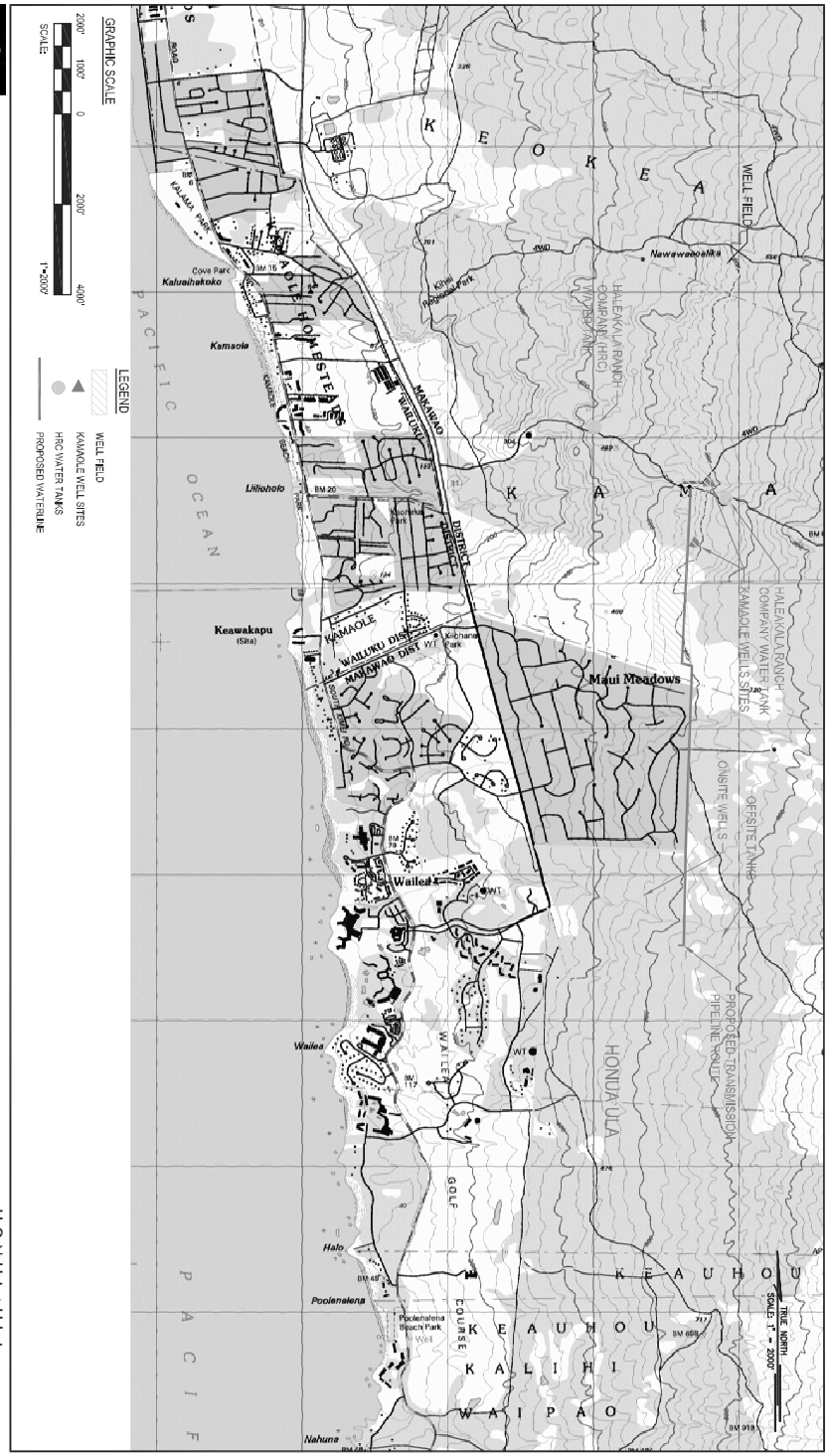
1. Pipe material will be Class 150 PVC 1120 Pressure Pipe for non-potable water
2. Pipe material will be Ductile Iron Pressure Pipe for potable water
3. A Flow of 2,000 GPM is used for the non-potable water

Pressure reducing valves are used to regulate excessive pressures within the pressure zones.

### 3.2.2.5 Treatment – Reverse Osmosis

The brackish well water will be treated by reverse osmosis to produce potable water for the project. The reverse osmosis process involves initially passing the raw brackish water through a filter to remove particulate matter. The filtered water is then forced through a membrane under pressure. The membrane acts as a barrier to salts and other constituents. The water that passes through the membrane may be further chemically treated and disinfected prior to use. The






HONUA'ULA FIGURE 3-2
ON/OFF SITE WATER WELLS AND TANKS

reverse osmosis plant will be located at the eastern border of the project site next to the lower distribution tanks (see Figure 3-3). A portion of the brackish water will bypass the reverse osmosis plant, to be used as non-potable water for irrigation. The brine effluent produced by the plant will also be diluted and reused as non-potable water for irrigation. The non-potable water system is discussed subsequently.

The RO facility generates brine in the process of producing potable water. The Conditions of Zoning prohibit the use of injection wells to dispose of the brine. However, by diluting it with other non-potable water (such as R-1), its salt content can be reduced to a degree that it will be used for irrigation.

## 3.3 Non-Potable Water System

### 3.3.1 Projected Non-Potable Water Use

Non-potable water will be used to irrigate the golf course, individual residential lots, roadway landscaping, and other common areas. The Conditions of Zoning require that irrigation be done using non-potable water. The projected average daily non-potable water use is 0.810 MGD through Phase 3. The estimated golf course irrigation requirement is 0.717 MGD for 110 acres (TNWRE, 2009).

Development of the non-potable water system will be concurrent with the phasing of major backbone infrastructure and the individual residential subdivisions.

### 3.3.2 Proposed Non-Potable Improvements

#### 3.3.2.1 Pressure Zones

Comparable to the potable water system, the site is separated into two pressure zones due to the elevation difference across the site.

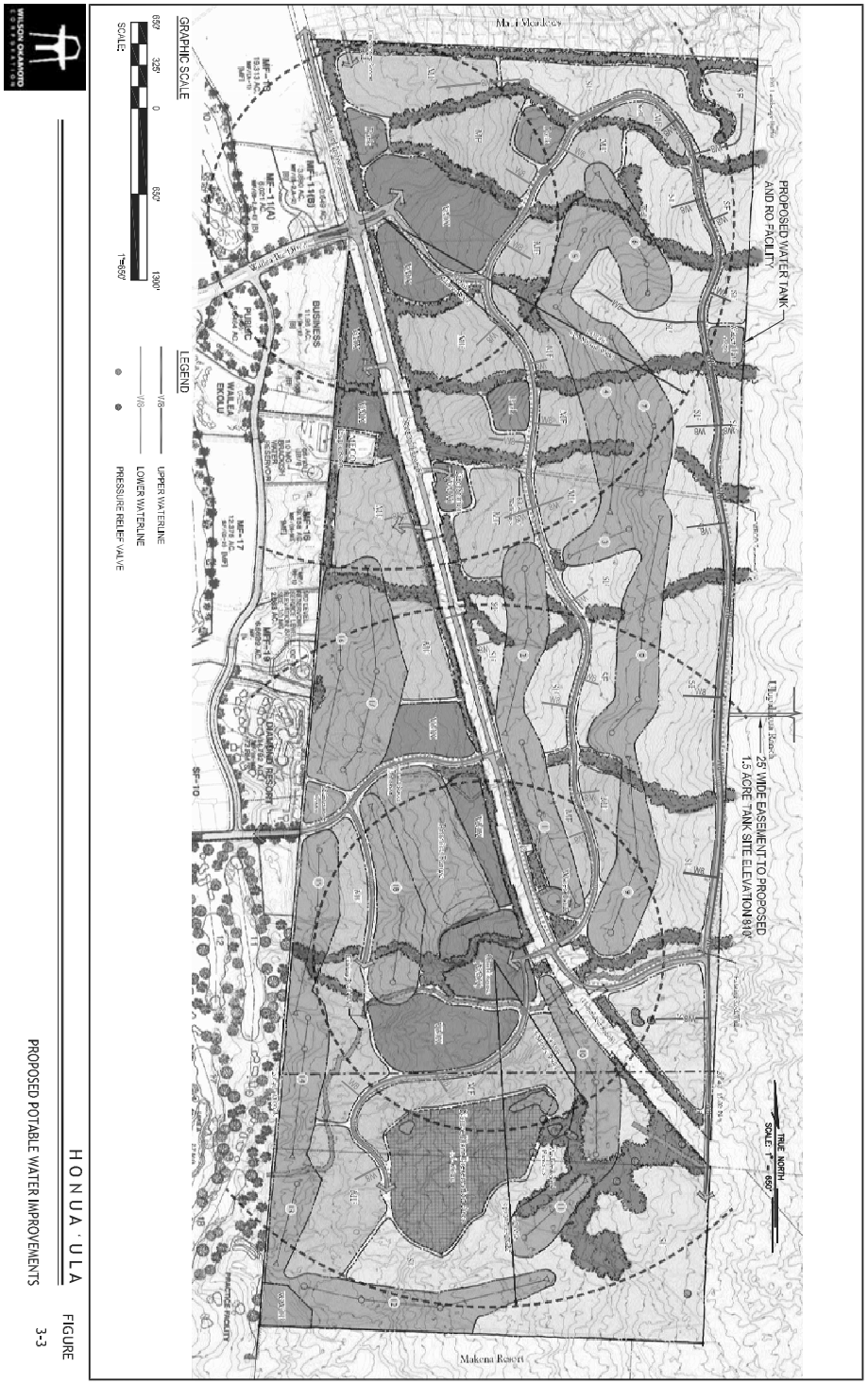
#### 3.3.2.2 Source

There are three sources of non-potable water: the R-1 reclaimed water returned from the Wastewater Reclamation Facility, the brine water being wasted from the RO facility, and well water.

#### 3.3.2.3 Storage

Similar to the potable water system, storage tanks will be provided for each pressure zone. According to the report by TNWRE (2009), a 1.0 MG lower non-potable water tank will be located at the 640' elevation adjacent the RO plant.






HONUA'ULA

FIGURE 3-3

PROPOSED POTABLE WATER IMPROVEMENTS

A 0.5 MG upper non-potable water tank will be located at the 810' elevation. The golf course irrigation water will be stored in water features located on the golf course.

#### 3.3.2.4 Distribution

The on-site upper level and lower level non-potable water distribution system respectively will largely follow the proposed roadway system (see Figure 3-4). A 16-inch non-potable waterline will be used for non-potable distribution. A separate distribution system will be used to irrigate the golf course. Pressure reducing valves will be used to regulate excessive pressures within the pressure zones.

### 3.4 Summary

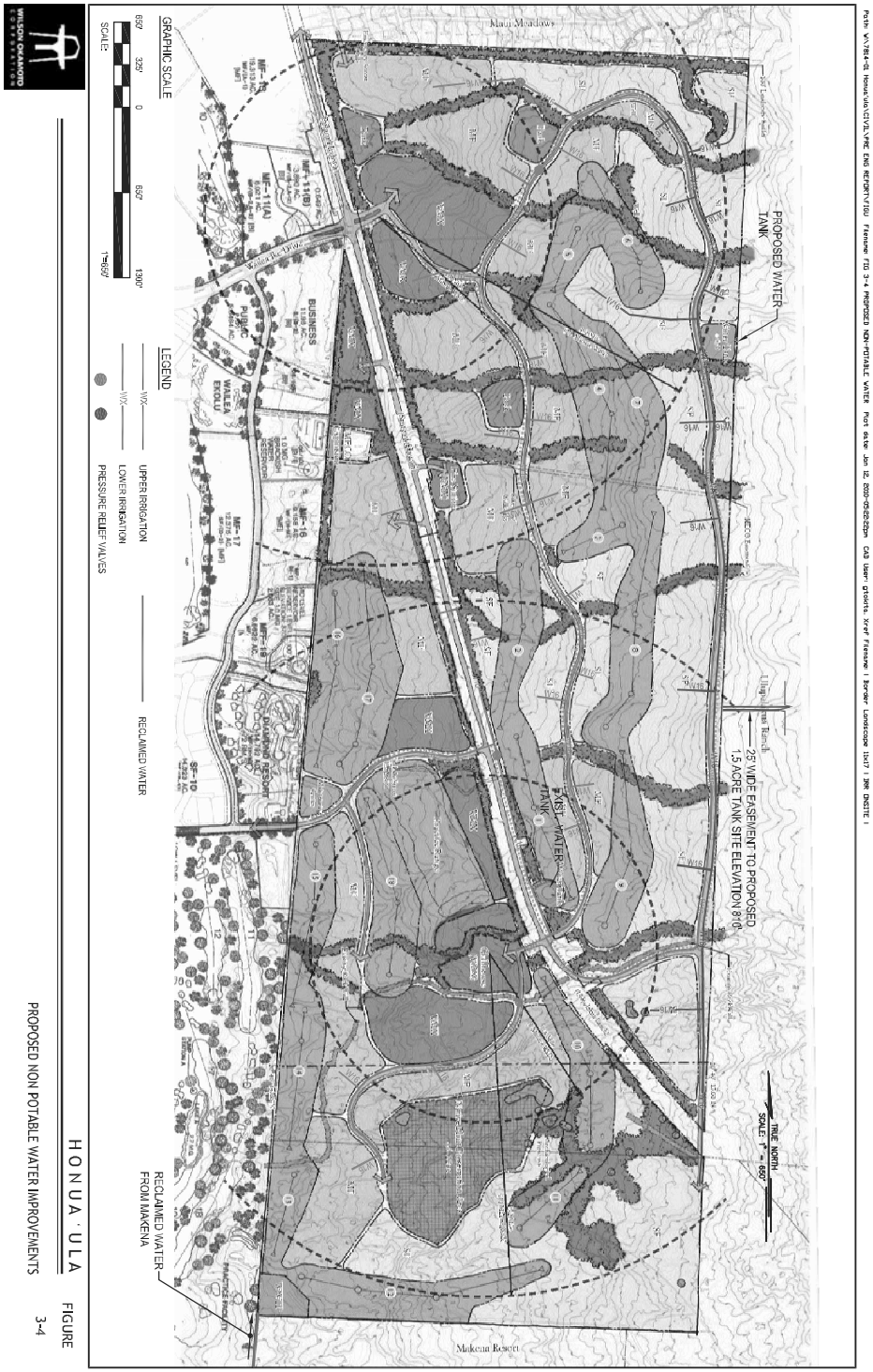
At full build-out, the proposed project is estimated to have a daily potable water use of 0.342 MGD, and an average use with 10% allowance for leakage and unmetered use of 0.3766 MGD. The daily non-potable water use is 0.810 MGD, and an average use with 10% allowance for leakage and unmetered use of 0.890 MGD. Due to the elevation range of the project site, the site was divided into two zones, correlating with high-level and low-level water storage water systems approximately divided by the 530-foot elevation.

To provide potable and non-potable water demand, two new brackish water wells will be developed to meet the demands of the proposed project. Depending on actual water use rates that materialize, an additional well may be required. The project is estimated to have a 0.5 MG lower-level tank and a 0.2 MG higher-level tank to store potable water. A 1.0 MG lower-level tank and 0.5 MG higher-level tank to store non-potable water. The potable tanks were sized to meet the estimated maximum day rate plus the 10% allowance for leakage and unmetered use, in storage volume with no credit for source inflow. The non-potable tanks were sized to provide fire protection, providing a fire flowrate with coincident maximum day demand for the duration of the fire, with the reservoir ¾ full at the start of the fire.

Waterline sizes will vary in size from 8 inch to 20 inch lines and follow the proposed roadway systems.

Non-potable water will be used to irrigate the golf course, individual residential lots, roadway landscaping, and other common areas in compliance with the Conditions of Zoning.






HONUA'ULA

FIGURE 3-4

PROPOSED NON POTABLE WATER IMPROVEMENTS

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## 4. DRAINAGE

The Conditions of Zoning require that the project develop infrastructure improvements:

> *Condition 4: The Honua'ula Partners LLC, its successors and permitted assigns, shall be responsible for all required infrastructural improvements for the project, including water source and system improvements for potable and non-potable use and fire protection, drainage improvements, traffic-related improvements, wastewater system improvements and utility upgrades……..*

This section reviews the existing topography and drainage conditions and describes proposed improvements to meet the demands of the project. The proposed improvements are subject to change based on the refinement of plans and availability of more detailed information.

### 4.1 Existing Conditions

For the purpose of the drainage assessment the drainage area (herein referred to as "project area") to be assessed encompasses approximately 687 acres, including the project site (TMK: 2-1-008: 056 and 071), TMK 2-1-008: 043, and the Pi'ilani Highway right-of-way within the property (TMK 2-1-008:999(portion)).

In addition to the on-site drainage areas, the "project area" also consists of off-site drainage areas. Approximately 3,989 acres of land mauka of the project area is taken into consideration as off-site drainage. The area mauka of the project site consists of undeveloped land, dirt roads and minor natural drainage channels. Generally, the drainage will flow in a westerly direction from Haleakalā toward the ocean.

Wailea Resort and Golf Course is located makai of Honua'ula.

#### 4.1.1 Climate

The project area generally experiences warm, dry weather except during occasional trade wind showers and during the major storm periods in the winter months. Kona storms usually produce high surface water runoff. Average annual rainfall is approximately 18 inches in the project area.

#### 4.1.2 Topography and Soil Conditions

On site soils are largely comprised of four soil types designated by the U.S. Department of Agriculture, Soil Conservation Service (see Figure 4-1):

- The majority of the project site is classified as Keawakapu Extremely Stony Silty Clay Loam (KNXD). The soil consists of a 2-inch thick dark reddish-brown stony silt loam. The subsoil has a 16-inch thick dark reddish-brown silty clay loam. Permeability is moderate, runoff is slow to medium, and the erosion hazard is slight to moderate. The slopes generally range from 3 to 17 percent with elevations ranging from 320 feet on the makai (west) end to 720 feet on the mauka (east) end.

- The lower, western portion of the project site is classified as Makena Loam, Stony Complex (MXC). It consists of Makena loam and Stony land. The permeability is moderately rapid, runoff is slow to medium and the erosion hazard is slight to moderate. The slopes generally range from 3 to 5 percent.

- The southern third of the project site is classified as Very Stony Land (rVS), with slopes ranging from 7 to 13 percent. Permeability is moderate, runoff is slow to medium and the erosion hazard is slight to moderate.

- Oanapuka (OAD), Very Stony Silt Loam is found in the southeast corner of the project site. This soil type has been used to support pasture land and wildlife habitat with its exotic grasses and trees. Permeability is moderately rapid, runoff is slow and erosion hazard is slight to moderate.

#### 4.1.3 Hydrology

Surface runoff mauka of the project sheetflows over the project site toward the ocean or through natural drainage paths before discharging into the ocean. There are approximately 8 well-defined natural drainage paths in which runoff flows through the site.

The existing project area consists of about 4,692 acres of off site and on site drainage. The existing area can be categorized into twelve (12) distinct drainage basins, based on approximate ridgelines and natural topography (see Figure 4-2).

1. **Drainage Basin A**. This drainage basin has an area of approximately 1,500 acres. Surface flow from Haleakalā travels in a westerly direction over the natural terrain toward the ocean. Currently, most of the basin is covered with slight to moderate vegetation. Most of the drainage flow can be considered off site. Ultimately, the runoff flows west through the Wailea development and into the ocean.

2. **Drainage Basin B**. Surface flow from this drainage basin encompasses approximately 446 acres. This surface flow starts from Haleakalā and travels in a westerly direction toward the ocean through the natural terrain.

   Most of this terrain is made up of slight to moderate vegetation. Ultimately, this drainage flow will reach the ocean though the lower Wailea development.

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HONUA'ULA

SOILS MAP

FIGURE 4-1

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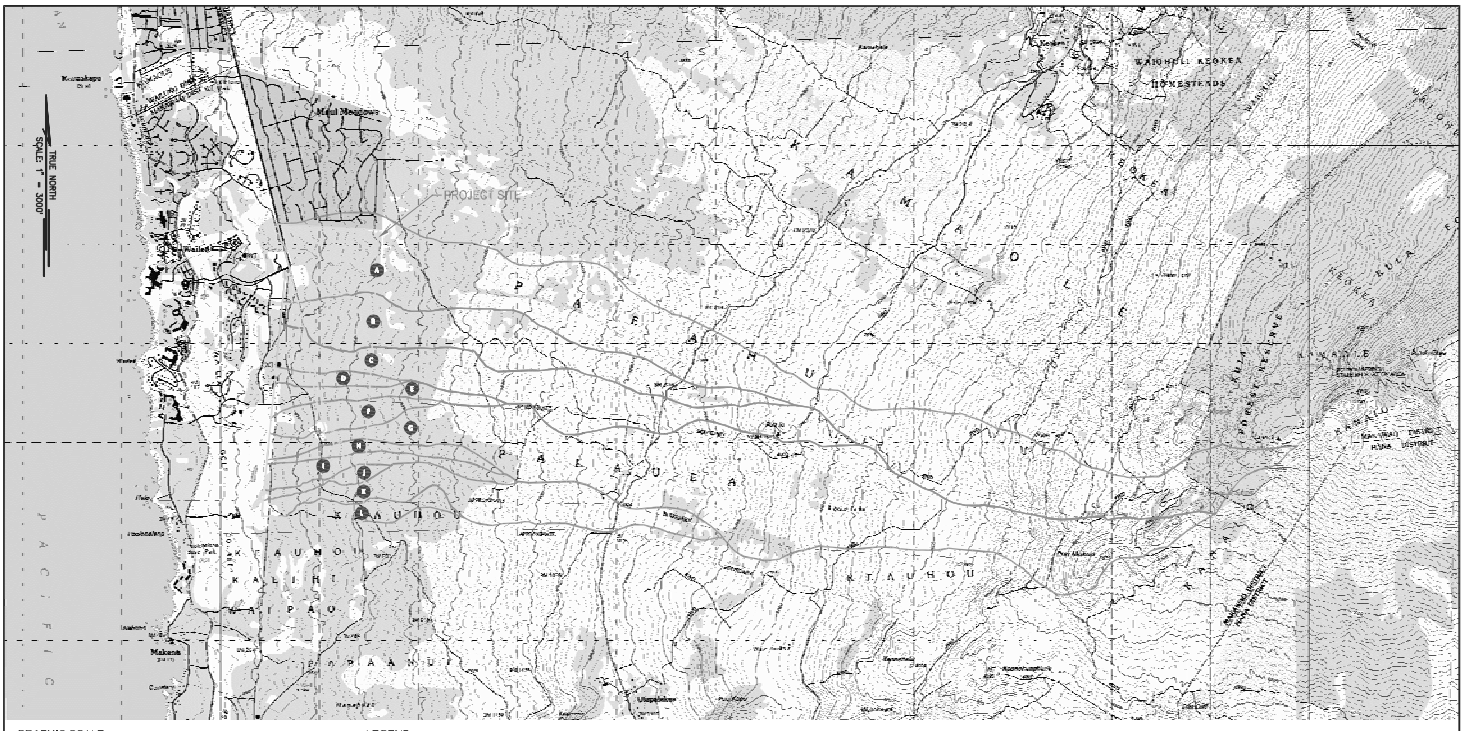



HONUA'ULA

EXISTING DRAINAGE AREA

FIGURE 4-2

3. **Drainage Basin C**. Approximately 494 acres of light brush makes up this drainage basin. Starting from Haleakalā, runoff surface flows in a westerly direction toward the ocean through the natural terrain. Most of this drainage basin can be considered off site drainage. Ultimately, the drainage flow will pass through the neighboring Wailea development and into the ocean.

4. **Drainage Basin D**. Most of the 41 acres of this drainage basin is considered on site. Runoff in this basin surface flows through the natural terrain of slight to moderate vegetation in a westerly direction toward the ocean through the Wailea development.

5. **Drainage Basin E**. About half of the 84 acres from this drainage basin can be considered off site while the other half is considered on site. The drainage flow from the upper off site area flows in a westerly direction toward the project site through the natural terrain of slight to moderate vegetation. Moving through the Wailea development, the drainage flow from this drainage basin will ultimately discharge into the ocean.

6. **Drainage Basin F**. This drainage basin has a total area of about 100 acres. Surface runoff from this drainage basin generally flows in a westerly direction toward the ocean. Slight to moderate vegetation covers the existing basin. Most of this basin can be considered on site. Ultimately, the flow from this basin will pass through the Wailea development and into the ocean.

7. **Drainage Basin G**. Reaching up into Haleakalā, this drainage basin is about 1,430 acres. The runoff from this basin surface flows in a westerly direction toward the ocean through the natural terrain of aa basalt. Most of this basin can be considered off site. Ultimately, the surface runoff will pass through Wailea development and discharge into the ocean.

8. **Drainage Basin H**. The natural terrain of this drainage basin consists of about 61 acres of slight to moderate vegetation. About half of this basin can be considered on site. Moving in a westerly direction, runoff surface flows from Haleakalā toward the ocean through the Wailea development.

9. **Drainage Basin I**. This drainage basin has an area of about 92 acres, mostly consisting of ā'a basalt. Surface flow will travel westerly through about half the basin over natural terrain. Then, through the other half of the basin, the project site. Ultimately, this flow will travel through the Wailea development and into the ocean.

10. **Drainage Basin J**. Over half of the 31 acres in this basin can be considered on site. Slight to moderate vegetation covers the existing natural terrain. Surface flow travels in a westerly direction toward the ocean through the Wailea development.

11. **Drainage Basin K**. About 325 acres make up this drainage basin. Mostly covered in slight to moderate vegetation and natural terrain, surface flow moves in a westerly direction toward the ocean. Most of this drainage basin can be considered off site. Ultimately, the runoff will flow through the Wailea development and into the ocean.

12. **Drainage Basin L**. This basin has an approximate area of 80 acres. Runoff surface flows in a westerly direction through the slight to moderate vegetation that covers most of the natural terrain. About half of this basin can be considered off site. Ultimately, the runoff will discharge into the ocean through the Wailea development.

Table 4-1 provides a summary of the twelve existing drainage basins that are shown in Figure 4-2.

### 4.1.4 Flood Zone

According to the Flood Insurance Rate Map (FIRM), Community-Panel Number 150003 0330 B, dated June 1, 1981, the project area is located in Zone C, an area of minimal flooding (see Figure 4-3). The project is not located in a flood zone.

## 4.2 Demand Analysis

As Honua'ula is developed, the nature of the land will be altered. The rate at which surface runoff flows (usually measured in cubic feet per second, cfs) will change and the quantity of runoff (usually measured in acre-feet, ac-ft) will also change resulting from the altered nature of the land. The off site runoff entering the Project Site is assumed to remain unchanged. The change in runoff from the Project Site was determined as described in the following sections.

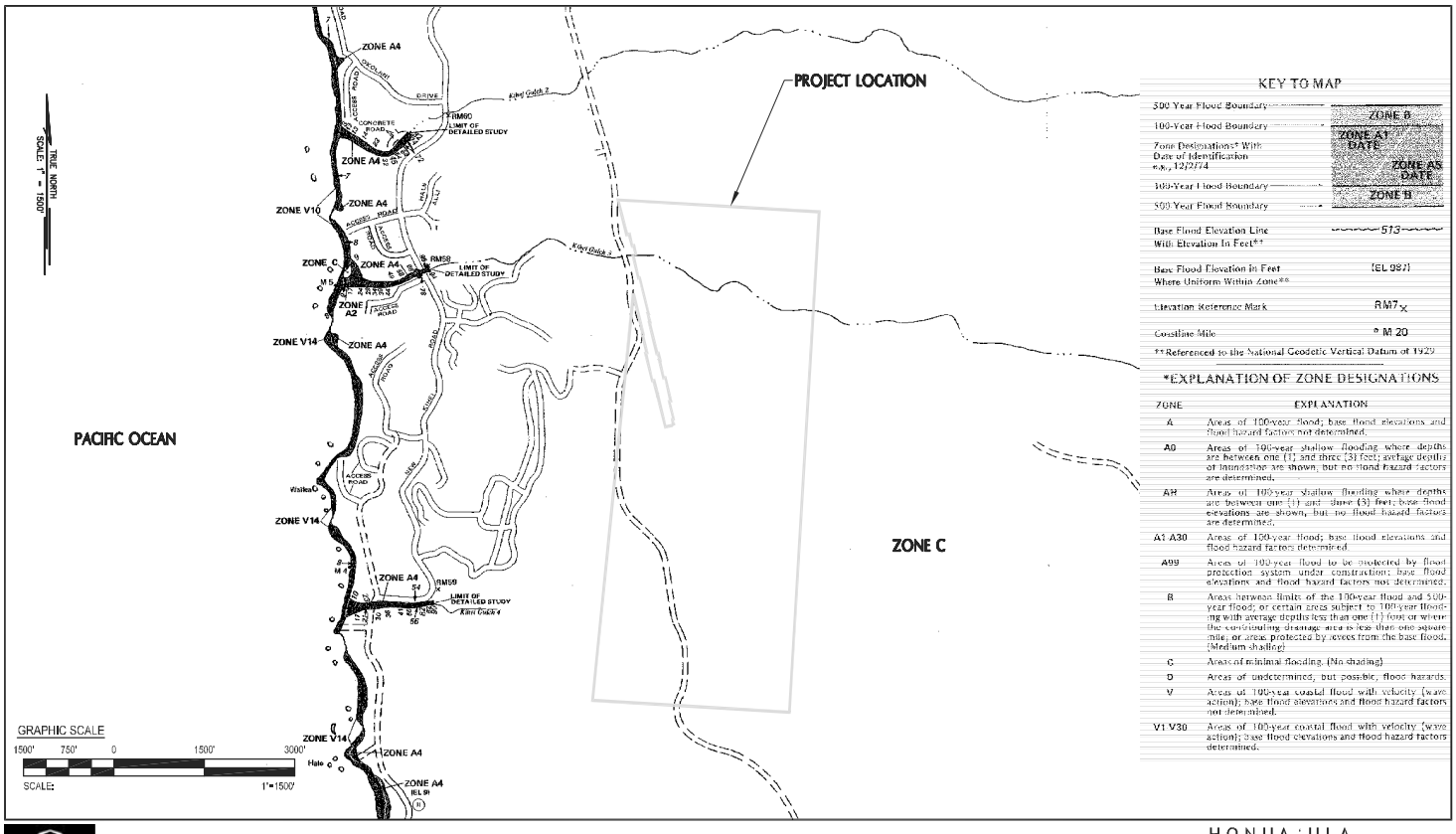
First, the peak runoff rates for a 100 year – 24 hour event for the existing, pre-development, and post-development conditions were calculated. The existing conditions are considered to be the overall watershed, including areas mauka of the project site. Portions of the existing areas within the project site area are further broken down into pre-development conditions. This more defined pre-development condition allows comparison to post- development conditions. The drainage area off site remains the same for pre- and post-development conditions.

Second, using the calculated peak runoff rates, the runoff volumes for a 100 year – 24 hour event for both the pre-development and post-development conditions were calculated. The difference between pre-development and post-development runoff volumes will be used to size detention basins such that the future runoff volume will not exceed the existing volume.

**Table 4-1**
**Existing Off Site/On Site Drainage**
**100 Year - 24 Hour Event**

| Basin | Analysis Method | Area ($ft^2$) | Area (acres) | Length (ft) | Slope (%) | Velocity (ft/s) | Tc (hr) | Weighted CN | Rainfall Type | $I_{100\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | SCS | 65,728,478 | 1508.93 | 37,430 | 16.5 | 6.5 | 1.6 | 71 | I | 10.5 | - | 2,383.52 |
| B | SCS | 19,432,400 | 446.11 | 17,884 | 13.2 | 5.8 | 0.86 | 71 | I | 10.5 | - | 1,017.56 |
| C | SCS | 21,511,502 | 493.84 | 20,496 | 13.3 | 5.8 | 0.99 | 71 | I | 10.5 | - | 1,036.78 |
| D | Rational | 1,799,885 | 41.32 | - | - | - | - | - | - | 10.5 | 0.3 | 130.16 |
| E | Rational | 3,637,667 | 83.51 | - | - | - | - | - | - | 10.5 | 0.3 | 263.06 |
| F | Rational | 4,298,467 | 98.68 | 6,015 | 7.3 | 4.2 | 0.4 | - | - | 10.5 | 0.3 | 310.84 |
| G | SCS | 62,289,878 | 1429.99 | 32,826 | 15.6 | 6.3 | 1.46 | 67 | I | 10.5 | - | 2,157.95 |
| H | Rational | 2,672,385 | 61.35 | - | - | - | - | - | - | 10.5 | 0.3 | 193.25 |
| I | Rational | 4,005,311 | 91.95 | - | - | - | - | - | - | 10.5 | 0.3 | 289.64 |
| J | Rational | 1,368,209 | 31.41 | - | - | - | - | - | - | 10.5 | 0.3 | 98.94 |
| K | SCS | 14,186,510 | 325.68 | 15252 | 13.2 | 6 | 0.71 | 66 | I | 10.5 | - | 733.41 |
| L | Rational | 3,442,956 | 79.04 | - | - | - | - | - | - | 10.5 | 0.3 | 248.98 |
| | Total | 204,373,648 | 4,691.81 | | | | | | | | | 8,864.09 |

*The SCS method was used for drainage areas greater than 100 acres




HONUA'ULA

FIGURE 4-3

FLOOD ZONE MAP

Third, the peak runoff rates for a 50 year – 1 hour event for the post-development condition was calculated and used to size the drainage piping systems.

### 4.2.1 Peak Runoff Rates

The peak runoff rates for the drainage area were calculated in conformance with the County of Maui Department of Public Works Rules for the Design of Storm Drainage Facilities in the County of Maui dated July 1995 (County Standards). The two methods of calculating peak runoff rates are:

- Rational Method is used for watersheds with areas less than 100 acres. A design storm with a recurrence interval of 50 years and duration of 1 hour is used for storm water calculations.

- SCS Method is used for watersheds with areas greater than 100 acres. A design storm with a recurrence interval of 100 years and duration of 24 hours is used for storm water calculations.

Peak runoff rates for the existing twelve (A – L) drainage basins were calculated to establish the existing runoff through the existing gulches and gullies, and is summarized in Table 4-1.

Increases in storm water runoff are generally related to the type of development or improvements undertaken to previously undeveloped areas. This increase of storm water runoff is created by changes in a number of factors including soil infiltration characteristics (soil permeability), relief (slope of ground), vegetation cover (percentage of vegetation cover over the drainage area), and development type (industrial, hotel, residential, agriculture, others). Of these factors, development type is the most significant characteristic that affects storm water runoff.

As the project area is developed, the runoff pattern defining the existing twelve drainage basins will be modified by the construction of the related roads and drainage facilities. In order to calculate the peak runoff rates for the project area in the future (post-development), the existing twelve drainage areas were further divided into 27 drainage areas (further discussed in Section 4.3.1).

The pre-development peak runoff rates were used as a base, from which to calculate the storage volume required to maintain existing conditions after the project area is developed.

Table 4-2 indicates the calculations of the pre-development peak runoff rates for the 27 drainage basins.





## 4.3 Post-development Improvements

### 4.3.1 Hydrology

In general, storm runoff will continue to travel from the upper mauka lands through the project to the ocean. Runoff from the off site mauka areas is not expected to increase as it enters the property. On site development, including roadways, residential lots, and commercial areas, will cause an increase in storm runoff due to the increase in impervious surfaces. However, the drainage scheme and the proposed drainage system improvements will maintain or reduce the rate of runoff discharged to the ocean to equal or less than pre-development rates, in compliance with County Standards. In addition, the use of detention basins, debris basins, and natural swales or channels will store and filter the stormwater, removing pollutants (via percolation) prior to exiting the project site (see Figure 4-4).

The future development will consist of about 697 acres of on site drainage that includes a portion of Pi'ilani Highway entering into the site. It also includes roughly 3,989 acres of off site drainage that will remain the same as existing. On site drainage basins were created for both pre-development conditions and post-development conditions. Runoff will be redirected into natural open drainage channels, detention basins, and series of drain lines. The proposed development was further divided into 27 drainage basin areas (see Figure 4-5).

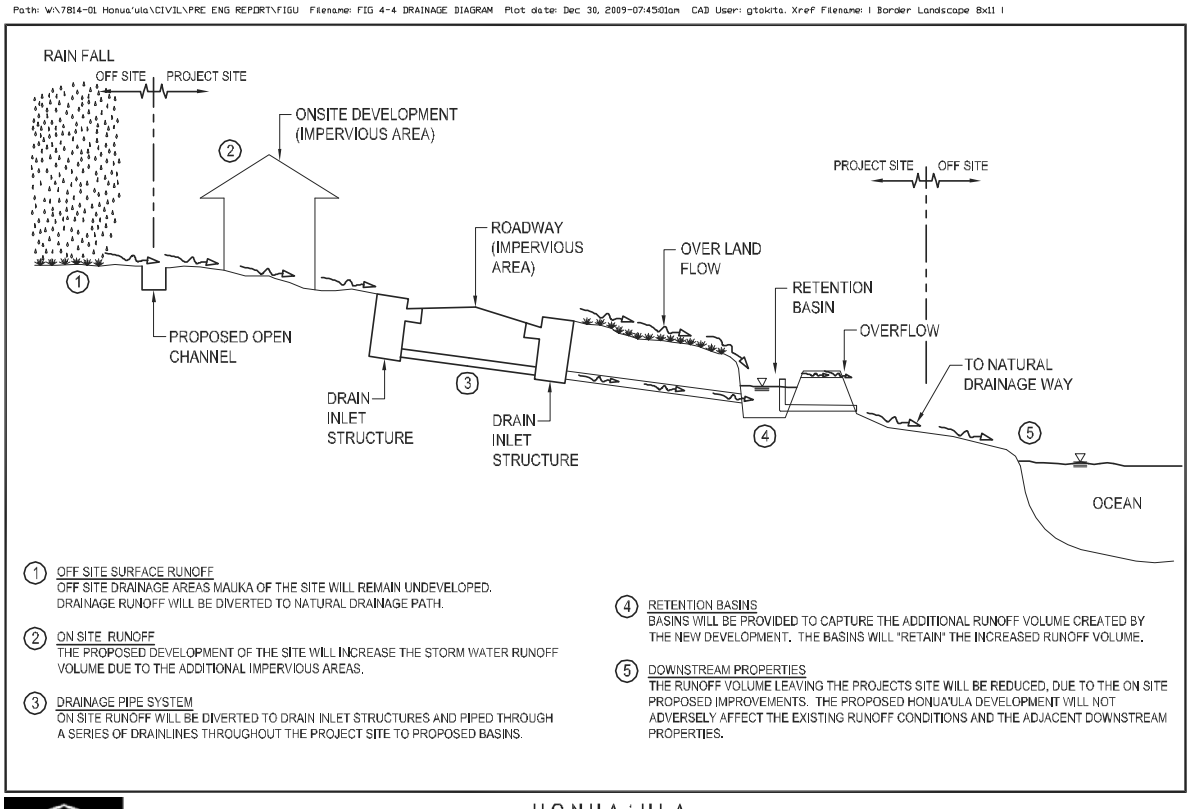
1. **Drainage Basin 1.** Located on the north side of the Project Site, this drainage basin includes multi family lots, a natural open channel, and a detention basin. Approximately 30 acres of this drainage basin will be diverted into a natural open drainage channel which flows through the northern portion of this basin. This channel diverts runoff in a westerly direction toward Detention Basin 1, within the area.

2. **Drainage Basin 2.** This drainage basin is roughly 30 acres and is located toward the northeast corner of the project. Single and multi family lots make up this basin along with roads, a natural open drainage channel, and detention basins. Most of the runoff will move through the natural open channel and eventually end up in Detention Basin 2 on the west side of the area.

3. **Drainage Basin 3.** About 39 acres make up this drainage basin on the northeast side of the project site. Single and multi family lots are planned for much of this area. Holes 5 and 6 of the golf course also occupy a portion of this basin. A natural open drainage channel will run though the middle of this basin with runoff flowing in a westerly direction. This channel will divert most of the runoff into Detention Basins 3 and 4 in the western portion of this area.

**Table 4-2**
**On Site Predevelopment Peak Runoff Rates**
**100 Year - 24 Hour Event**

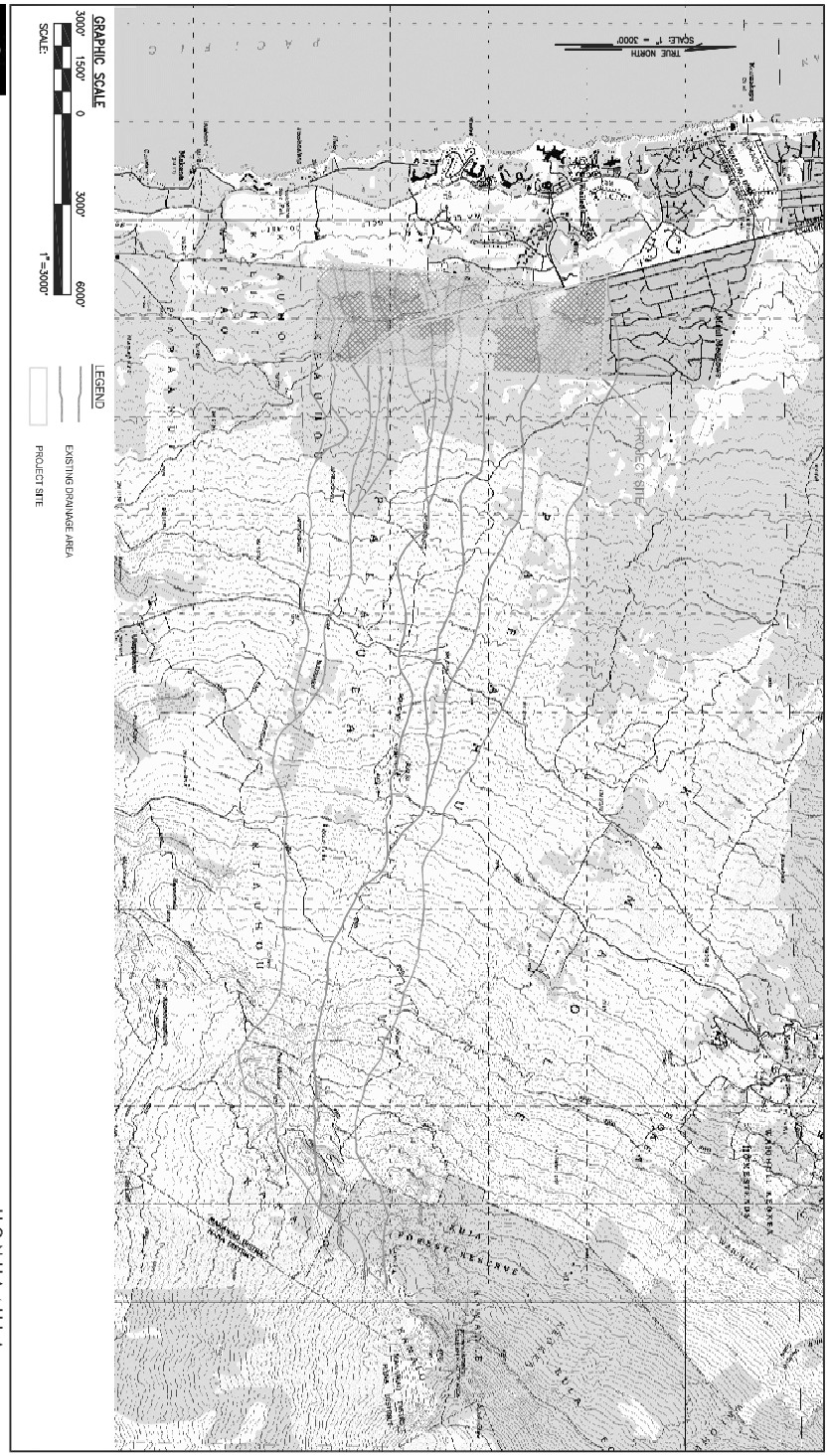
| Basin | Analysis Method | Area (acres) | Length (ft) | Slope (%) | Velocity (ft/s) | Tc (min) | Tc (hr) | $I_{100\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 29.88 | 3,240 | 10.06 | 1.86 | 29 | 0.48 | 10.5 | 0.30 | 94.12 |
| 2 | Rational | 29.94 | 1,834 | 9.81 | 1.80 | 17 | 0.28 | 10.5 | 0.30 | 94.31 |
| 3 | Rational | 38.47 | 1,769 | 9.84 | 1.73 | 17 | 0.28 | 10.5 | 0.30 | 121.18 |
| 4 | Rational | 27.61 | 1274 | 10.20 | 1.52 | 14 | 0.23 | 10.5 | 0.30 | 86.98 |
| 5 | Rational | 11.90 | 1315 | 13.38 | 1.69 | 13 | 0.22 | 10.5 | 0.30 | 37.48 |
| 6 | Rational | 11.40 | 714 | 12.61 | 1.13 | 10.5 | 0.18 | 10.5 | 0.30 | 35.92 |
| 7 | Rational | 24.19 | 1,691 | 11.35 | 1.88 | 15 | 0.25 | 10.5 | 0.30 | 76.19 |
| 8 | Rational | 10.53 | 920 | 13.04 | 1.33 | 11.5 | 0.19 | 10.5 | 0.30 | 33.16 |
| 9 | Rational | 27.38 | 1620 | 9.75 | 1.69 | 16 | 0.27 | 10.5 | 0.30 | 86.23 |
| 10 | Rational | 12.66 | 724 | 15.19 | 1.12 | 10.75 | 0.18 | 10.5 | 0.30 | 39.89 |
| 11 | Rational | 47.65 | 1108 | 10.83 | 1.54 | 12 | 0.20 | 10.5 | 0.30 | 150.09 |
| 12 | Rational | 28.24 | 942 | 8.49 | 1.21 | 13 | 0.22 | 10.5 | 0.30 | 88.97 |
| 13 | Rational | 18.65 | 1156 | 10.38 | 1.48 | 13 | 0.22 | 10.5 | 0.30 | 58.75 |
| 14 | Rational | 13.65 | 474 | 10.55 | 0.81 | 9.75 | 0.16 | 10.5 | 0.30 | 43.00 |
| 15 | Rational | 27.20 | 1028 | 8.75 | 1.14 | 15 | 0.25 | 10.5 | 0.30 | 85.68 |
| 16 | Rational | 3.61 | 550 | 3.64 | 0.71 | 13 | 0.22 | 10.5 | 0.30 | 11.37 |
| 17 | Rational | 8.68 | 1175 | 6.81 | 2.45 | 8 | 0.13 | 10.5 | 0.30 | 27.33 |
| 18 | Rational | 5.87 | 270 | 1.85 | 0.41 | 11 | 0.18 | 10.5 | 0.30 | 18.48 |
| 19 | Rational | 17.88 | 765 | 10.46 | 1.28 | 10 | 0.17 | 10.5 | 0.30 | 56.32 |
| 20 | Rational | 14.24 | 1048 | 11.93 | 1.16 | 15 | 0.25 | 10.5 | 0.30 | 44.85 |
| 21 | Rational | 23.53 | 1070 | 9.35 | 1.27 | 14 | 0.23 | 10.5 | 0.30 | 74.13 |
| 22 | Rational | 16.63 | 1038 | 9.63 | 1.12 | 15.5 | 0.26 | 10.5 | 0.30 | 52.37 |
| 23 | Rational | 73.37 | 1248 | 11.22 | 1.54 | 13.5 | 0.23 | 10.5 | 0.30 | 231.13 |
| 24 | Rational | 25.60 | 594 | 11.78 | 0.97 | 10.25 | 0.17 | 10.5 | 0.30 | 80.63 |
| 25 | Rational | 99.63 | 3130 | 9.27 | 1.49 | 35 | 0.58 | 10.5 | 0.30 | 313.83 |
| 26 | Rational | 21.00 | 783 | 12.13 | 1.13 | 11.5 | 0.19 | 10.5 | 0.30 | 66.14 |
| 27 | Rational | 27.57 | 1925 | 5.19 | 1.69 | 19 | 0.32 | 10.5 | 0.30 | 86.85 |
| | Total | 696.95 | | | | | | | | 2,195.39 |




HONUA'ULA

Drainage Diagram

FIGURE 4-4


GRAPHIC SCALE
3000' 1500' 0 3000' 6000'
SCALE: 1"=3000'
LEGEND
EXISTING DRAINAGE AREA
PROJECT SITE
TRUE NORTH
SCALE 1" = 3000'
PACIFIC OCEAN
PROJECT SITE
KUAUHOU GULCH
KAUHUHU GULCH
KAUHUHU GULCH
KUAUHOU GULCH
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will flow to Detention Basin 11 in the western portion of this area along the golf course.

12. **Drainage Basin 12.** Approximately 28 acres make up this drainage basin. Single and multi family lots, a couple of detention basins, and hole 2 of the golf course make up this basin. Runoff will surface flow in a westerly direction toward Detention Basins 12 and 13.

13. **Drainage Basin 13.** This drainage basin is approximately 19 acres. It contains single and multi family lots, a natural open channel, and a detention basin. Runoff is directed to the natural open channel in the northern portion of this basin. Ultimately, runoff will flow to Detention Basin 14 in the western portion of this area.

14. **Drainage Basin 14.** Single and multi family lots, a natural open drainage channel, hole 1 or the golf course, and a detention basins make up this basin which is located in the central portion of the project site. The natural open drainage channel runs through the middle of approximately 14 acres in this basin. Runoff surface flows toward the open channel and to Detention Basin15 in the western portion of this area.

15. **Drainage Basin 15.** Located in toward the south east portion of the project site, this drainage basin is about 27 acres. It will include single and multi family lots, a natural open drainage channel, a portion of hole 9 of the golf course, and a detention basin. The natural drainage channels divert the runoff in this basin toward Detention Basin 16 in the western portion of this area.

16. **Drainage Basin 16.** This drainage basin is approximately 4 acres located in the northwest portion of the project site. It is proposed to have multi-family lots and the water tank. Runoff will surface flow in a western direction toward Pi'ilani Highway.

17. **Drainage Basin 17.** Single family units are proposed for roughly 9 acres of this drainage basin. This drainage basin is located to the east of Pi'ilani highway in the southern portion of the site. Runoff in this basin will go to Pi'ilani Highway.

18. **Drainage Basin 18.** Located in the western portion of the project site, this drainage basin has an area of about 6 acres. Village mixed use units and a natural open drainage channel are proposed for this area. The runoff in this basin will surface flow in a westerly direction toward the Wailea development.

19. **Drainage Basin 19.** This drainage basin is about 18 acres and is located in the western portion of the project site. It includes an area for MECO





expansion, multi family lots, and some village mixed use lots. The runoff in this area will flow in a westerly direction toward the Wailea development.

20. **Drainage Basin 20.** This basin is approximately 14 acres and is located in the western portion of the project site. It includes holes 16 and 17 of the golf course, natural open drainage channel and multi family lots. The runoff in this basin will flow in a western direction toward Detention Basin 17.

21. **Drainage Basin 21.** This drainage basin is located on the middle portion of the project site, and is about 24 acres. This basin includes golf course holes 16 and 17, a maintenance center, multi family lots, and village mixed use lots. Most of the runoff in this area will flow toward the golf course and Detention Basin 18.

22. **Drainage Basin 22.** Multi family lots, a portion of the driving range, and hole 18 of the golf course make up the approximate 17 acres in this area. Most of the runoff in this area will flow in southern direction toward Drainage Basin 23 where it will be handled by Detention basin 19.

23. **Drainage Basin 23.** This drainage basin is about 73 acres. It includes, Single and multi family lots, village mixed use lots, the golf club house, holes, 10 and 18, a natural open drainage channel, and a couple detention basins. The runoff in this area will surface flow to Detention Basins 19 and 20 through the natural open channels.

24. **Drainage Basin 24.** This basin of about 26 acres is located on the south western side of the project. Multi family lots, holes 14 and 15, a natural drainage channel, and a detention basin are contained in this area. Runoff in this area will flow to the natural drainage channels and eventually into the Detention Basin 21.

25. **Drainage Basin 25.** Single and multi family lots, holes 11 through 14 of the golf course, several detention basins, and the wastewater treatment plant, make up about 100 acres of this drainage basin. Runoff in this area will surface flow toward one of five detention basins, Detention Basin 22 through 26, in this area.

26. **Drainage Basin 26.** The Native Plant Preservation Area makes up this drainage basin. It is about 21 acres and is located in the southern portion of the Project Site. Most of the runoff is expected to stay within this basin.

27. **Drainage Basin 27.** This Basin takes into account the portion of Pi'ilani Highway that runs within the project area. The runoff in this basin will

surface flow in a westerly direction and will be handled by basins to the west of the road right-of-way.

The post-development peak runoff rates were calculated for the drainage basins within the project site to determine the drainage facilities within the proposed roadways. Table 4-3 illustrates the calculations for the post-development runoff rates for the 27 drainage areas.

See Figure 4-6 for Post-Development and Off-Site Drainage Basins. The off site peak runoff rate were also calculated for the drainage basins mauka of the project site. Table 4-4 illustrates these calculations.

### 4.3.2 Future Runoff Volume Calculations

With the development of the Honua'ula project, the storm water runoff volume is expected to increase. The drainage system will be designed to retain the increased storm water runoff volume created by site improvements and development. The higher volume of runoff will require a comparable increase in storage to maintain existing conditions.

In order to accommodate the additional flow, detention basins will be provided to retain the increased drainage runoff volume. The Area-Duration method was used with a 100 year, 24-hour storm event to determine the required capacity of the detention basins. This calculation method uses the differences of runoff coefficient (C) of pre-development and post-development to determine the increase of storm water runoff volumes. Basin volume is measured in acre-feet. Table 4-5 illustrates the volumes of pre-development and post-development areas.

For the purposes of this Report, it is assumed that off site drainage areas mauka of the Honua'ula remain undeveloped. If development should occur in these off site areas in the future, it will be necessary for such developments to incorporate drainage facilities to retain any increase in runoff volumes within the development.

## 4.4 Proposed Improvements

Construction of the golf courses will improve drainage over the existing topography. Golf course design features and use of plant materials will reduce storm runoff and improve drainage control. With the creation of detention basins travel time of flows crossing the property will be lengthened thus reducing the peak discharges.

Construction of the housing units, other buildings and roads will increase impervious areas and speed surface runoff thus increasing the flow rates and volumes. This increase will be handled through the addition of detention basins throughout the site.



**Table 4-3**
**On Site Post Development Peak Runoff Rates**
**100 yr., 24 hr Event**

| Basin | Analysis Method | Area (acres) | Length (ft) | Slope (%) | Velocity (ft/s) | Tc (min) | Tc (hr) | $I_{100\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 29.88 | 3,240 | 10.06 | 1.86 | 29 | 0.48 | 10.5 | 0.44 | 137.26 |
| 2 | Rational | 29.94 | 1,834 | 9.81 | 1.80 | 17 | 0.28 | 10.5 | 0.51 | 161.12 |
| 3 | Rational | 38.47 | 1,769 | 9.84 | 1.73 | 17 | 0.28 | 10.5 | 0.38 | 151.48 |
| 4 | Rational | 27.61 | 1274 | 10.20 | 1.52 | 14 | 0.23 | 10.5 | 0.33 | 94.95 |
| 5 | Rational | 11.90 | 1315 | 13.38 | 1.69 | 13 | 0.22 | 10.5 | 0.31 | 39.04 |
| 6 | Rational | 11.40 | 714 | 12.61 | 1.13 | 10.5 | 0.18 | 10.5 | 0.34 | 41.01 |
| 7 | Rational | 24.19 | 1,691 | 11.35 | 1.88 | 15 | 0.25 | 10.5 | 0.37 | 94.61 |
| 8 | Rational | 10.53 | 920 | 13.04 | 1.33 | 11.5 | 0.19 | 10.5 | 0.42 | 46.14 |
| 9 | Rational | 27.38 | 1620 | 9.75 | 1.69 | 16 | 0.27 | 10.5 | 0.42 | 120.01 |
| 10 | Rational | 12.66 | 724 | 15.19 | 1.12 | 10.75 | 0.18 | 10.5 | 0.39 | 51.53 |
| 11 | Rational | 47.65 | 1108 | 10.83 | 1.54 | 12 | 0.20 | 10.5 | 0.48 | 240.14 |
| 12 | Rational | 28.24 | 942 | 8.49 | 1.21 | 13 | 0.22 | 10.5 | 0.43 | 128.26 |
| 13 | Rational | 18.65 | 1156 | 10.38 | 1.48 | 13 | 0.22 | 10.5 | 0.43 | 84.70 |
| 14 | Rational | 13.65 | 474 | 10.55 | 0.81 | 9.75 | 0.16 | 10.5 | 0.42 | 59.84 |
| 15 | Rational | 27.20 | 1028 | 8.75 | 1.14 | 15 | 0.25 | 10.5 | 0.42 | 119.95 |
| 16 | Rational | 3.61 | 550 | 3.64 | 0.71 | 13 | 0.22 | 10.5 | 0.45 | 16.96 |
| 17 | Rational | 8.68 | 1175 | 6.81 | 2.45 | 8 | 0.13 | 10.5 | 0.53 | 47.83 |
| 18 | Rational | 5.87 | 270 | 1.85 | 0.41 | 11 | 0.18 | 10.5 | 0.25 | 15.40 |
| 19 | Rational | 17.88 | 765 | 10.46 | 1.28 | 10 | 0.17 | 10.5 | 0.59 | 110.29 |
| 20 | Rational | 14.24 | 1048 | 11.93 | 1.16 | 15 | 0.25 | 10.5 | 0.25 | 37.38 |
| 21 | Rational | 23.53 | 1070 | 9.35 | 1.27 | 14 | 0.23 | 10.5 | 0.25 | 61.78 |
| 22 | Rational | 16.63 | 1038 | 9.63 | 1.12 | 15.5 | 0.26 | 10.5 | 0.25 | 43.64 |
| 23 | Rational | 73.37 | 1248 | 11.22 | 1.54 | 13.5 | 0.23 | 10.5 | 0.35 | 267.73 |
| 24 | Rational | 25.60 | 594 | 11.78 | 0.97 | 10.25 | 0.17 | 10.5 | 0.42 | 112.21 |
| 25 | Rational | 99.63 | 3130 | 9.27 | 1.49 | 35 | 0.58 | 10.5 | 0.49 | 515.20 |
| 26 | Rational | 21.00 | 783 | 12.13 | 1.13 | 11.5 | 0.19 | 10.5 | 0.25 | 55.12 |
| 27 | Rational | 27.57 | 1925 | 5.19 | 1.69 | 19 | 0.32 | 10.5 | 0.90 | 260.55 |
| | Total | 696.95 | | | | | | | | 3,114.12 |

**Table 4-4**
**Off Site Peak Runoff Rates**
**100 Year - 24 Hour Event**

| Basin | Analysis Method | Area (acres) | Length (ft) | Slope (%) | Velocity (ft/s) | Tc (hr) | Weighted CN | Rainfall Type | $I_{100\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OFF-A | SCS | 1345.74 | 37,430 | 16.5 | 6.5 | 1.6 | 71 | I | 10.5 | - | 2,125.75 |
| OFF-B | SCS | 344.88 | 17,884 | 13.2 | 5.8 | 0.86 | 71 | I | 10.5 | - | 786.66 |
| OFF-C | SCS | 422.34 | 20,496 | 13.3 | 5.8 | 0.99 | 71 | I | 10.5 | - | 866.68 |
| OFF-D | Rational | 7.22 | 4460 | 11.1 | 5.1 | 0.24 | - | I | 10.5 | 0.3 | 22.75 |
| OFF-E | Rational | 40.01 | 7713 | 11.7 | 5.7 | 0.38 | - | I | 10.5 | 0.3 | 126.03 |
| OFF-F | Rational | 28.65 | 6,015 | 7.3 | 4.2 | 0.4 | - | I | 10.5 | 0.3 | 90.26 |
| OFF-G | SCS | 1390.84 | 32,826 | 15.6 | 6.3 | 1.46 | 67 | I | 10.5 | - | 2,098.87 |
| OFF-H | Rational | 36.64 | 7823 | 11.6 | 5.6 | 0.39 | - | I | 10.5 | 0.3 | 115.42 |
| OFF-I | Rational | 41.24 | 8324 | 11.5 | 5.5 | 0.42 | - | I | 10.5 | 0.3 | 129.91 |
| OFF-J | Rational | 5.98 | 4346 | 10.6 | 5 | 0.24 | - | I | 10.5 | 0.3 | 18.84 |
| OFF-K | SCS | 282.06 | 15252 | 13.2 | 6 | 0.71 | 66 | I | 10.5 | - | 635.18 |
| OFF-L | Rational | 43.52 | 6553 | 11.3 | 5.3 | 0.34 | - | I | 10.5 | 0.3 | 137.08 |
| | Total | 3,989.13 | | | | | | | | | 7,153.43 |




HONUA ULA

POST DEVELOPMENT AND OFFSITE DRAINAGE BASINS

FIGURE 4-6

### 4.4.1 Detention Basins

With the development of the proposed Honua'ula project, storm water runoff volumes in this area will increase. Twenty-six (26) detention basins throughout the site will be provided to handle this increase of about 76.56 ac-ft (see Figure 4-7). This increase of runoff volume is due to the increase of impervious areas throughout the site. The development of the golf course will control runoff. The detention basins will keep the post-development runoff on site so as to not adversely affect properties downstream to the west. Overall, the increase in runoff volume for the entire site will be handled by the detention basins. Table 4-6 shows the required runoff volume and the capacities of the proposed detention basins.

Detention basins will be located in low lying areas, within the golf course, or along the makai project boundary. All detention basins, except for Detention Basin #2 (located in Phase 2), will be constructed during Phase 1. Detention Basin #2 will be constructed during Phase 2.

### 4.4.2 Drainage Pipe System

Runoff from the residential, commercial, road and other paved areas will be graded to drain inlet structures and piped through a series of drain lines in the roadways throughout the project site (see Figure 4-8). These drain lines will allow runoff to be kept on site by diverting drainage flows to the detention basins.

The Rational Method was used to determine the peak runoff rates for the 50 year 1 hour storm event (see Table 4-7). These peak runoff rates were used to determine the sizes of the drain structures throughout the roadways. The majority of the drain lines will be 18 inch diameter and the remaining will be 24 inch diameter. In the final design, further analysis on inlet and outlet structures, junction-structures, slope of pipes, and open channel sections will be performed to enhance engineering efficiency.

The drainage pipe system will be constructed within their respective phases.

### 4.4.3 Open Channels

Proposed natural open drainage channels will be provided throughout the site to divert runoff toward the detention basins. Open channels will be provided at the upper limits of the project site to direct mauka off site runoff entering the project site to the natural drainage paths flowing through the project. These channels will remain natural and unlined. Open channel plans will be finalized during the final design of the project.





### 4.4.4 Roadway Culverts

Proposed roadway culverts will be provided throughout the site to divert runoff under roadways, which will prevent flooding on the roadways. Roadway culvert plans will be finalized during the final design of the project.

In addition, bioswales, landscape elements designed to remove silt, along roadways may be an option where appropriate.

## 4.5 Summary

Peak existing, pre-development, and post-development flow rates for the Honua'ula project were determined using the Rational Method and SCS Method for the 100 year 24 hour storm. The total runoff generated for existing, pre-development, post-development, and off site conditions are 8,864 cfs, 2,195 cfs, 3,114 cfs, and 7,153 cfs, respectively.

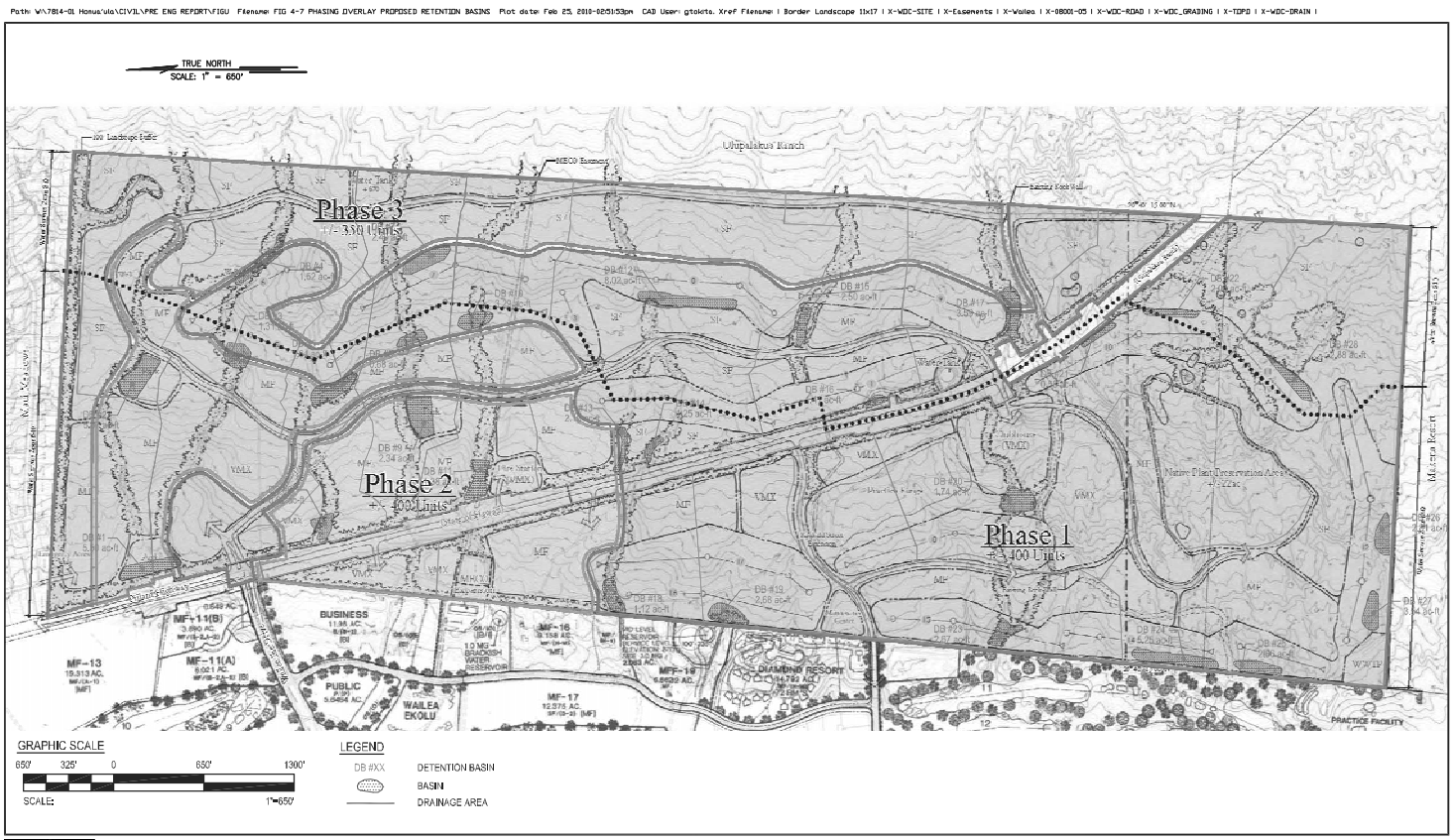
Runoff volumes of 182.95 ac-ft and 259.51 ac-ft were also determined for the pre-development and post-development drainage conditions, respectively. Due to the addition of more impervious area from the project site, there is an increase of 76.56 ac-ft from pre-development conditions to post-development conditions. This additional volume will be handled by the 26 detention basins located throughout the project site, which provide a total volume of 81.62 ac-ft. These basins provide an excess runoff capacity of 5.06 ac-ft. Natural open channels and drain pipe system will divert runoff toward these detention basins.

The proposed Honua'ula development will not adversely affect the existing runoff conditions and the adjacent downstream properties.

**Table 4-5**
**On Site Predevelopment and Post Development Volumes**
**Area-Duration Method**
**100 Year - 24 Hour Event**

| Basin | Analysis Method | Area (acres) | $I_{100\ year}$ (in.) | Pre C | Post C | Pre V (ac-ft) | Post V (ac-ft) | Net V (ac-ft) |
|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 29.88 | 10.5 | 0.30 | 0.44 | 7.84 | 11.44 | 3.59 |
| 2 | Rational | 29.94 | 10.5 | 0.30 | 0.51 | 7.86 | 13.43 | 5.57 |
| 3 | Rational | 38.47 | 10.5 | 0.30 | 0.38 | 10.10 | 12.62 | 2.52 |
| 4 | Rational | 27.61 | 10.5 | 0.30 | 0.33 | 7.25 | 7.91 | 0.66 |
| 5 | Rational | 11.90 | 10.5 | 0.30 | 0.31 | 3.12 | 3.25 | 0.13 |
| 6 | Rational | 11.40 | 10.5 | 0.30 | 0.34 | 2.99 | 3.42 | 0.42 |
| 7 | Rational | 24.19 | 10.5 | 0.30 | 0.37 | 6.35 | 7.88 | 1.53 |
| 8 | Rational | 10.53 | 10.5 | 0.30 | 0.42 | 2.76 | 3.85 | 1.08 |
| 9 | Rational | 27.38 | 10.5 | 0.30 | 0.42 | 7.19 | 10.00 | 2.81 |
| 10 | Rational | 12.66 | 10.5 | 0.30 | 0.39 | 3.32 | 4.29 | 0.97 |
| 11 | Rational | 47.65 | 10.5 | 0.30 | 0.48 | 12.51 | 20.01 | 7.50 |
| 12 | Rational | 28.24 | 10.5 | 0.30 | 0.43 | 7.41 | 10.69 | 3.27 |
| 13 | Rational | 18.65 | 10.5 | 0.30 | 0.43 | 4.90 | 7.06 | 2.16 |
| 14 | Rational | 13.65 | 10.5 | 0.30 | 0.42 | 3.58 | 4.99 | 1.40 |
| 15 | Rational | 27.20 | 10.5 | 0.30 | 0.42 | 7.14 | 10.00 | 2.86 |
| 16 | Rational | 3.61 | 10.5 | 0.30 | 0.45 | 0.95 | 1.41 | 0.47 |
| 17 | Rational | 8.68 | 10.5 | 0.30 | 0.53 | 2.28 | 3.99 | 1.71 |
| 18 | Rational | 5.87 | 10.5 | 0.30 | 0.25 | 1.54 | 1.28 | -0.26 |
| 19 | Rational | 17.88 | 10.5 | 0.30 | 0.59 | 4.69 | 9.19 | 4.50 |
| 20 | Rational | 14.24 | 10.5 | 0.30 | 0.25 | 3.74 | 3.11 | -0.62 |
| 21 | Rational | 23.53 | 10.5 | 0.30 | 0.25 | 6.18 | 5.15 | -1.03 |
| 22 | Rational | 16.63 | 10.5 | 0.30 | 0.25 | 4.36 | 3.64 | -0.73 |
| 23 | Rational | 73.37 | 10.5 | 0.30 | 0.35 | 19.26 | 22.31 | 3.05 |
| 24 | Rational | 25.60 | 10.5 | 0.30 | 0.42 | 6.72 | 9.35 | 2.63 |
| 25 | Rational | 99.63 | 10.5 | 0.30 | 0.49 | 26.15 | 42.93 | 16.78 |
| 26 | Rational | 21.00 | 10.5 | 0.30 | 0.25 | 5.51 | 4.59 | -0.92 |
| 27 | Rational | 27.57 | 10.5 | 0.30 | 0.90 | 7.24 | 21.71 | 14.47 |
| | Total | 696.95 | | | | 182.95 | 259.51 | 76.56 |

Area Duration Method: Volume = Area x I / 12 x C
Off site drainage will not change. No increase in runoff volume.

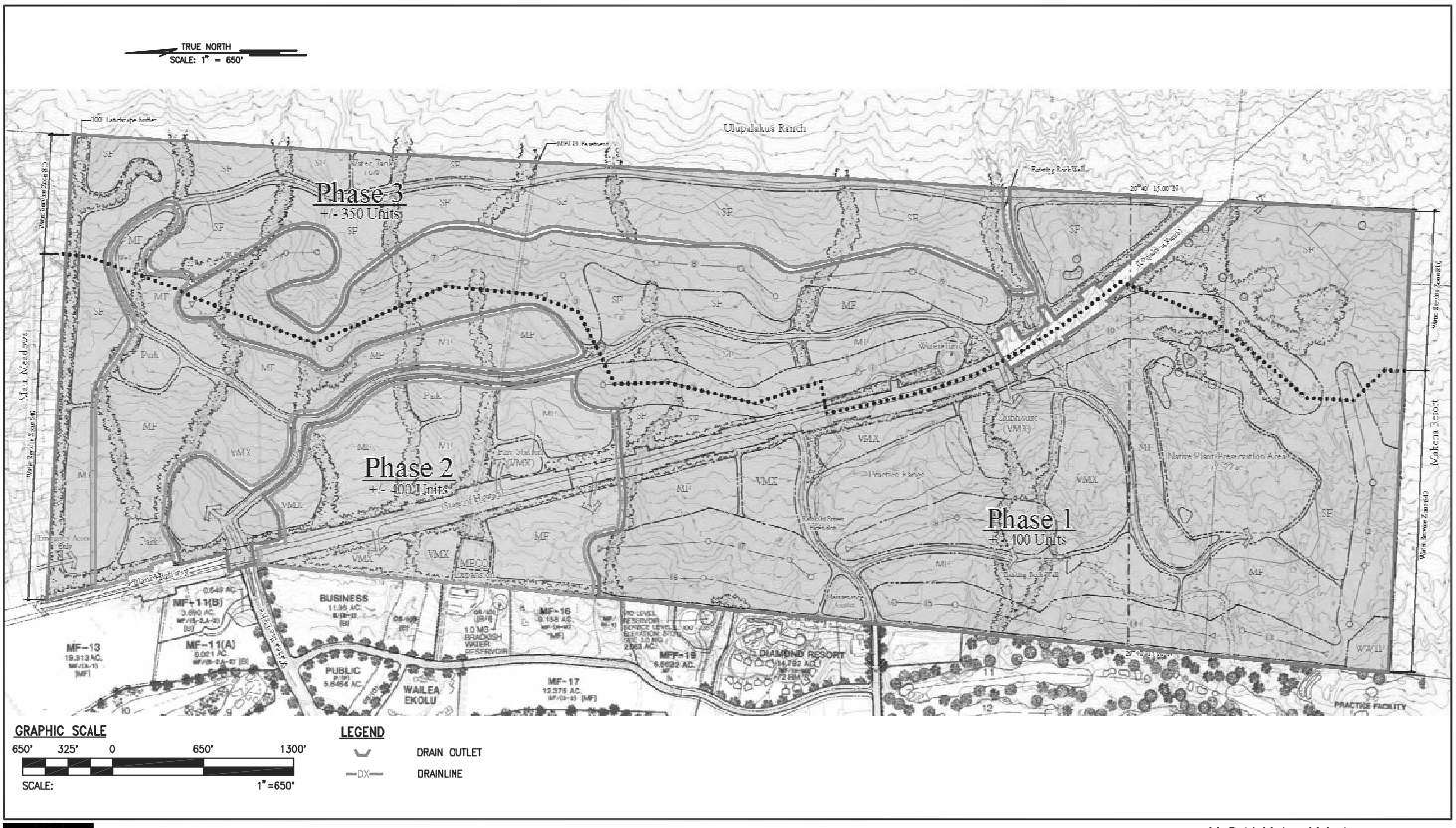



HONUA'ULA

PROPOSED DETENTION BASINS

FIGURE 4-7

Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 4-8 PHASING OVERLAY PROPOSED DRAINAGE SYS PLAN Plot date: Feb 25, 2010-02:49:22pm CAD User: gtokita. Xref Filename: | Border Landscape 11x17 | X-WDC-SITE | X-Easements | X-Wailea | X-88001-05 | X-WDC-ROAD | X-WDC_GRADING | X-TOPO | X-WDC-DRAIN |




HONUA'ULA

PROPOSED DRAINAGE SYSTEM

FIGURE 4-8

**Table 4-6**
**Detention Basins**

| Basin # | Required Runoff Volume (ac-ft) | Detention Basin # | Depth (ft) | Provided Runoff Volume (ac-ft) | Total Provided Runoff Volume (ac-ft) | Excess Runoff Volume (ac-ft) | Meet Required? |
|---|---|---|---|---|---|---|---|
| 1 | 3.59 | 1 | 4 | 4.15 | 4.15 | 0.55 | YES |
| 2 | 5.57 | 2 | 3 | 7.04 | 7.04 | 1.47 | YES |
| 3 | 2.52 | 3 | 2 | 1.05 | 2.57 | 0.04 | YES |
| | | 4 | 2 | 1.52 | | | |
| 4 | 0.66 | 1 | 4 | 4.15 | 4.15 | 3.48 | YES |
| 5 | 0.13 | 5 | 2 | 1.64 | 1.64 | 1.51 | YES |
| 6 | 0.42 | 6 | 3 | 1.38 | 1.38 | 0.95 | YES |
| 7 | 1.53 | 7 | 3 | 2.41 | 2.41 | 0.88 | YES |
| 8 | 1.08 | 8 | 1 | 2.23 | 2.23 | 1.15 | YES |
| 9 | 2.81 | 9 | 6 | 3.29 | 3.29 | 0.48 | YES |
| 10 | 0.97 | 10 | 3 | 1.62 | 1.62 | 0.65 | YES |
| 11 | 7.50 | 11 | 6 | 8.02 | 8.02 | 0.52 | YES |
| 12 | 3.27 | 12 | 7 | 2.19 | 3.45 | 0.17 | YES |
| | | 13 | 6 | 1.25 | | | |
| 13 | 2.16 | 14 | 6 | 2.50 | 2.50 | 0.34 | YES |
| 14 | 1.40 | 15 | 7 | 1.41 | 1.41 | 0.00 | YES |
| 15 | 2.86 | 16 | 4 | 3.59 | 3.59 | 0.73 | YES |
| 16 | 0.47 | | | | | -0.47 | NO* |
| 17 | 1.71 | | | | | -1.71 | NO* |
| 18 | -0.26 | | | | | 0.26 | YES |
| 19 | 4.50 | | | | | -4.50 | NO* |
| 20 | -0.62 | 17 | 2 | 1.12 | 1.12 | 1.74 | YES |
| 21 | -1.03 | 18 | 4 | 2.68 | 2.68 | 3.71 | YES |
| 22 | -0.73 | | | | | 0.73 | YES |
| 23 | 3.05 | 19 | 4 | 1.74 | 6.53 | 3.48 | YES |
| | | 20 | 4 | 4.79 | | | YES |
| 24 | 2.63 | 21 | 5 | 2.67 | 2.67 | 0.04 | YES |
| 25 | 16.78 | 22 | 5 | 7.00 | 19.18 | 2.40 | YES |
| | | 23 | 5 | 5.25 | | | |
| | | 24 | 5 | 1.93 | | | |
| | | 25 | 5 | 2.81 | | | |
| | | 26 | 5 | 2.20 | | | |
| 26 | -0.92 | | | | | 0.92 | YES |
| 27 | 14.47 | | | | | -14.47 | NO* |
| **Totals** | **76.56** | | | **81.62** | **81.62** | **5.06** | **YES** |

* Excess runoff to be handled by other detention basins on site.

**Table 4-7**
**Post Development Runoff Rates (Rational)**
**Pipe System**
**50 Year - 1 Hour Event**

| Basin | Basin Area ($ft^2$) | Pipe Area ($ft^2$) | Area (acres) | Tc (min) | $I_{50\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|
| 1 | 1,301,545 | -- | 29.88 | 10 | 2.5 | 0.44 | 32.68 |
| 2 | 1,304,185 | -- | 29.94 | 6.75 | 2.5 | 0.51 | 38.36 |
| 2-1 | -- | 188,730 | | | | | 5.55 |
| 2-2 | -- | 355,220 | | | | | 10.45 |
| 2-3 | -- | 149,066 | | | | | 4.38 |
| | | **693,016** | | | | | **20.38** |
| | | | | | | | |
| 3 | 1,675,751 | -- | 38.47 | 7.5 | 2.5 | 0.38 | 36.07 |
| 3-1 | -- | 268,010 | | | | | 5.77 |
| 3-2 | -- | 223,166 | | | | | 4.80 |
| | | **491,176** | | | | | **10.57** |
| | | | | | | | |
| 4 | 1,202,822 | -- | 27.61 | 7.75 | 2.5 | 0.33 | 22.61 |
| 5 | 518,241 | -- | 11.90 | 6.75 | 2.5 | 0.31 | 9.29 |
| 6 | 496,687 | -- | 11.40 | 9 | 2.5 | 0.34 | 9.76 |
| 7 | 1,053,636 | -- | 24.19 | 13.5 | 2.5 | 0.37 | 22.53 |
| 7-1 | -- | 250,920 | | | | | 5.36 |
| | | **250,920** | | | | | **27.89** |
| | | | | | | | |
| 8 | 458,524 | -- | 10.53 | 8.5 | 2.5 | 0.42 | 10.99 |
| 9 | 1,192,495 | -- | 27.38 | 17 | 2.5 | 0.42 | 28.57 |
| 9-1 | -- | 131,975 | | | | | 3.16 |
| 9-2 | -- | 192,489 | | | | | 4.61 |
| | | **324,464** | | | | | **7.77** |
| | | | | | | | |
| 10 | 551,652 | -- | 12.66 | 10 | 2.5 | 0.39 | 12.27 |
| 11 | 2,075,474 | -- | 47.65 | 18.5 | 2.5 | 0.48 | 57.18 |
| 11-1 | -- | 140,406 | | | | | 3.87 |
| 11-2 | -- | 375,130 | | | | | 10.33 |
| 11-3 | -- | 362,086 | | | | | 9.97 |
| | | **877,622** | | | | | **24.18** |
| | | | | | | | |
| 12 | 1,230,271 | -- | 28.24 | 9.25 | 2.5 | 0.43 | 30.54 |
| 12-1 | -- | 338,499 | | | | | 8.40 |
| 12-2 | -- | 108,123 | | | | | 2.68 |
| 12-3 | -- | 376,563 | | | | | 9.35 |
| 12-4 | -- | 85,427 | | | | | 2.12 |
| | | **908,612** | | | | | **22.55** |
| | | | | | | | |





**Table 4-7 (Continued)**
**Post Development Runoff Rates (Rational)**
**Pipe System**
**50 Year - 1 Hour Event**

| Basin | Basin Area ($ft^2$) | Pipe Area ($ft^2$) | Area (acres) | Tc (min) | $I_{50\ year}$ (in.) | C | Q ($ft^3/s$) |
|---|---|---|---|---|---|---|---|
| 13 | 812,400 | -- | 18.65 | 8.25 | 2.5 | 0.43 | 20.17 |
| 13-1 | -- | 215,099 | | | | | 5.34 |
| | | **215,099** | | | | | **5.34** |
| | | | | | | | |
| 14 | 594,619 | -- | 13.65 | 7.5 | 2.5 | 0.42 | 14.25 |
| 14-1 | -- | 108,825 | | | | | 2.61 |
| 14-2 | -- | 303,563 | | | | | 7.27 |
| | | **412,388** | | | | | **9.88** |
| | | | | | | | |
| 15 | 1,184,779 | -- | 27.20 | 9.25 | 2.5 | 0.42 | 28.56 |
| 15-1 | -- | 117,954 | | | | | 2.84 |
| | | **117,954** | | | | | **2.84** |
| | | | | | | | |
| 16 | 157,220 | -- | 3.61 | 8 | 2.5 | 0.45 | 4.04 |
| 17 | 377,935 | -- | 8.68 | 11.5 | 2.5 | 0.53 | 11.39 |
| 18 | 255,598 | -- | 5.87 | 19.25 | 2.5 | 0.25 | 3.67 |
| 19 | 778,811 | -- | 17.88 | 24.5 | 2.5 | 0.59 | 26.26 |
| 20 | 620,262 | -- | 14.24 | 21 | 2.5 | 0.25 | 8.90 |
| 21 | 1,025,170 | -- | 23.53 | 19.5 | 2.5 | 0.25 | 14.71 |
| 22 | 724,222 | -- | 16.63 | 25 | 2.5 | 0.25 | 10.39 |
| 23 | 3,196,190 | -- | 73.37 | 13.5 | 2.5 | 0.35 | 63.74 |
| 23-1 | -- | 557,968 | | | | | 11.13 |
| | | **557,968** | | | | | **11.13** |
| | | | | | | | |
| 24 | 1,115,022 | -- | 25.60 | 10.25 | 2.5 | 0.42 | 26.72 |
| 24-1 | -- | 259,977 | | | | | 6.23 |
| 24-2 | -- | 141,501 | | | | | 3.39 |
| | | **401,478** | | | | | **9.62** |
| | | | | | | | |
| 25 | 4,339,778 | -- | 99.63 | 35 | 2.5 | 0.49 | 122.67 |
| 25-1 | -- | 207,459 | | | | | 5.86 |
| 25-2 | -- | 1,307,561 | | | | | 36.96 |
| 25-3 | -- | 183,647 | | | | | 5.19 |
| 25-4 | -- | 455,095 | | | | | 12.86 |
| 25-5 | -- | 130,796 | | | | | 3.70 |
| 25-6 | -- | 297,117 | | | | | 8.40 |
| | | **2,581,675** | | | | | **72.97** |
| | | | | | | | |
| 26 | 914,627 | -- | 21.00 | 11.5 | 2.5 | 0.25 | 13.12 |
| 27 | 1,200,993 | -- | 27.57 | 19 | 2.5 | 0.90 | 62.04 |
| 27-1 | -- | 28,174,801 | 449.78 | | | | 1,455.32 |
| | | **28,174,801** | | | | | **1,455.32** |

## 5. ROADWAY SYSTEM

A traffic study for the Honua'ula development was prepared by Austin, Tsutsumi & Associates in November 2009. Relevant portions of the study are summarized below.

### 5.1 Project Site Access

The intersection of Pi'ilani Highway and Wailea Ike Drive provides the primary roadway access to the project site. Pi'ilani Highway is a four-lane, undivided, north/south State arterial highway that connects central Maui to the Kīhei-Wailea-Mākena areas. It is a four-lane highway from Mokulele Highway to Kilohana Drive and reduces to a two-lane from Kilohana Drive to Wailea Ike Drive. Wailea Ike Drive is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects to Pi'ilani Highway with Wailea Alanui Drive. Wailea Ike's vertical alignment is a relatively steep grade.

A second access point to the project site is located on Kaukahi Street which runs parallel to Wailea Ike Drive further south. Kaukahi Street is a two-way, two-lane street. Kaukahi Street is east/west roadway between Wailea Alanui Drive/Mākena Alanui Drive and Kalai Waa Street. Kaukahi Street intersects Wailea Alanui Drive/Makena Alanui Drive on the west end and terminates at the Wailea Resort property line on the east end. Kaukahi Street will be extended to intersect with the future extension of Piilani Highway. The extension of Pi'ilani Highway is discussed below as part of the third access point for the project. Because Kaukahi Street is a private road, the extension of Kaukahi Street into the project is planned to be a gated access to address the concerns of current landowners along Kaukahi Street.

The third access point to the project site will be from the extension of Pi'ilani Highway into the site. The extension will be constructed when the project is 50% complete and will extend south from the Wailea Ike intersection beyond Kaukahi Street into the project site.

### 5.2 Roadway Types

There will be six (6) major types of roadways within the project site as described below (see Figures 5-1 to 5-4).

1. Parkway: The parkway will consist of a 102-foot right-of-way which includes an 8-foot median, two 12-foot travel lanes in the eastbound direction, three 12-foot travel lanes in the westbound direction. There will be curb and gutter, and a 6-foot landscape strip on each side. There will be a 10-foot combined sidewalk/bikeway on the westbound direction and a 4 to 6-foot wide sidewalk on the eastbound direction. The parkway will utilize concrete for the roadway and sidewalk due to the steepness of the area.

2. Pi'ilani Highway Extension: The Pi'ilani Highway extension is separated into three segments. Two portions of the extension will be State-owned and privately maintained (within State right-of-way) while the third will be privately owned and maintained.

    a. Wailea Ike Drive Intersection: The first segment of the Pi'ilani Highway extension will consist of a 105-foot right-of-way with two 12-foot thru lanes, one 12-foot right turn lane and one 11-foot left turn lane for northbound traffic. There will be a median with one 12-foot southbound lane and curb, gutter, and a 4 to 6-foot wide meandering sidewalk on the makai side of the street.

    b. South of the Wailea Ike Drive Intersection (within State right-of-way): This segment of the Pi'ilani Highway extension will consist of one 12-foot lane in each direction with an 11-foot middle turning lane. There will be curb, gutter and 4 to 6-foot wide meandering sidewalk on the makai side of the street. The right-of-way width varies from 140 to 202 feet.

    c. South of the Wailea Ike Drive Intersection (Private): The last segment of the Pi'ilani Highway extension will consist of a 54-foot right-of-way with a 11-foot lane with 2-foot paved shoulders and an 8-foot bioswale in each direction. A 6-foot landscape strip and 6-foot wide sidewalk will be located on one side of the road. This segment will connect with Kaukahi Street and will not extend to the mauka boundary of the project site. The roadway sections will be widened to accommodate an exclusive left turn lane at the intersections located along the extension.

3. Collector Roads: There will be two alternate roadway sections for the collector roads for the development. Both sections will consist of a 60-foot right-of-way with two 11-foot travel lanes.

    a. Option 1: The first option will include an 8-foot wide bioswale and 10-foot wide meandering sidewalk/bikeway on one side of the road and a 15-foot bioswale/landscape strip on the other side.

    b. Option 2: The second option will include a 4-foot wide paved bike lane in each direction adjacent to the travel lanes. One side of the road will contain a 4 to 6-foot wide meandering sidewalk with a variable bioswale/landscape strip. The other side will contain a 15-foot bioswale/landscape strip.

4. Minor Streets: Minor streets for the development will consist of a 52-foot right-of-way, widening to 58-feet in areas where a 4 to 6-foot wide sidewalk will be provided. There will be two 11-foot travel lanes and a 15-foot wide bioswale/landscape strip on each side. An 8-foot wide paved parking lane will be provided at designated locations.

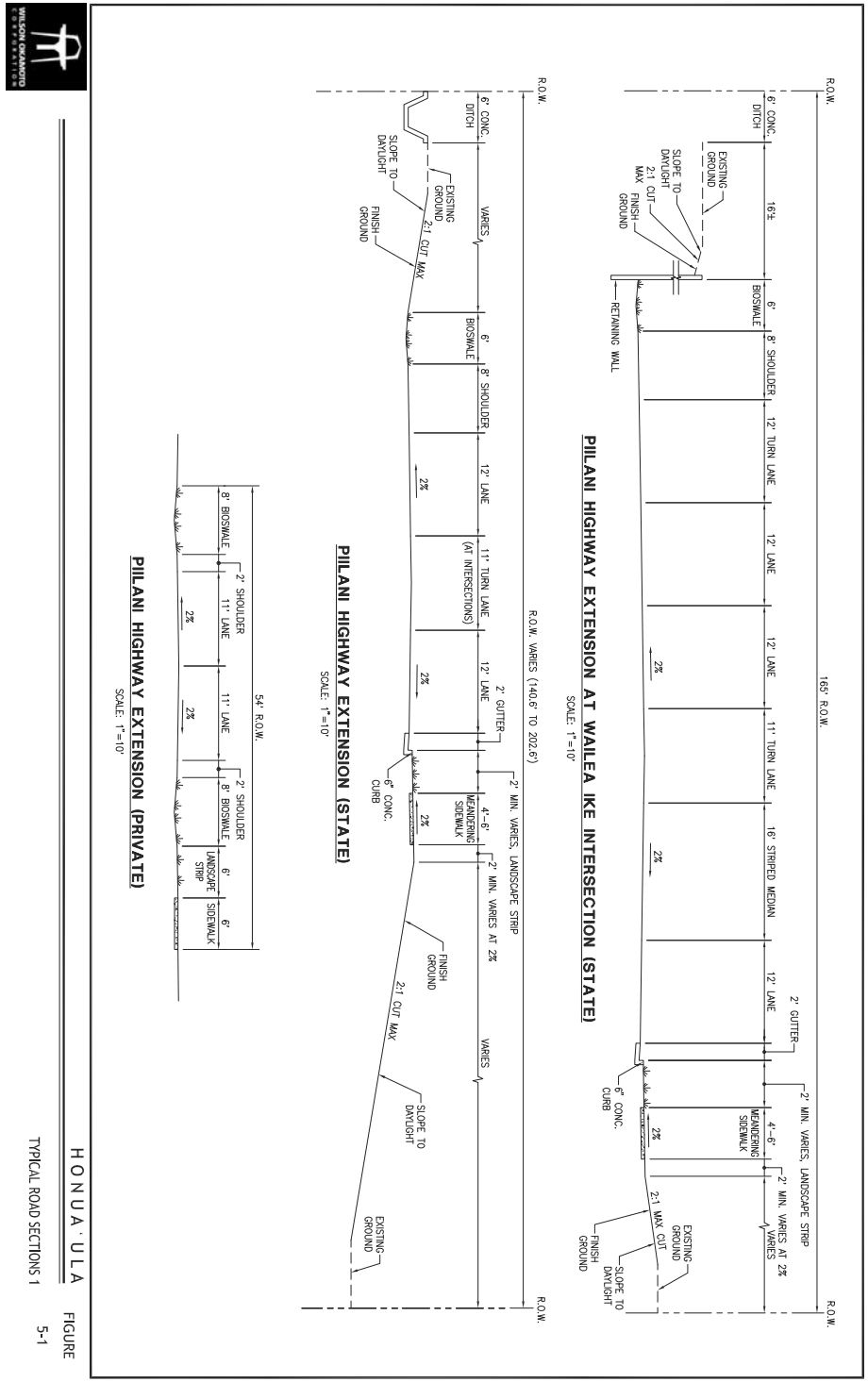
5. Cul De Sacs: Cul de sacs for the development will consist of a 52-foot right-of-way with two 11-foot travel lanes and a 15-foot wide bioswale/landscape strip on each side. An 8-foot wide paved parking lane will be provided at designated locations.

6. Village Streets: There are two Village Street roadway sections for the development - one for parking on one side of the street and the other for parking on both sides:

    a. Parking on One Side of the Street: This section will consist of a 56-foot right-of-way with two 11-foot travel lanes, curb, gutter, a 6-foot landscape strip and a 4 to 6-foot wide sidewalk on both sides of the street. An 8-foot parking lane (6-foot paved and 2-foot gutter) will be provided on one side of the street.

    b. Parking on Two Sides of the Street: This section will consist of a 62-foot right-of-way with two 11-foot travel lanes, curb, gutter, a 6-foot landscape strip and 4 to 6-foot wide sidewalk on both sides of the street. An 8-foot parking lane (6-foot paved and 2-foot gutter) will be provided on both sides of the street.

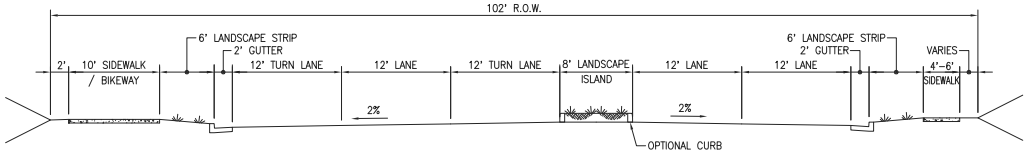




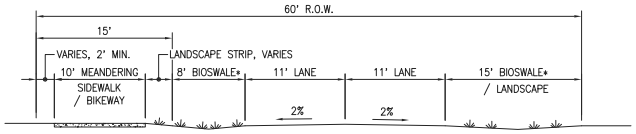

HONUA'ULA FIGURE 5-1

TYPICAL ROAD SECTIONS 1

Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 5-2 ROAD SECTIONS 2 Plot date: Jan 19, 2010-03:23:35pm CAD User: gtakita. Xref Filename: | Border Landscape 11x17 |

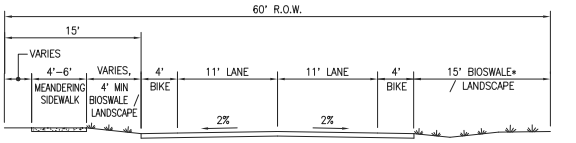



**PARKWAY**
SCALE: 1"=10'



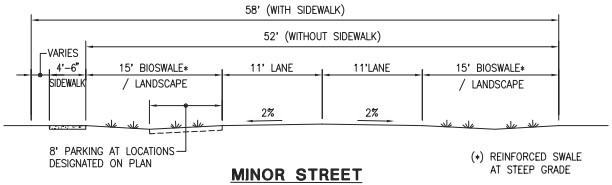

**COLLECTOR ROAD - OPTION 1**
SCALE: 1"=10'

(*) REINFORCED SWALE AT STEEP GRADE



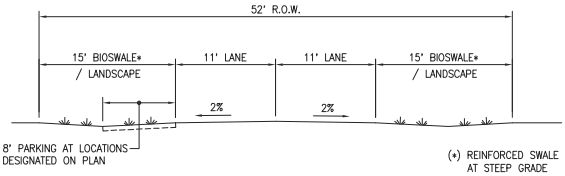

**COLLECTOR ROAD - OPTION 2**
SCALE: 1"=10'

(*) REINFORCED SWALE AT STEEP GRADE




**MINOR STREET**
SCALE: 1"=10'

(*) REINFORCED SWALE AT STEEP GRADE

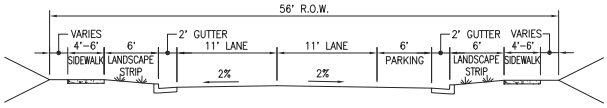



**CUL DE SAC**
SCALE: 1"=10'

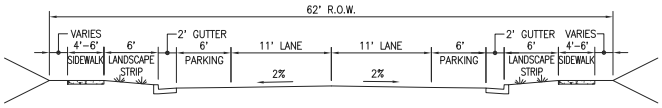
(*) REINFORCED SWALE AT STEEP GRADE



Path: W:\7814-01 Honua'ula\CIVIL\PRE ENG REPORT\FIGU Filename: FIG 5-3 ROAD SECTIONS 3 Plot date: Jan 19, 2010-04:04:17pm CAD User: gtakita. Xref Filename: | Border Landscape 11x17 |




**VILLAGE STREET (PARKING 1 SIDE)**
SCALE: 1"=10'




**VILLAGE STREET (PARKING 2 SIDE)**
SCALE: 1"=10'

## 6. OTHER UTILITIES

### 6.1 Electrical

The Kīhei – Mākena region is serviced by a 69 kV (kilovolt) power line that runs from the 'Ulupalakua Ranch, mauka of Honua'ula, to the Maui Electric Company (MECO) substation located on a separate parcel (TMK (2)2-1-08: 043) near the western boundary of the makai portion of the property. The Wailea Substation is currently being fed by transmission lines from the Maalaea Power Plant, northwest of the property and from Kealahou Switchyard, mauka of the property. The substation converts the 69 kV power to 12.47 kV for distribution to the Wailea area. The converted 12.47 kV lines run within a 12-foot wide easement along the makai boundary of the property. The Wailea Substation is nearly filled to capacity.

When fully built-out, the peak forecasted electrical demand for Honua'ula is estimated to be 9,467 kilowatts (kW) per month. Based on the forecasted Honua'ula electrical demand and use, MECO anticipates additional transformer units or new substation development may be necessary. The current plans for the project include an area for the expansion of the substation.

In addition to the substation improvements, the project proposes to underground existing overhead power lines that run through the property in the mauka-makai direction and also along the makai boundary.

The projected electrical demand is approximately 9,467.0 KW (kilowatt). We will coordinate with MECO to ensure service is provided.

### 6.2 Communication

Hawaiian Telecom provides telephone service in the Kīhei – Mākena region, and Oceanic Time Warner cable provides cable service. The telephone system servicing the area consists of overhead and underground facilities.

The project proposes to place existing overhead lines along the makai boundary underground.






HONUA'ULA

ROADWAY SITE LAYOUT PLAN

FIGURE 5-4

## 7. REFERENCES

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# Appendix A

## Water Pipe Size Chart

TABLE 5.41

*Friction Loss in Pipe–C = 130–6-in. PVC 1120 Pressure Pipe (ASTM-D2241)*

| Flow | Class 100 SDR 25* 6.35 ID | | Class 150 SDR 18 6.134 ID | | Class 200 SDR 14 5.914 ID | |
|---|---|---|---|---|---|---|
| *US gpm* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* |
| 50 | 0.51 | 0.01 | 0.54 | 0.01 | 0.58 | 0.01 |
| 60 | 0.61 | 0.01 | 0.65 | 0.02 | 0.70 | 0.02 |
| 70 | 0.71 | 0.02 | 0.76 | 0.02 | 0.82 | 0.03 |
| 80 | 0.81 | 0.02 | 0.87 | 0.03 | 0.93 | 0.03 |
| 90 | 0.91 | 0.03 | 0.98 | 0.03 | 1.05 | 0.04 |
| 100 | 1.01 | 0.03 | 1.09 | 0.04 | 1.17 | 0.05 |
| 120 | 1.22 | 0.05 | 1.30 | 0.06 | 1.40 | 0.07 |
| 140 | 1.42 | 0.06 | 1.52 | 0.08 | 1.64 | 0.09 |
| 160 | 1.62 | 0.08 | 1.74 | 0.10 | 1.87 | 0.12 |
| 180 | 1.82 | 0.10 | 1.95 | 0.12 | 2.10 | 0.14 |
| 200 | 2.03 | 0.12 | 2.17 | 0.15 | 2.34 | 0.18 |
| 220 | 2.23 | 0.15 | 2.39 | 0.18 | 2.57 | 0.21 |
| 240 | 2.43 | 0.17 | 2.61 | 0.21 | 2.80 | 0.25 |
| 260 | 2.63 | 0.20 | 2.82 | 0.24 | 3.04 | 0.29 |
| 280 | 2.84 | 0.23 | 3.04 | 0.27 | 3.27 | 0.33 |
| 300 | 3.04 | 0.26 | 3.26 | 0.31 | 3.50 | 0.37 |
| 320 | 3.24 | 0.30 | 3.47 | 0.35 | 3.74 | 0.42 |
| 340 | 3.44 | 0.33 | 3.69 | 0.39 | 3.97 | 0.47 |
| 360 | 3.65 | 0.37 | 3.91 | 0.44 | 4.20 | 0.52 |
| 380 | 3.85 | 0.41 | 4.13 | 0.48 | 4.44 | 0.58 |
| 400 | 4.05 | 0.45 | 4.34 | 0.53 | 4.67 | 0.63 |
| 450 | 4.56 | 0.56 | 4.89 | 0.66 | 5.26 | 0.79 |
| 500 | 5.07 | 0.68 | 5.43 | 0.80 | 5.84 | 0.96 |
| 550 | 5.57 | 0.81 | 5.97 | 0.96 | 6.42 | 1.14 |
| 600 | 6.08 | 0.95 | 6.51 | 1.13 | 7.01 | 1.34 |
| 650 | 6.59 | 1.10 | 7.06 | 1.30 | 7.59 | 1.56 |
| 700 | 7.09 | 1.26 | 7.60 | 1.50 | 8.18 | 1.79 |
| 750 | 7.60 | 1.44 | 8.14 | 1.70 | 8.76 | 2.03 |
| 800 | 8.11 | 1.62 | 8.69 | 1.92 | 9.34 | 2.29 |
| 850 | 8.61 | 1.81 | 9.23 | 2.14 | 9.93 | 2.56 |
| 900 | 9.12 | 2.01 | 9.77 | 2.38 | 10.51 | 2.85 |
| 950 | 9.62 | 2.22 | 10.31 | 2.63 | 11.10 | 3.14 |
| 1 000 | 10.13 | 2.45 | 10.86 | 2.89 | 11.68 | 3.46 |
| 1 100 | 11.14 | 2.92 | 11.94 | 3.45 | 12.85 | 4.12 |
| 1 200 | 12.16 | 3.43 | 13.03 | 4.06 | 14.02 | 4.84 |
| 1 300 | 13.17 | 3.97 | 14.11 | 4.70 | 15.18 | 5.62 |
| 1 400 | 14.18 | 4.56 | 15.20 | 5.39 | 16.35 | 6.44 |
| 1 500 | 15.20 | 5.18 | 16.29 | 6.13 | 17.52 | 7.32 |
| 1 600 | 16.21 | 5.84 | 17.37 | 6.91 | 18.69 | 8.25 |
| 1 700 | 17.22 | 6.53 | 18.46 | 7.73 | 19.86 | 9.23 |
| 1 800 | 18.24 | 7.26 | 19.54 | 8.59 | 21.02 | 10.26 |
| 1 900 | 19.25 | 8.02 | 20.63 | 9.49 | 22.19 | 11.34 |
| 2 000 | 20.26 | 8.82 | 21.72 | 10.44 | 23.36 | 12.46 |
| 2 200 | 22.29 | 10.52 | 23.89 | 12.45 | 25.70 | 14.87 |
| 2 400 | 24.32 | 12.36 | 26.06 | 14.62 | 28.03 | 17.46 |

*(SDR) Standard Dimension Ratio (OD/T) with OD s of Cast Iron Pipe; Factor of Safety of 2.5 Less Surge; Pressure Class at 73 F, psi.



TABLE 5.42

*Friction Loss in Pipe–C = 130–8-in. PVC 1120 Pressure Pipe (ASTM-D2241)*

| Flow | Class 100 SDR 25* 8.326 ID | | Class 150 SDR 18 8.044 ID | | Class 200 SDR 14 7.758 ID | |
|---|---|---|---|---|---|---|
| *US gpm* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* |
| 130 | 0.77 | 0.02 | 0.82 | 0.02 | 0.88 | 0.02 |
| 140 | 0.83 | 0.02 | 0.88 | 0.02 | 0.95 | 0.02 |
| 150 | 0.88 | 0.02 | 0.95 | 0.02 | 1.02 | 0.03 |
| 160 | 0.94 | 0.02 | 1.01 | 0.03 | 1.09 | 0.03 |
| 170 | 1.00 | 0.02 | 1.07 | 0.03 | 1.15 | 0.03 |
| 180 | 1.06 | 0.03 | 1.14 | 0.03 | 1.22 | 0.04 |
| 190 | 1.12 | 0.03 | 1.20 | 0.04 | 1.29 | 0.04 |
| 200 | 1.18 | 0.03 | 1.26 | 0.04 | 1.36 | 0.05 |
| 220 | 1.30 | 0.04 | 1.39 | 0.05 | 1.49 | 0.06 |
| 240 | 1.41 | 0.05 | 1.52 | 0.06 | 1.63 | 0.07 |
| 260 | 1.53 | 0.05 | 1.64 | 0.06 | 1.76 | 0.08 |
| 280 | 1.65 | 0.06 | 1.77 | 0.07 | 1.90 | 0.09 |
| 300 | 1.77 | 0.07 | 1.89 | 0.08 | 2.04 | 0.10 |
| 350 | 2.06 | 0.09 | 2.21 | 0.11 | 2.38 | 0.13 |
| 400 | 2.36 | 0.12 | 2.53 | 0.14 | 2.72 | 0.17 |
| 450 | 2.65 | 0.15 | 2.84 | 0.18 | 3.05 | 0.21 |
| 500 | 2.95 | 0.18 | 3.16 | 0.21 | 3.39 | 0.26 |
| 550 | 3.24 | 0.22 | 3.47 | 0.26 | 3.73 | 0.31 |
| 600 | 3.54 | 0.25 | 3.79 | 0.30 | 4.07 | 0.36 |
| 650 | 3.83 | 0.29 | 4.10 | 0.35 | 4.41 | 0.42 |
| 700 | 4.13 | 0.34 | 4.42 | 0.40 | 4.75 | 0.48 |
| 750 | 4.42 | 0.38 | 4.74 | 0.45 | 5.09 | 0.54 |
| 800 | 4.71 | 0.43 | 5.05 | 0.51 | 5.43 | 0.61 |
| 850 | 5.01 | 0.48 | 5.37 | 0.57 | 5.77 | 0.68 |
| 900 | 5.30 | 0.54 | 5.68 | 0.64 | 6.11 | 0.76 |
| 950 | 5.60 | 0.60 | 6.00 | 0.70 | 6.45 | 0.84 |
| 1 000 | 5.89 | 0.65 | 6.31 | 0.77 | 6.79 | 0.92 |
| 1 100 | 6.48 | 0.78 | 6.94 | 0.92 | 7.47 | 1.10 |
| 1 200 | 7.07 | 0.92 | 7.58 | 1.08 | 8.15 | 1.29 |
| 1 300 | 7.66 | 1.06 | 8.21 | 1.26 | 8.82 | 1.50 |
| 1 400 | 8.25 | 1.22 | 8.84 | 1.44 | 9.50 | 1.72 |
| 1 500 | 8.84 | 1.39 | 9.47 | 1.64 | 10.18 | 1.95 |
| 1 600 | 9.43 | 1.56 | 10.10 | 1.85 | 10.86 | 2.20 |
| 1 800 | 10.61 | 1.94 | 11.36 | 2.30 | 12.22 | 2.74 |
| 2 000 | 11.79 | 2.36 | 12.63 | 2.79 | 13.58 | 3.33 |
| 2 200 | 12.96 | 2.81 | 13.89 | 3.33 | 14.93 | 3.97 |
| 2 400 | 14.14 | 3.31 | 15.15 | 3.91 | 16.29 | 4.66 |
| 2 600 | 15.32 | 3.83 | 16.42 | 4.53 | 17.65 | 5.41 |
| 2 800 | 16.50 | 4.40 | 17.68 | 5.20 | 19.01 | 6.20 |
| 3 000 | 17.68 | 5.00 | 18.94 | 5.91 | 20.36 | 7.05 |
| 3 500 | 20.63 | 6.64 | 22.10 | 7.86 | 23.76 | 9.37 |
| 4 000 | 23.57 | 8.51 | 25.25 | 10.06 | 27.15 | 12.00 |
| 4 500 | 26.52 | 10.58 | 28.41 | 12.51 | 30.54 | 14.92 |
| 5 000 | 29.47 | 12.85 | 31.57 | 15.20 | 33.94 | 18.13 |
| 5 500 | 32.41 | 15.33 | 34.72 | 18.13 | 37.33 | 21.62 |

*(SDR) Standard Dimension Ratio (OD/T) with OD s of Cast Iron Pipe; Factor of Safety of 2.5 Less Surge; Pressure Class at 73 F, psi.

TABLE 5.43

*Friction Loss in Pipe–C = 130–10-in. PVC 1120 Pressure Pipe (ASTM-D2241)*

| Flow | Class 100 SDR 25* 10.212 ID | | Class 150 SDR 18 9.866 ID | | Class 200 SDR 14 9.514 ID | |
|---|---|---|---|---|---|---|
| *US gpm* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* |
| 180 | 0.71 | 0.01 | 0.76 | 0.01 | 0.81 | 0.01 |
| 200 | 0.78 | 0.01 | 0.84 | 0.01 | 0.90 | 0.02 |
| 220 | 0.86 | 0.01 | 0.92 | 0.02 | 0.99 | 0.02 |
| 240 | 0.94 | 0.02 | 1.01 | 0.02 | 1.08 | 0.02 |
| 260 | 1.02 | 0.02 | 1.09 | 0.02 | 1.17 | 0.03 |
| 280 | 1.10 | 0.02 | 1.18 | 0.03 | 1.26 | 0.03 |
| 300 | 1.18 | 0.03 | 1.26 | 0.03 | 1.35 | 0.04 |
| 350 | 1.37 | 0.03 | 1.47 | 0.04 | 1.58 | 0.05 |
| 400 | 1.57 | 0.04 | 1.68 | 0.05 | 1.81 | 0.06 |
| 450 | 1.76 | 0.06 | 1.89 | 0.07 | 2.03 | 0.08 |
| 500 | 1.96 | 0.07 | 2.10 | 0.08 | 2.26 | 0.09 |
| 550 | 2.15 | 0.08 | 2.31 | 0.09 | 2.48 | 0.11 |
| 600 | 2.35 | 0.09 | 2.52 | 0.11 | 2.71 | 0.13 |
| 650 | 2.55 | 0.11 | 2.73 | 0.13 | 2.93 | 0.15 |
| 700 | 2.74 | 0.13 | 2.94 | 0.15 | 3.16 | 0.18 |
| 800 | 3.13 | 0.16 | 3.36 | 0.19 | 3.61 | 0.23 |
| 900 | 3.53 | 0.20 | 3.78 | 0.24 | 4.06 | 0.28 |
| 1 000 | 3.92 | 0.24 | 4.20 | 0.29 | 4.51 | 0.34 |
| 1 100 | 4.31 | 0.29 | 4.62 | 0.34 | 4.96 | 0.41 |
| 1 200 | 4.70 | 0.34 | 5.04 | 0.40 | 5.42 | 0.48 |
| 1 300 | 5.09 | 0.39 | 5.46 | 0.47 | 5.87 | 0.56 |
| 1 400 | 5.48 | 0.45 | 5.88 | 0.53 | 6.32 | 0.64 |
| 1 500 | 5.88 | 0.51 | 6.30 | 0.61 | 6.77 | 0.72 |
| 1 600 | 6.27 | 0.58 | 6.72 | 0.68 | 7.22 | 0.82 |
| 1 700 | 6.66 | 0.65 | 7.13 | 0.77 | 7.67 | 0.91 |
| 1 800 | 7.05 | 0.72 | 7.55 | 0.85 | 8.12 | 1.01 |
| 1 900 | 7.44 | 0.79 | 7.97 | 0.94 | 8.58 | 1.12 |
| 2 000 | 7.83 | 0.87 | 8.39 | 1.03 | 9.03 | 1.23 |
| 2 200 | 8.62 | 1.04 | 9.23 | 1.23 | 9.93 | 1.47 |
| 2 400 | 9.40 | 1.22 | 10.07 | 1.45 | 10.83 | 1.73 |
| 2 600 | 10.19 | 1.42 | 10.91 | 1.68 | 11.73 | 2.00 |
| 2 800 | 10.97 | 1.63 | 11.75 | 1.93 | 12.64 | 2.30 |
| 3 000 | 11.75 | 1.85 | 12.59 | 2.19 | 13.54 | 2.61 |
| 3 200 | 12.54 | 2.08 | 13.43 | 2.47 | 14.44 | 2.94 |
| 3 400 | 13.32 | 2.33 | 14.27 | 2.76 | 15.35 | 3.29 |
| 3 600 | 14.10 | 2.59 | 15.11 | 3.07 | 16.25 | 3.66 |
| 3 800 | 14.89 | 2.86 | 15.95 | 3.39 | 17.15 | 4.04 |
| 4 000 | 15.67 | 3.15 | 16.79 | 3.73 | 18.05 | 4.45 |
| 4 500 | 17.63 | 3.92 | 18.89 | 4.63 | 20.31 | 5.53 |
| 5 000 | 19.59 | 4.76 | 20.98 | 5.63 | 22.57 | 6.72 |
| 5 500 | 21.55 | 5.68 | 23.08 | 6.71 | 24.82 | 8.01 |
| 6 000 | 23.50 | 6.67 | 25.18 | 7.89 | 27.08 | 9.41 |
| 6 500 | 25.46 | 7.73 | 27.28 | 9.15 | 29.34 | 10.91 |
| 7 000 | 27.42 | 8.87 | 29.38 | 10.49 | 31.59 | 12.52 |
| 7 500 | 29.38 | 10.08 | 31.48 | 11.92 | 33.85 | 14.22 |

*(SDR) Standard Dimension Ratio (OD/T) with OD s of Cast Iron Pipe; Factor of Safety of 2.5 Less Surge; Pressure Class at 73 F, psi.



TABLE 5.44

*Friction Loss in Pipe–C = 130–12-in. PVC 1120 Pressure Pipe (ASTM-D2241)*

| Flow | Class 100 SDR 25* 12.144 ID | | Class 150 SDR 18 11.734 ID | | Class 200 SDR 14 11.314 ID | |
|---|---|---|---|---|---|---|
| *US gpm* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* | Velocity *fps* | Head Loss *psi/100 ft* |
| 200 | 0.55 | 0.01 | 0.59 | 0.01 | 0.64 | 0.01 |
| 250 | 0.69 | 0.01 | 0.74 | 0.01 | 0.80 | 0.01 |
| 300 | 0.83 | 0.01 | 0.89 | 0.01 | 0.96 | 0.02 |
| 350 | 0.97 | 0.01 | 1.04 | 0.02 | 1.12 | 0.02 |
| 400 | 1.11 | 0.02 | 1.19 | 0.02 | 1.28 | 0.03 |
| 450 | 1.25 | 0.02 | 1.34 | 0.03 | 1.44 | 0.03 |
| 500 | 1.39 | 0.03 | 1.48 | 0.03 | 1.60 | 0.04 |
| 550 | 1.52 | 0.03 | 1.63 | 0.04 | 1.76 | 0.05 |
| 600 | 1.66 | 0.04 | 1.78 | 0.05 | 1.91 | 0.06 |
| 700 | 1.94 | 0.05 | 2.08 | 0.06 | 2.23 | 0.08 |
| 800 | 2.22 | 0.07 | 2.37 | 0.08 | 2.55 | 0.10 |
| 900 | 2.49 | 0.09 | 2.67 | 0.10 | 2.87 | 0.12 |
| 1 000 | 2.77 | 0.10 | 2.97 | 0.12 | 3.19 | 0.15 |
| 1 100 | 3.05 | 0.12 | 3.26 | 0.15 | 3.51 | 0.18 |
| 1 200 | 3.32 | 0.15 | 3.56 | 0.17 | 3.83 | 0.21 |
| 1 300 | 3.60 | 0.17 | 3.86 | 0.20 | 4.15 | 0.24 |
| 1 400 | 3.88 | 0.19 | 4.15 | 0.23 | 4.47 | 0.27 |
| 1 500 | 4.16 | 0.22 | 4.45 | 0.26 | 4.79 | 0.31 |
| 1 600 | 4.43 | 0.25 | 4.75 | 0.29 | 5.11 | 0.35 |
| 1 800 | 4.99 | 0.31 | 5.34 | 0.37 | 5.74 | 0.44 |
| 2 000 | 5.54 | 0.38 | 5.93 | 0.44 | 6.38 | 0.53 |
| 2 200 | 6.09 | 0.45 | 6.53 | 0.53 | 7.02 | 0.63 |
| 2 400 | 6.65 | 0.53 | 7.12 | 0.62 | 7.66 | 0.74 |
| 2 600 | 7.20 | 0.61 | 7.71 | 0.72 | 8.30 | 0.86 |
| 2 800 | 7.76 | 0.70 | 8.31 | 0.83 | 8.94 | 0.99 |
| 3 000 | 8.31 | 0.80 | 8.90 | 0.94 | 9.57 | 1.12 |
| 3 500 | 9.70 | 1.06 | 10.38 | 1.25 | 11.17 | 1.49 |
| 4 000 | 11.08 | 1.36 | 11.87 | 1.60 | 12.77 | 1.91 |
| 4 500 | 12.47 | 1.69 | 13.35 | 1.99 | 14.36 | 2.38 |
| 5 000 | 13.85 | 2.05 | 14.84 | 2.42 | 15.96 | 2.89 |
| 5 500 | 15.24 | 2.44 | 16.32 | 2.89 | 17.55 | 3.45 |
| 6 000 | 16.62 | 2.87 | 17.80 | 3.39 | 19.15 | 4.05 |
| 6 500 | 18.01 | 3.33 | 19.29 | 3.93 | 20.74 | 4.70 |
| 7 000 | 19.39 | 3.82 | 20.77 | 4.51 | 22.34 | 5.39 |
| 7 500 | 20.78 | 4.34 | 22.25 | 5.13 | 23.94 | 6.12 |
| 8 000 | 22.16 | 4.89 | 23.74 | 5.78 | 25.53 | 6.90 |
| 8 500 | 23.55 | 5.47 | 25.22 | 6.46 | 27.13 | 7.72 |
| 9 000 | 24.93 | 6.08 | 26.70 | 7.18 | 28.72 | 8.58 |
| 9 500 | 26.32 | 6.72 | 28.19 | 7.94 | 30.32 | 9.48 |
| 10 000 | 27.70 | 7.39 | 29.67 | 8.73 | 31.91 | 10.42 |
| 11 000 | 30.47 | 8.81 | 32.64 | 10.41 | 35.11 | 12.43 |
| 12 000 | 33.24 | 10.35 | 35.60 | 12.23 | 38.30 | 14.60 |
| 13 000 | 36.01 | 12.00 | 38.57 | 14.18 | 41.49 | 16.93 |
| 14 000 | 38.78 | 13.76 | 41.54 | 16.27 | 44.68 | 19.42 |
| 15 000 | 41.55 | 15.64 | 44.51 | 18.48 | 47.87 | 22.07 |

(SDR) Standard Dimension Ratio (OD/T) with OD s of Cast Iron Pipe; Factor of Safety of 2.5 Less * Surge; Pressure Class at 73 F, psi.

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# Appendix Q

## Market Study, Economic Impact Analysis, and Public Cost / Benefits Assessment

**Market Study,**
**Economic Impact Analysis, and**
**Public Costs/Benefits Assessment**
**of the**

**PROPOSED HONUAULA**

**COMMUNITY**

**Wailea, Maui, Hawaii**

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& APPRAISERS

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June 15, 2009

Mr. Charlie Jencks
Goodfellow Bros. Inc.
P. O. Box 220
Kihei, Hawaii 96753

**Market Study, Economic Impact Analysis, and**
**Public Costs/Benefits Assessment of the**
**Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

Dear Mr. Jencks:

At your request, we have completed a series of market and econometric analyses associated with Honuaula, a proposed 1,150 unit development to be located on 668.4 acres fronting Piilani Highway, mauka-abutting Wailea Resort, 12 miles southwest of Kahului, Maui. The multi-phase project will provide a mix of competitive residential inventory intended to service the mid to long-term regional demand for a broad spectrum of product ranging from affordably-priced workforce housing units to upper-end golf course homes. Commercial, recreational and open space components will service resident needs, combining to create a comprehensive modern master-planned suburban community.

Our study was primarily comprised of three elements:

1. **Market Study**. To ascertain whether there will exist sufficient demand in the South Maui residential and commercial real estate markets to successfully absorb the finished subject inventory in a timely manner given its characteristics and those of competing in-place and proposed regional development.

2. **Economic Impact Analysis**. To estimate the general and specific effects on the local economy which will result from the development of Honuaula, including construction and business employment, wages and income, contractor/supplier profits, end-user expenditures, and other regional monetary and employment effects. And, to identify and determine specific effects associated with regional real property issues including population, traffic, affordable housing and property values.

3. **Public Cost/Benefit Assessment**. To quantify the impact on the public purse arising from the subject project in regards to tax/fee revenues which will be received by the State of Hawaii and Maui County due to the project's actualization, versus the implied costs of providing needed governmental services to the population of the development.

Additionally, our studies and presentation are intended to fulfill the requirements of Maui County Code Section 19.510.010 General application procedures:

> "10. Analysis of the secondary impacts of the proposed use on surrounding uses which includes, but which is not limited to, increases in property value, populations, housing, community services and facility needs, secondary jobs and employment generated, and compatibility with surrounding uses, and if applicable, the affordable housing program and comments from the department of human concerns of the County, and other mitigation plans and comments from the respective governmental and community services agencies."

The subject property, identified on State of Hawaii Tax maps as Second Division Tax Map Key 2-1-08, Parcels 56 and 71, varies from gently to moderately sloping, has a desirable windless climate, and offers superior ocean and mountain views. The site is generally rectangular, bisected by the right-of-way for the possible extension of Piilani Highway, and runs from the mauka boundary of the existing Wailea resort (at about the 300-foot elevation) up the westerly flank of Haleakala to the 700-foot level. Makena Resort lands southerly abut the holding.

Honuaula will be a comprehensively-serviced, residential-oriented development containing 400 home sites, 750 multi-family units, 100,000 square feet of commercial space, an 18-hole golf course and clubhouse facility, three public parks, extensive open space and a variety of community features. With 450 workforce housing/affordable units planned for local families along with a wide variety of other product types, full-time Maui residents will comprise a primary target demographic for the project. Pacific Rim non-resident, second/vacation home purchasers (specifically from North America), will also comprise a major purchasing segment.

The pertinent results from our studies are presented within the following summary report, which focuses on a series of tables and models with brief narrative describing the research, analytical process and conclusions.

As part of our investigation program, we have inspected the subject property and its environs, researched the Maui residential and commercial real property market sectors, interviewed knowledgeable parties active in the regional economy, reviewed government statistics, policies and publications, accessed on-line databases, and compiled materials from published and private sources.



All conclusions presented herein are subject to the identified limiting conditions, assumptions, and certification of The Hallstrom Group, Inc., in addition to any others specifically set forth in the text. All work has been completed in conformance with the Uniform Standards of Professional Appraisal Practice (USPAP).

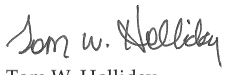
Based on our investigation and analysis, we have concluded:

- There will be meaningful amounts of unmet demand for housing units in the Kihei-Makena study area relative to proposed supply over the coming two decades despite the current down cycle status of island real estate.
- Honuaula has the attributes necessary to be strongly competitive in the regional residential market across a wide-spectrum of pricing, unit types and ownership sectors.
- We forecast the proposed residential and commercial inventory of the subject will be fully absorbed within circa eleven years from the anticipated commencement of pre-sales in 2012 (mid-point demand estimate).
- Construction of the community will provide some $1.2 billion in investment into the Maui economy, creating thousands of worker-years during development and stabilized employment for hundreds after completion.
- Maui County will realize a net fiscal gain (increased tax receipts versus added costs) of $41.8 million during build-out and $1.6 million dollars annually in tax receipts relative to government expenses associated with the project.
- The State of Hawaii will receive net fiscal gains of $97.2 million during the development period and an annual stabilized positive cash flow of $1.5 million after build-out.

We appreciate the opportunity to be of service to Honuaula Partners LLC in regards to this prominent holding and long-envisioned project. Please contact us if further discussion or detail is required.

Respectfully submitted,

THE HALLSTROM GROUP, INC.



Tom W. Holliday
Supervisor/Senior Analyst

/as

THE HALLSTROM GROUP INC.
REAL ESTATE CONSULTANTS & APPRAISERS

**Market Study,**
**Economic Impact Analysis, and**
**Public Costs/Benefits Assessment**

**PROPOSED HONUAULA COMMUNITY**

**Located at**

**Wailea, Maui, Hawaii**

**Prepared for**

**Mr. Charlie Jencks**
**Goodfellow Brothers, Inc.**
**and**
**Honuaula Partners LLC**

**June 2009**

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## ASSIGNMENT AND PRESENTATION SUMMARY

Honuaula will comprise approximately 670 acres located on the westerly flank of Haleakala, fronting the mauka border of the existing Wailea Resort, and extending inland about one mile to the 700-foot elevation level. The site is bisected by the right-of-way for the possible southerly extension of Piilani Highway. It is within the Kihei-Makena planning and market "corridor" and has long been proposed for urban expansion of the Kamaole/Wailea community.

Capitalizing on a moderately sloping, scenic site having favorable climate and superior view potentials, which abuts similar existing urban uses, the subject development is intended to be a leading edge master planned sustainable community offering a wide spectrum of uses for both resident families and non-resident owners. The current design calls for: 750 multi-family units, 450 of which will be priced and marketed according to County affordable/workforce housing guidelines; 400 single family lots/homes; 100,000 square feet of commercial space; an 18-hole golf course and clubhouse facility; and a variety of parks, open spaces and public uses.

If there is sufficient market demand, Honuaula will be transformed from a vacant bulk acreage holding having limited agricultural use potentials and nominal regional economic benefit, into an asset providing needed affordable/workforce housing, producing thousands of "worker years" of employment and wages, attracting significant new capital investment, and stimulating spending via upper-income non-resident owners. This activity will in turn create employment and business opportunities for Maui residents and an expanded tax base for the state and county.

The Hallstrom Appraisal Group, Inc., assignment was to analyze the proposed Honuaula community from a real estate market perspective and to identify and quantify probable market and economic impacts associated with the master plan

in light of competitive, regional, prevailing and forecast trends in order to answer four basic study questions:

1. Is there sufficient demand to absorb the various "marketable" components of the subject project during a reasonable exposure period given competing developments and projected statewide/regional market trends?

2. Will the subject be an appropriate use of the underlying site relative to market needs, standard land planning objectives, accepted master plan design characteristics, and the area environs?

3. What will be the general/specific and direct/indirect economic impacts on Maui resulting from the undertaking of the subject development via employment, wages, business operations, population, property values and other economic activity related to the real property asset?

4. What will be the effect on the state and county "public purse" from the project in regards to costs of services required to service the Honuaula population versus increased tax/fee receipts?

These issues were addressed through a comprehensive research and inquiry process utilizing data from market investigation, governmental agencies, various Hawaii-based media, industry spokespersons/sources, on-line databases, and published public and private documents.

The pertinent results of our study are highlighted in the following summary report which contains concise supporting narrative, tabular data and other materials contributing to our conclusions. The presentation is divided into nine sections:

1. **Primary Study Conclusions**
2. **Economic Outlook and Regional Overview**
3. **The Subject Property and Proposed Project**





4. **Market Study of the Kihei-Makena Residential Sector**
5. **The Maui Resort/Residential Sector**
6. **Appropriateness of the Subject for Residential Use and Absorption Estimates**
7. **Quantification of Demand for Subject Commercial Uses**
8. **Analysis of the Economic Impacts of the Proposed Development**
9. **Assessment of the Public Costs/Benefits Associated With the Project**

The primary source information regarding the subject used in our study were: maps, master plans, unit counts, density estimates and background materials provided by PBR Hawaii; infrastructure costs estimates and associated materials supplied by Honuaula Partners LLC; Maui County ordinances 3553 and 3554 regarding the proposed subject development, materials relating to the on-going analysis being completed for the Kihei-Makena community plan update; and, data from our files from numerous studies of the subject property undertaken over the past three decades.

The Honuaula site and environs have been viewed by our firm on many occasions and specifically for this assignment during early April 2009.

## PRIMARY STUDY CONCLUSIONS

Based on our analysis of the subject property, its environs, and envisioned development we have reached the following conclusions as of June 1, 2009 regarding the probable market standing and economic impacts of the proposed Honuaula community:

- Although Hawaii is in the midst of a cyclical down real estate market, expectations are activity will generally recover towards long-term average levels during 2011-12,

**TABLE A**

**SUMMARY OF SUBJECT ABSORPTION PROJECTIONS BY PRODUCT TYPE**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Using Rounded Mid-Point Demand Estimates**

| | Residential | | | | | Golf Course Clubhouse | |
|---|---|---|---|---|---|---|---|
| Year | MF-Affordable (1) | MF-Market | Single Family | Total | Commercial Village (2) | Golf/Club-Oriented Operations | Non-Golf/Club Businesses |
| | | | | | (in Sq. Ft.) | (in Sq. Ft.) | (in Sq. Ft.) |
| 2012 | 60 | 16 | 25 | 101 | | 12,000 | 12,000 |
| 2013 | 60 | 22 | 30 | 112 | 37,000 | | |
| 2014 | 60 | 28 | 35 | 123 | 25,000 | | |
| 2015 | 60 | 28 | 40 | 128 | | | |
| 2016 | 60 | 28 | 40 | 128 | | | |
| 2017 | 60 | 28 | 40 | 128 | 18,000 | | |
| 2018 | 60 | 28 | 40 | 128 | 8,000 | | |
| 2019 | 30 | 28 | 40 | 98 | | | |
| 2020 | | 28 | 40 | 68 | | | |
| 2021 | | 28 | 40 | 68 | | | |
| 2022 | | 28 | 30 | 58 | | | |
| 2023 | | 10 | | 10 | | | |
| **Totals** | **450** | **300** | **400** | **1,150** | **88,000** | **12,000** | **12,000** |
| **Average Annual Rate of Absorption During Sales Period** | **56 Units** | **25 Units** | **36 Homes** | **96 Units/Homes** | | | |

(1) Does not include 250 affordable-priced units located off-site to which the developer has committed, including 125 rental apartments and 125 for sale condominiums all priced for households making 100% or less of the Maui median household income level.

(2) This component to be zoned "VMX" which allows for mixed commercial and residential use. For purposes of this assignment it is assumed that both sites will be used for commercial space, with the 4.7 acre northerly parcel being developed first, followed several years later by the 1.3 acre southerly parcel.

Source: The Hallstrom Group, Inc.



and that another upcycle will inevitably ensue. And, regardless of the current recession, there continues to be an unmet need for affordably-priced housing in the Kihei-Makena study area.

- The demand for new residential units in the Kihei-Makena Corridor will be from 7,000 to 10,846 units over the next 22 years (to 2030). The number of existing unsold and planned units, excluding Honuaula, total some 5,160 units. This indicates there will be a minimum shortfall in the sector of from 1,840 to 5,686 new residential units; with a mid-point under-supply of 3,763 units. Our analysis clearly demonstrates sufficient unmet demand will be available to absorb the 1,150 units of subject inventory.

- The subject property is a superior location for the proposed development in regards to access, views, slope, shape, complimentary existing adjacent uses, climate and ability to provide a quality lifestyle for a wide-range of owners and end-users. It will have the attributes necessary to be highly competitive in all its product sectors, and will capture a reasonable market share during its offering period.

- We estimate the 450 affordable/workforce subject residential units will be fully absorbed (sold-out) within an 8-year marketing period, and the market-priced units within 12-years. The 100,000 square feet of non-golf club/commercial space will require about seven years to achieve full-occupancy. Our annualized mid-point absorption estimates are summarized on Table A.

- Honuaula will generate circa $1.2 billion in capital investment into the Maui economy. The construction and on-going operations/maintenance of the single family homes, multi-family units, commercial village businesses, golf course and community facilities will provide an estimated 9,537 "worker-years" of employment and $480 million in total wages over a 13-year build-out period. After completion the community

will support some 518 permanent jobs with an annual payroll of about $19 million and host an estimated $97 million in economic activity per year.

- At build-out the de facto population of the project will be some 1,833 persons of which 1,541 will be full-time residents (with 370 school-age children) and 292 will be comprised of non-resident owners and their guests periodically using their vacation unit/home. The total resident household income will be $68.9 million annually on a stabilized basis (in constant 2009 dollars), and discretionary expenditures into Maui businesses by the Honuaula population will be some $77 million per year.

- The project will have nominal impacts on the socio-economic aspects of the community that relate to real property issues. Property values in the Kihei-Makena sector are largely driven by external, cyclical economic factors and its existing cumulative mass, not any single new project. Further, the envisioned prices of the subject product will fall at and below the existing range found within the abutting developments; Wailea Resort to makai and Maui Meadows to the north. The master plan calls for substantial numbers of affordable units. There will be minimal direct in-migration as a direct result of the operating components of the community, and what is created will be readily met via on and off-site projects of the developer.

- The immediate impact of the "weight" of the Honuaula population on regional real property infrastructure will be offset by public fees of some $25,240 per unit, or more than $29 million in total, to be paid into traffic, school and park funds. An additional $5 million will be contributed towards the Kihei Regional Park, another $550,000 towards the South Maui Police Station, and a two-acre building site will be dedicated for a future fire station.

- The County of Maui, beyond its share of the impact fees, will receive some $55.5 million in real property tax





receipts during the construction period for the project, and annual collections of $7.25 million on a stabilized basis. The "per capita fair contribution" for the costs of providing County services to the Honuaula de facto population will be circa $5.65 million per year, resulting in a net fiscal gain to Maui of $1.6 million annually. The "actual" costs of additional services required as a result of the development would likely be less than these "per capita" estimates.

- The State of Hawaii will receive a net revenue gain after operating costs of $97.2 million in taxes during the 13-year build-out, and an estimated $1.5 million annually stabilized thereafter.

The major economic impacts and public costs/benefits conclusions are summarized on Table B.

## ECONOMIC OUTLOOK AND REGIONAL OVERVIEW

### Current Status

The Hawaii real estate market is typified by widely-swinging, multi-year cycles, with periods of extreme demand and hyper-appreciation followed by ones of recessionary pricing and low activity. Much of the market impetus is a result of external economic factors in conjunction with the limited island land base.

We are currently at the nadir of the cycle, in a down period showing soft demand and weak pricing. There are emerging signs the trend has bottomed-out and stabilization and movement into recovery/growth is expected during the next several quarters.

Although omens of underlying mainland economic weakness and softening in a variety of real estate sectors began to appear on Maui by early to mid-2007, the critical event foreshadowing a broad downturn in the primary study area was the collapse of

**TABLE B**

**SUMMARY COMPARISON OF MAJOR ECONOMIC IMPACTS AND PUBLIC COSTS/BENEFITS**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Analysis Item | During Build-Out/Absorption Period | Stabilized Annually Thereafter |
|---|---|---|
| Direct Capital Investment | $1,216,246,800 | |
| Local Contractor's Profits | $121,624,680 | |
| Local Supplier's Profits | $46,284,872 | |
| Worker Years of Jobs | 9,537 | 518 |
| Employee Wages | $479,975,118 | $19,039,212 |
| De Facto Owner/Guest Population | | 1,833 |
| School-Age Children | | 370 |
| Full-Time Resident Household Income | $496,911,000 | $68,875,500 |
| Owners/Guest Expenditures (On & Off Site) | $513,882,405 | $77,034,710 |
| Total Operating Gross Receipts | $383,730,000 | $96,920,000 |
| Outside Patronage Expenditures | $196,704,000 | $49,176,000 |
| Total Maui "Base" Economic Impact | $1,602,709,475 | $145,249,922 |
| Total Overall Statewide Economic Impact | $3,205,418,950 | $290,499,843 |
| | | |
| County of Maui Gross Tax/Fee Receipts (1) | $81,116,659 | $7,251,075 |
| State of Hawaii Gross Tax/Fee Receipts | $165,422,400 | $11,344,005 |
| Maui Costs of Services (per Capita) | $39,324,805 | $5,649,486 |
| State Costs of Services (per Capita) | $68,200,408 | $9,797,817 |
| Maui Net Benefits or (Loss) | $41,791,853 | $1,601,589 |
| State Net Benefits or (Loss) | $97,221,991 | $1,546,188 |

(1) Does not include $5 million contribution towards Kihei Regional Park, payment of $550,000 towards South Maui Police Station, and a two-acre site for future fire station.

Source: The Hallstrom Group, Inc.



Aloha and ATA airlines in April 2008. This abruptly decimated tourism, leading to increasing unemployment, business failures, slackening of residential and contractor demand, and modified spending levels island wide.

Subsequent external events exacerbated the situation, including recessionary movement in the US and throughout the Pacific Basin, rapidly fluctuating fuel prices, a significant tightening of available credit, and a major decline in stock/equity markets.

As a result, the unemployment rate on Maui, traditionally among the lowest in the nation, has well more than doubled over the past year now standing at 8.5 percent, up from the 3.3 percent rate of April 2008. Tourism indicators have declined by 10 to 20-plus percent, and gross total expenditures (residents and visitors) was down by more than two percent last year relative to 2007 with the annualized outlook for 2009 showing a similar decline. A previously fast growing population has been somewhat stabilized by out-migration and a stagnation of gross household income.

Inevitably, there has been a dramatic slowing in real estate across the spectrum, with commercial property cash flows weakened by slowed business activity and vacancies; lack of capital for investment/development opportunities; and a retreat by non-resident purchasers. One of the only sectors for which there remained demonstrable demand, the affordable resident housing segment, was stymied by stiffened loan requirements, job losses, limited lending capacities, and diminishing household income.

From a real property perspective, the current downturn is the most substantial since the 1981-82 recession, outpacing the 1990-1994 decline in the aftermath of the "Japanese bubble", and the post-9/11 period.

## Outlook

Notwithstanding the near-term turmoil, which will require many months to be resolved, mid to long-term indicators and foundational economic attributes remain favorable for both

Maui and the Kihei-Makena study area. An increasing population base via natural growth and inevitable in-migration, coupled with the intrinsic worldwide demand for Maui tourism and its limited land resources, will result in a renewal of the well-established, highly-cyclical nature of the local real estate market along historic trend lines.

Over the coming two decades, through 2030, the resident population of the Kihei-Makena planning area is forecast to increase by 11,000 to 15,000 persons, a gain of 40 to 54 percent above current levels. These households will pump nearly a quarter-billion dollars annually into the local economy. Visitor counts in the study corridor will also grow, as will their expenditures by an estimated $1.2 billion per year over the next 22 years. These users/consumers and their discretionary spending will be the basis for expanding future economic activity and land use demand.

Additionally, as Maui becomes a more diversified economic and urbanized community, new business opportunities will emerge outside the traditional fields.

The near-term focus is on when recovery can be expected in the Hawaii and Maui economies. Generally, the State lags behind the mainland by one to two quarters within the economic cycle; as demonstrated by Hawaii being one of the last areas of the country to move into the current recession. Similarly, it is expected that a return to growth will be delayed by several months behind the rest of the country during the coming recovery.

We anticipate that Hawaii will continue in its current malaise through the remainder of the year, reaching stabilization in its downward move during the fourth quarter. Upward recovery is anticipated to begin by mid to late 2010, with a return to meaningful, if limited, growth in 2011.

In their second quarter 2009 *Outlook for the Economy*, the State Department of Business, Economic Development and Tourism (DBEDT) depict a continuing slowdown through 2009, with the possibility of stabilization reached by year-end. Gross Domestic





Product (GDP) for the state is forecast to be off 1.9 percent for the year relative to 2008, visitor spending down nearly eight percent, and personal income off one percent.

For 2010, the department is forecasting GDP expansion of 0.4 percent over 2009, gains of more than five percent in visitor spending, and nearly two percent in personal income. Thereafter they project:

> "Beyond 2010 the gradual recovery is expected to continue with modest job growth of around 0.5 percent for 2011. Visitor arrivals should show a healthier, 4.3 percent increase in 2011. Hawaii's GDP growth in 2011 is expected to reach 0.9 percent. This gradual recovery will continue into 2012, assuming national and international economic conditions continue to improve."

The DBEDT publication can be viewed at:

http://www.hawaii.gov/dbedt/info/economic/data_reports/qser

Forecasts by the University of Hawaii Economic Research Organization (UHERO) throughout the recession have been slightly to moderately more pessimistic than the DBEDT estimates. Their modeling depicts a continuing flat to slightly-off economy in 2010 before notable gains commence in 2011-12. Yet, their current perspective on the depth of the down-cycle and recovery potentials has adopted a markedly more optimistic tone relative to past reports:

> "We are now approaching the point where the balance of risks is more evenly weighted between positive and negative. The cycle of job and income destruction is still ongoing, and certainly deeper near-term losses are possible. But recovery will come, and economic forecasters are notorious for their inability to predict when the economy will turn. Considering the size of the economic drop, it is possible that we may see a somewhat bigger bounce during recovery than currently anticipated."

The UHERO economic forecast reports can be viewed at:

http://www.uhero.hawaii.edu/

Throughout our analyses, we have adopted the perspective that the Kihei-Makena real estate market will remain slow for the remainder of 2009, with activity down more than half from historic annual averages, increasing slightly in 2010, and moving into the beginnings of a typical up cycle in 2011.

As Honuaula residential and commercial product is not expected to be offered for pre-sale/lease until late 2012, at the earliest, the current recession is not expected to have a meaningful impact on the marketability of the subject inventory. The real estate sectors are anticipated to be in full recovery mode by this time, and it is highly probable that during the decade-plus absorption period of the project another full economic cycle will transpire.

**Regional Overview**

The "Kihei-Makena Corridor", which comprises the primary study area and encompasses the subject property, is one of the larger urbanized communities on the neighbor islands, and one of the most important visitor destinations in the State. It has been a focal point for a wide variety of urban land use development on Maui for several decades

At present, there are some 27,750 full-time residents in the region, housed in an estimated 13,500 units. Many residents work in the community businesses and resorts, although Kihei has long-been planned to provide a centralized housing location for workers throughout the island. The gross household income among area residents is estimated at about $1 billion.

The daily tourist population in South Maui averages more than 20,000 visitors, utilizing nearly 8,000 transient vacation units, and spending some $1.25 billion annually (current dollars).

The attractions of Kihei for residents and visitors are its exceptional climate, extensive shoreline, central location and supporting facilities.

Temperatures in the area average 71 degrees in winter, and 78 degrees in summer. Annual rainfall averages less than 14





inches, typically falling in a limited number of strong storms, making the area among the more arid stretches in the state. The area is generally considered one of the most desirable micro-climates in islands (particularly from Central Kihei south).

There are a string of full-service beach parks along the coastline, with schools, mauka parks, recreational amenities and public services spread through the community. Kahului Airport and Harbor provide portals to the world only a dozen miles away, and the island's major highways are readily accessible from Kihei. Apart from "big box" stores and major hospital services, Kihei-Makena offers the comprehensive range of commercial activities, land uses, and infrastructure creating a modern urban environment.

Kihei-Makena has weathered the current downturn moderately, to marginally better, than other neighbor island locales. While there has been some business closures, it has been well less than that experienced in West Hawaii and on Kauai. But, most operations have cut back on staffing, and there are wide-spread concerns over viability should the recession continue into another year.

Following past off-cycles, South Maui has demonstrated the ability to rebound faster than most neighbor island sectors, a function of its large working-class resident population and a highly competitive tourism infrastructure. We anticipate it will stabilize then recover in concert with statewide trends commencing in 2010-11.

The study area population and business activity is anticipated to continue growing over the coming two-plus decades (to 2030), albeit at a slightly slower rate then during the 1980s-90s. This growth will require additional lands be designated for residential, commercial, resort, recreational, park/open space and other uses in order to provide a sustainable, quality lifestyle for residents and visitors.

As part of the on-going General/Community Plan Update process, the County of Maui has completed a series of studies and planning activities over the past several years in order to

quantify and provide for the expected demands of the increasing island population over the mid to long-term. We have incorporated the findings and forecasts from these efforts within our market study and economic impact assessment.

Among the source materials contributing to our analysis:

- "*Maui Island Housing Issue Paper*", John Knox & Associates, Inc., December 2006.
- "*Land Use Forecast Technical Resource Study*", Plan Pacific, Inc., November 2006.
- "*South Maui Development Projects Map*", Long-Range Planning Division, Maui County Planning Department, July 2008.
- "*GPAC Directed Growth Maps*" and Unit Count Recommendations, General Plan Advisory Committee, March 2009

Our conclusions are generally consistent with the range of demand and supply forecasts identified in these materials, and they are supportive of the need for Honuaula in order to provide a stabilized housing market for area residents and non-resident purchasers.

In addition to the currently in-force Kihei-Makena Community Plan Update (1998), these current data sources are cited within the report narrative and/or tables.

## THE SUBJECT PROPERTY AND PROPOSED PROJECT

Near rectangular in shape, the 668.997-acre subject property is bounded by Wailea Resort on the makai side, Maui Meadows subdivision to the north, the Makena Resort to the south, and Ulupalakua Ranch range lands to mauka. Situated on the western slope of Haleakala, the site has a moderately-sloping, undulating topography, dropping from 700 feet above sea level





along its inland boundary to circa the 300 feet elevation along its makai property line. This provides panoramic views of the coast and neighbor islands from nearly all points of the property.

The climate in the area is highly desirable; dry, warm, and subject to lesser intensity trade winds. It has direct access onto the region's main thoroughfare, and proximity to the commercial and employment centers of Kamaole and Wailea. It abuts similar urban use types as proposed in the master plan.

The holding was originally labeled the "Makena 700" property when first considered for development nearly 30 years ago as a long-term expansion for the Wailea Resort node. This was in reference to its acreage, which was reduced to its current size by the deeding of two parcels to other interests totaling 31.003 acres. The largest was a 30-acre right-of-way corridor, which bisects the property, and could possibly be used for a future extension of Piilani Highway (not under meaningful consideration at this time). The remaining 1.003 acres were deeded to Maui Electric.

The property is located about twelve miles from the Kahului Airport and is within two miles of shops, beaches, and resort centers. Four-lane Piilani Highway allows direct high-speed access to the island's highway system into Central and West Maui.

Currently, the subject property is in a natural state of shrub, brush, and Keawe tree growth. The somewhat rugged terrain is composed of porous lava rock covered lightly with top soil sufficient to allow tree and plant growth typical of Wailea/South Kihei's arid, warm climate.

In its initial master planning known as "Wailea 670", the intent was to provide resort-oriented expansion lands and the associated employment and tax revenues created via them for future generations as the lands in Wailea Resort were built-out.

Following significant evolution over time in response to community input, the master plan now focuses on providing a

broad spectrum of residential-oriented uses, from affordable to resort-quality, with a minor supporting commercial component. Transient, timeshare and other intensive resort uses will not be permitted under the County-approved guidelines.

The current Honuaula design calls for development as follows:

| Land Use | Acres | Units | Density Per Acre |
|---|---|---|---|
| Single-Family Residential | 244 | 400 | 1.6 |
| Multifamily Residential | 115 | 750 | 6.5 |
| Commercial Mixed-Use | 6 | 88,000 SF | - |
| Golf Course | 186 | 18 Holes | - |
| Clubhouse Facility | 5 | 24,000 SF | - |
| Open Space/Parks/Other | 112 | | |
| Total | 668 | 1,150 | |

Within the multifamily component will be 450 units meeting affordable pricing guidelines established by the Maui County Department of Housing and Human Concerns, Housing Division in concurrence with the County's workforce housing ordinance. These units are anticipated to range in size from 600 to 1,000+ gross square feet of living area, and be built at densities of 6.2 to 15.8 units per acre. They will be located in the northerly area of the project site, near the neighborhood commercial mixed-use component and with ready access onto Piilani Highway.

All of these units will be subject to strict purchaser limitations insuring they provide housing for full-time resident families earning between 80 and 160 percent of average Maui household income. In addition to these on-site affordably-priced units, the developer has committed to constructing another 250 units off-site (125 rental and 125 for-sale) with prices affordable to households earning 100 percent of less of the County median.

The remaining 300 multifamily units at Honuaula will be divided between "Townhomes" ranging in size from 1,600 to 2,000 square feet and built at a density of 6.7 units per acre; and, ""Luxury Villas" which will be from 2,000 to 2,800-plus square





feet at an average density of 3.8 units per acre. Our analysis indicates that about half the "Townhomes" and one-quarter of the "Luxury Villas" will be purchased by resident Maui households, with the remainder being bought by non-residents for second/vacation home use.

The 400 single family lots will range in density from 0.6 to 3.3 per acre, with many having direct golf course frontage and others half-acre and larger in size abutting the open Ulupalakua Ranch lands. Finished homes are expected to range from 2,500 to upwards of 5,000 square feet of living space. We anticipate that circa 20 to 25 percent of this product will be bought by residents.

Two Mixed-Use Village sites will be located at the gateway to the subject community, on the mauka side of Piilani Highway at its intersection with Wailea Ike Drive. Comprising about six acres, it is anticipated these pods will be used primarily for neighborhood and service commercial meeting the needs of the subject population as well as other currently-unserviced neighborhoods in the immediate vicinity (Maui Meadows and Wailea North Mauka), and passer-bys.

The gross floor area of these centers is expected to total about 88,000 square feet.

An 18-hole championship-quality golf course will be spread across the southerly portion of the site, creating extensive amenity frontage for the residential component. The course will be primarily operated as a membership club, however there are provisions to allow some public daily fee play. Current plans call for 375 memberships to be offered, with the majority expected to be purchased by homeowners in the Honuaula community.

The clubhouse is envisioned to contain a golf-oriented facility of circa 12,000 square feet (including pro shop, storage/support areas, bar & grill, and fitness center/spa), and up to 12,000 square feet of additional general commercial space.

There will be three parks totaling six acres located in the higher density areas of the project, a 22-acre "native plant preserve", a fire station site, and more than 30 acres of other open space/greenbelts (many with pathways).

From a market perspective, the proposed master plan embodies the range of characteristics necessary to be competitive across virtually the entire spectrum of residential demand in the study area. It will offer a broad range of product types and prices within a comprehensive community containing supporting commercial, service and recreational facilities and providing for a high-quality lifestyle in a moderate to low density urban environment.

We project it will become readily established in the regional market and able to capture a reasonable to exceptional share of expressed demand within both the resident and non-resident purchaser segments.

## THE KIHEI-MAKENA CORRIDOR RESIDENTIAL MARKET

Our analysis of the Kihei-Makena residential market is divided between two perspectives:

- Macro Analysis -- Assessing the overall, long-term demand and supply trends in the competitive sector; and

- Micro Analysis -- Focusing on the current demand/supply levels in the subject segment.

The study opens with a brief overview of residential development in the study area followed by an analysis quantifying the demand for additional housing units in the Kihei-Makena Corridor based on population, buyer demographic, and real estate trends. Existing and proposed inventory supply is then identified in regards to number of units, development timing and product type. To the extent mid to long-term demand exceeds supply in the study area, the





general (or macro) climate for the proposed subject development is favorable.

The second part of the study reviews current market activity in the region, including the status of the market cycle, pricing and appreciation levels, and sales velocity. As noted, given the initial offerings of Honuaula are at least three years in the future, the near-term indicators are not of substantial import relative to the mid to long-term macro forecasts. However, it does establish the level of new overhanging supply which has yet to be absorbed and establish a timely foundation for commencing projections.

Prior to the 1970s, Kihei was a small coastal village with fewer than 3,000 residents, with very limited resort-oriented and commercial uses. During that decade, the development of Wailea Resort coupled with numerous condominium projects along South Kihei Road served to create a desirable visitor destination. At the same time, Kihei was identified as the most appropriate location for resident housing for the employees of the South and West Maui resort areas and to support the natural and in-migrating population growth of the island.

By 1980, the population had more than doubled to about 7,000 persons, substantial commercial space was being developed, and the region was well-established as a desirable vacation locale offering a wide variety of resort units.

While the near-makai areas continued to be dominated by resort/transient-oriented and non-resident use and ownership, the inland areas of Kihei began being developed at a rapid pace for local resident households. Over the next two decades, the resident population more than tripled.

Initially during this surge, most resident-oriented product was developed as vacant home sites which were then (for the most part) built-out individually as "custom" homes. However, over-time the trend was towards larger builders constructing spec tract homes. Today, just over 60 percent of the residential inventory in the study area is of a single family type.

Some full-time residents did locate into makai multifamily units, and there was a surge of resident-oriented interior condominium/apartment development, so that presently about 40 percent of regional households are in multifamily projects.

There are circa 13,500 residential (non-resort) units in the Kihei-Makena region, and long-range planning indicates there will be a need for an increase of 50 to 80 percent more in order to service the anticipated demand created by community growth. It is expected that the division in product type will continue to favor single family homes/lots, but that condominium development will slightly increase as a percentage of the total market as available entitled, serviced land becomes further scarce and unit prices increase over time.

Until earlier in this decade, most of the interior subdivisions and multifamily development was purchased by resident households; the intended users from a planning perspective. But, given the desirability of the region among vacation home purchasers and the exceptionally high prices of in-resort units, well-capitalized non-resident buyers began to acquire homes and units in mauka non-resort developments; often out-competing the local segment for scarce inventory.

Studies done for the County and which we have completed, indicate that circa 25 to 35-plus percent of demand for residential units in Kihei-Makena is created by non-resident purchasers. This trend is anticipated to continue unabated apart from cyclical influences.

While purchaser restrictions can be/are applied to some categories of housing (specifically lower income and workforce housing types), there will always be competing non-resident purchaser pressure on the market-priced inventory. Thus, in order to achieve market stability and sufficient supply for resident families, it is necessary to provide suitable types and amounts of product to satiate this demand which will present itself within resident neighborhoods.

Notwithstanding brief periodic downturns, as is presently being experienced, residential construction in Greater Kihei has





progressed at a generally consistent and fairly rapid pace over the past three decades; a trend we anticipate will continue as long as suitable lands are made available for development. Among the primary reasons for this conclusion are:

- The region provides for a quality, comprehensive, modern, suburban lifestyle.
- There is a scarcity of alternative, entitled acceptable development areas throughout the island.
- In addition to the in-community availability of a broad range of commercial, industrial and service businesses, Kihei is proximate to goods, services, and support uses in Central Maui.
- Relative ease of access to major South Maui and Central Maui employment centers and other areas of the island.
- A warm, generally dry climate considered highly desirable by many residents and particularly favored by non-residents.
- Superior view panoramas from many interior locations.

Relative to most neighbor island areas, the balance between demand and supply in Kihei-Makena has been more stable; although like elsewhere the market remains somewhat under-supplied (just not acutely) from long-term and affordability perspectives. There remains significant unmet needs for additional affordable housing opportunities.

**Macro Analysis**

Projecting the probable mid to long-term regional demand for the residential units in the study area is a three-step process:

1. Quantification of Kihei-Makena Housing Unit Demand -- Estimating the need for additional housing units in the study area based on population, demographic, vacancy and income characteristics.

2. Identification of Current and Proposed Inventory -- Quantification of unsold supply and planned residential development in the study area during the expected sales period for Honuaula.

3. Indicated Conclusions -- Correlation of quantified market demand and supply indicators.

We have assumed the subject units will be priced as previously described, with 450 multifamily units meeting County workforce housing guidelines and developer agreements, and the remainder priced at general market levels competitive with other new residential product in the study area and attracting typical buyers.

It is our understanding the developer will meet affordable housing criteria established/negotiated with State and County planning agencies, and in conformance with Maui ordinances, via the on-site 450 workforce housing units and an additional 250 moderate to low income condominium and apartment units elsewhere on the island.

**Quantification of Kihei-Makena Housing Unit Demand**

We have projected the demand for residential units in the Kihei-Makena study area using standardized formulae employing population forecasts, household size trends, and other market-based factors as follows:

**RP/AHS = TRUR X (1 + (VA + NRPA)) = TMUD**

Where:

**RP** is the Resident Population
**AHS** is the Average Household Size
**TRUR** is the Total Resident Units Required
**VA** is a Vacancy Allowance
**NRPA** is a Non-Resident Purchaser Allowance
**TMUD** is a Total Market Unit Demand

Each of the variables in the formula is based on historic statistics compiled by the Federal Home Loan Bank, U.S. Census Bureau, State of Hawaii DBEDT, County of Maui Planning Department,





other recognized governmental sources, and researched market data. Of specific relevance was the Land Use Forecast Technical Resource Study completed in 2006 which contains housing unit demand projections covering the same geographical area and time frame (to 2030).

These compiled historic and prevailing indicators were translated into estimates based on temperate trending interpretations. Our emphasis was on letting the data "speak for itself" via our projections, as opposed to making large-scale adjustments for subjectively anticipated lifestyle or market evolutions.

In this regard, our forecasts bracket the most probable range for future housing requirements in the Kihei-Makena Corridor, with the mid-point providing a moderate, and most likely achievable, indicator. However, our conclusions could be understated if some movements continue as strongly as in recent years; such as the trend towards smaller household sizes and an increasing influx of non-resident purchasers into the market.

The "Total Market Unit Demand" conclusions resulting from application of the model are intended to quantify the total number of residential housing units of all types which will be needed in the study region over a 22-year projection period (2009 through 2030) in order to manifest a reasonably stable market with all purchaser/tenant demand segments served.

With the dramatic slow-down in activity during the recent recession, the South Maui housing market has fragmented in regards to the balance between demand and supply. The resort/luxury end of the spectrum is oversupplied, with hundreds of unsold units and lots developed in response to the mid-decade boom period which have yet to be absorbed. Conversely, the affordable end of the market remains undersupplied relative to potential demand (assuming appropriate inventory and mortgage loans were competitively available).

The goal of our market demand model was to quantify the number, pricing structure, and types of units required.

The factors comprising our housing demand equation can be summarized as follows:

Resident Population (RP) -- This variable utilizes correlated population and distribution estimates from the State, County and our firm for the study area. Specifically, in order to be in concert with on-going community plan research and forecasts, we have tested the population projections made by the Maui Planning Department in their 2006 report "*Socio Economic Forecast: The Economic Projections for the Maui County General Plan 2030*" (GP 2030) which forms the statistical foundation for the updating process.

The Long-Range Planning models forecast a resident population of between 38,757 ("baseline" model) and 42,741 persons ("historical trend run" model) in the Kihei-Makena Community Plan study area by 2030; an increase of some 40 to 54 percent and 11,000 to 15,000 persons over the current estimate of 27,750. The projected expansion in resident counts is equivalent to a compounded annual growth rate range of 1.5 to 2.0 percent.

These County-based population projections served as the basis of our housing demand modeling scenarios. The "baseline" estimates served as minimum projections (Scenario One) and the "historical trend run" figures as maximum projections (Scenario Two). By correlating the two scenarios we arrived at a mid-point which is cited throughout the remainder of the market study.

Average Household Size (AHS) -- This factor was calculated using the data as provided by the above-cited sources and census figures. The 2000 US census indicators for the study area were at about 2.6 persons per resident household, moderately below the island-





wide figure of 2.9 persons. Currently, the Kihei-Makena AHS is estimated at 2.51 persons.

The county planning data forecasts average household sizes in South Maui will trend downward over the study period, declining to circa 2.4 persons by 2030. This is in keeping with national statistics. Most Hawaii-oriented sociologists contend the movement to smaller household sizes will continue into the future; forecasting longer life-spans, the influx of single persons attracted to the climate and employment opportunities, and the tendency towards fewer children.

We project the average household size level in the study area will stabilize by the Year 2030 at between 2.37 and 2.42 persons, a decline of 0.17 to 0.26 percent compounded per year. These estimates were coupled with the minimum and maximum scenario models.

Total Resident Units Required (TRUR) -- This figure is arrived at by dividing the subject area resident population (RP) by the average household size (AHS). It is indicative of the minimum number of residences which would be required to meet basic market needs, assuming there were no vacant units, none uninhabitable due to on-going repair or deleterious conditions, and none purchased by non-resident persons.

For a market to be considered stable (and nominally operative) with acceptable appreciation rates and quality lifestyle opportunities, allowances for such factors must be made.

Vacancy Allowance (VA) -- Governmental agencies are on record during the past three decades calling Maui one of the tightest residential markets in the nation, consistently expressing concerns of a deteriorating economy and community structure unless major steps are taken over the long-term to address the endemic shortage. The historic undersupply condition relative to resident and non-resident demand levels is a primary

reason Maui housing prices are on average among the highest of any locale in the country.

According to HUD, the Urban Institute, and other sources, a "healthy" market has a minimum vacancy level of five to six-plus percent of the total number of units in the inventory. This allows for uninhabitable units, units under repair, seasonal fluctuations, a transitional housing margin, a degree of mobility potential, and the ability to service periodic unanticipated population increases. A "slack" in unit occupancy also serves as a margin to cushion against hyper-appreciation during strong demand periods.

Given the history of the Maui housing market and its inability to keep an acceptable vacancy pool available, we believe it will be exceptionally difficult for the desirable vacancy allowance of more than five percent to be achieved on the island during the foreseeable future.

In our "minimum" demand models we have used a nominal vacancy rate allowance of 3.0 percent of the total residential unit demand. In the "maximum" scenario formula, we have tested a more desirable vacancy rate allowance of five percent of the Total Resident Units Required figure.

Non-Resident Purchaser Allowance (NRPA) -- While some non-resident purchasers of non-resort housing units are investors who seek to rent them to residents to cover debt service obligations, an increasing number are buying Hawaii residential units for personal (family and friends) second-home use, business reasons, or other non full-time residential use.

These units are not available to meet resident housing demands and are effectively withdrawn from the inventory pool. An allowance must be made for these residences in the general community, which are not to be confused with those specifically intended for tourist-





oriented transient rentals (i.e., within a condominium/hotel project in a resort-classified area).

On the neighbor islands and in Waikiki, there are many units in complexes or subdivisions designed for general residential use, which are owned by non-residents and may sit vacant the majority of the time.

Our research indicates most newer "residential" projects in neighbor island vacation (non-resort) communities such as Kailua-Kona, Kihei and Poipu have upwards of 30 percent non-resident, investor-owned units/homes. In many in-resort developments (particularly Hualalai, Mauna Kea Beach, Mauna Lani, and Kapalua), upwards of 90 percent of the residential inventory is held by non-residents. However, some resort communities have successfully bridged the gap between resident and non-resident ownerships, such as Wailea and Keauhou, and have 20 to 40 percent full-time resident occupancy in some projects.

Most neighbor island subdivisions and multifamily developments, no matter where they are located, have some level of non-resident ownership/use. This is particularly true in newer projects with proximity to the coastline and/or in leeward areas which are highly attractive to off-island buyers informed via the internet. Further, Maui has an increasing number of oft-returning visitors who are comfortable away from the resorts and destination corridors and drawn to alternative "more local" areas.

The impact of these buyers on the market must be taken into consideration when projecting a region's housing unit needs, given the widespread interest in Hawaii real estate and typically greater financial resources of non-resident buyers. Failure to adequately account for their demand places extreme stress on island towns.

As noted, during the past 10 to 15 years, non-resident purchasers have shown greater interest in "standard"

residential product in the interior Kihei-Makena market, and comprised up to 40 percent of original buyers in some recent subdivisions and multifamily projects.

Several studies were completed for the County Planning Department regarding non-resident demand for residential inventory on Maui. The "Land Use Forecast" completed for the on-going general/community plan updating estimates that non-resident demand islandwide will represent 26 percent of total unit demand through 2030. In the Kihei-Makena region the estimate was as high as 35 percent of total demand forecast; or a need for about 3,700 residential units to meet the non-resident; similar to West Maui estimates.

In previous General Plan projections consideration of this impact of non-resort residential demand was considered incidental, but is now recognized by all to be a legitimate, continuing segment of demand which must be addressed if market sustainability is to be achieved.

With stringent resident-only purchaser restrictions attached to many proposed workforce/affordable housing units in the study area and the availability of new resort-oriented inventory in Makena, we believe the non-resident component of the regional market will be at to slightly below the percentages forecast by the County. We have, therefore, tested a non-resident allowance of 25 percent of total resident household demand in our minimum projections, and 30 percent in the maximum scenario.

Total Market Unit Demand (TMUD) -- The solution to our demand formula is quantified by adding the Vacancy Allowance (VA) and Non-Resident Purchaser Allowance (NRPA) to the Total Resident Units Required (TRUR) figure. This is the total number of units which will be needed in the study region in order to meet all reasonable market demands.





The application of the housing demand formula to the subject region using the County Long-Range Planning "Baseline" and "Historic Trend Run" population forecasts are shown on Table 1.

Extrapolation of 2000 census figures in combination with County building permit and tax data indicates there are currently some 13,500 existing non-resort residential housing units in the Kihei-Makena Corridor.

Our model indicates the actualization of a healthy and stable housing market in the study area will require the construction of between 7,000 (Scenario One: Minimum) to 10,846 (Scenario Two: Maximum) additional housing units in South Maui by the Year 2030. The mid-point demand would be for 8,923 units, or 34 percent more than the in-place inventory, over the coming 22 years.

The County Land Use Forecast planning models forecasted a need for up to 9,735 new units from 2007 through 2030 ("Table 3-3 Projected Demand for Non-Resident Housing Units"); which is within our anticipated range and slightly above our current mid-point projections.

Conversion of our estimates of gross housing demand into pricing equivalents was completed using available data from the U.S. Census, Maui Board of Realtors, and the U.S. Dept. of HUD, in conjunction with affordable/workforce housing pricing guidelines established by the County of Maui Department of Housing and Human Concerns (DHHC), Housing Division. We have specifically relied upon the recently released "Affordable Sales Price Guidelines" for 2009 (dated March 27th) in establishing the moderate to lower-end price points for housing demand.

Table 2 illustrates the striation of Kihei-Makena regional housing requirements through 2030 into probable percentile demand by sales prices at current dollar levels. The figures correlate both historic actual buying trends and theoretical "affordability" quotients derived using government pricing criteria.

TABLE 2

**STRIATED PROJECTIONS OF HOUSING UNIT DEMAND**
**BY SELLING PRICE IN KIHEI-MAKENA AREA 2009 TO 2030**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Expressed in Constant 2009 Dollars**

| Period | Periodic Demand 2009 to 2010 | 2011 to 2015 | 2016 to 2020 | 2021 to 2025 | 2026 to 2030 | Total Demand 2009-2030 |
|---|---|---|---|---|---|---|
| **1. Using "Baseline" Demand Forecasts** | | | | | | |
| **Less Than $275,000 (1)** | **49** | **312** | **332** | **348** | **359** | **1,400** |
| Percent of Total Demand | 20.00% | 20.00% | 20.00% | 20.00% | 20.00% | 20.00% |
| **$275,000 to $550,000 (2)** | **61** | **375** | **382** | **383** | **377** | **1,577** |
| Percent of Total Demand | 25.00% | 24.00% | 23.00% | 22.00% | 21.00% | 22.53% |
| **$550,000 to $800,000** | **61** | **390** | **415** | **435** | **449** | **1,750** |
| Percent of Total Demand | 25.00% | 25.00% | 25.00% | 25.00% | 25.00% | 25.00% |
| **Over $800,000** | **73** | **484** | **531** | **574** | **611** | **2,273** |
| Percent of Total Demand | 30.00% | 31.00% | 32.00% | 33.00% | 34.00% | 32.47% |
| **Total Market Demand** | **243** | **1,561** | **1,660** | **1,739** | **1,797** | **7,000** |
| | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| **2. Using "Historic Trend Run" Demand Forecasts** | | | | | | |
| **Less Than $275,000 (1)** | **179** | **459** | **489** | **518** | **524** | **2,169** |
| Percent of Total Demand | 20.00% | 20.00% | 20.00% | 20.00% | 20.00% | 20.00% |
| **$275,000 to $550,000 (2)** | **224** | **551** | **563** | **570** | **550** | **2,457** |
| Percent of Total Demand | 25.00% | 24.00% | 23.00% | 22.00% | 21.00% | 22.65% |
| **$550,000 to $800,000** | **224** | **574** | **612** | **648** | **655** | **2,712** |
| Percent of Total Demand | 25.00% | 25.00% | 25.00% | 25.00% | 25.00% | 25.00% |
| **Over $800,000** | **268** | **711** | **783** | **855** | **891** | **3,508** |
| Percent of Total Demand | 30.00% | 31.00% | 32.00% | 33.00% | 34.00% | 32.35% |
| **Total Market Demand** | **894** | **2,295** | **2,446** | **2,591** | **2,620** | **10,846** |
| | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

| *Comparison of Projected and Current Unit Prices (3):* | | | | | |
|---|---|---|---|---|---|
| **Projected Average Unit Prices** | $776,250 | $787,100 | $797,950 | $808,800 | $819,650 | $803,043 |
| **Median Unit Price** | **2008 Full Year** | **2009 (Jan-April)** | | | |
| Kihei | $504,136 | $383,239 | | | |
| Wailea/Makena | $2,212,255 | $1,919,118 | | | |
| Overall Study Area | $1,026,559 | $631,905 | | | |

Note: The median household income for Maui for 2008 was estimated at $72,800 (excluding Hana). No gains in household income are anticipated in 2009

(1) This price is considered "affordable" for households earning 80% of the median county household income ("Low Income")
(2) This price is considered 'affordable' for households earning from 81% to 160% of county median (includes "Below Moderate" to "Gap Income" categories).
(3) For comparison purposes, the constant dollar prices projected for the four identified market segments are at $250,000, $415,000, $690,000 and $1,500,000. Figures incorporate all single family and multifamily "unit" types

Source: Maui County, DBEDT, MLS and The Hallstrom Group, Inc.

TABLE 1

**QUANTIFICATION OF HOUSING UNIT DEMAND FOR THE**
**KIHEI-MAKENA STUDY AREA 2009 to 2030**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

| | 2009 | 2010 | 2015 | 2020 | 2025 | 2030 | Additional Units Required by 2030 (1) |
|---|---|---|---|---|---|---|---|
| **Scenario One: Planning Department June 2006 Baseline Population Forecasts** | | | | | | | |
| **Resident Population** | 27,750 | 28,114 | 30,597 | 33,227 | 35,962 | 38,757 | |
| **Average Household Size** | 2.51 | 2.50 | 2.48 | 2.46 | 2.44 | 2.42 | |
| **Total Resident Units Required** | 11,056 | 11,246 | 12,338 | 13,507 | 14,739 | 16,015 | |
| **Vacancy Allowance** (3 % of resident unit demand) | 332 | 337 | 370 | 405 | 442 | 480 | |
| **Non-Resident Purchaser Allowance** (25% of resident unit demand) | 2,764 | 2,811 | 3,084 | 3,377 | 3,685 | 4,004 | |
| **TOTAL MARKET UNIT DEMAND** | **14,151** | **14,394** | **15,792** | **17,289** | **18,865** | **20,500** | **7,000** |
| **Scenario Two: Planning Department June 2006 Historical Trend Run Population Forecasts** | | | | | | | |
| **Resident Population** | 27,750 | 29,177 | 32,358 | 35,726 | 39,258 | 42,741 | |
| **Average Household Size** | 2.51 | 2.49 | 2.46 | 2.43 | 2.40 | 2.37 | |
| **Total Resident Units Required** | 11,056 | 11,718 | 13,154 | 14,702 | 16,358 | 18,034 | |
| **Vacancy Allowance** (5% of resident unit demand) | 553 | 586 | 658 | 735 | 818 | 902 | |
| **Non-Resident Purchaser Allowance** (30% of resident unit demand) | 3,317 | 3,515 | 3,946 | 4,411 | 4,907 | 5,410 | |
| **TOTAL MARKET UNIT DEMAND** | **14,925** | **15,819** | **17,757** | **19,848** | **22,083** | **24,346** | **10,846** |

**CONCLUDED HOUSING UNIT DEMAND RANGE**

| | Existing | 2009-2010 | 2011-2015 | 2016-2020 | 2021-2025 | 2026-2030 | Totals |
|---|---|---|---|---|---|---|---|
| **MINIMUM DEMAND** | | | | | | | |
| Periodic | 651 | 243 | 1,398 | 1,497 | 1,576 | 1,634 | 7,000 |
| Cumulative | 651 | 243 | 1,803 | 3,463 | 5,202 | 7,000 | |
| Average Annual Demand (2) | | 121 | 312 | 332 | 348 | 359 | |
| **MAXIMUM DEMAND** | | | | | | | |
| Periodic | 1,425 | 894 | 1,939 | 2,090 | 2,235 | 2,264 | 10,846 |
| Cumulative | 1,425 | 894 | 3,188 | 5,635 | 8,226 | 10,846 | |
| Average Annual Demand (2) | | 447 | 459 | 489 | 518 | 524 | |
| **MID-POINT DEMAND** | | | | | | | |
| Periodic | 1,038 | 568 | 1,668 | 1,794 | 1,906 | 1,949 | 8,923 |
| Cumulative | 1,038 | 568 | 2,496 | 4,549 | 6,714 | 8,923 | |
| Average Annual Demand (2) | | 284 | 386 | 411 | 433 | 442 | |

(1) There are an estimated 13,500 housing units in the Kihei-Makena study area as of year-end 2008 (extrapolated figure).
(2) Existing (or latent) demand is assumed absorbed evenly from 2011 though 2030. None assumed absorbed in 2009-10 due to recession.

Source: US Census, County of Maui Planning Dept "Socio-Economic Forecast: Report", Various and The Hallstrom Group, Inc.

**TABLE 3**

**ESTIMATE OF HOUSING PRICE AFFORDABILITY FOR MAUI RESIDENTS**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui , Hawaii**

***1. Based on HUD/Maui County Criteria***

| **Grouping** | **Low Income** | **Below-Moderate to Moderate Income** | **Above-Moderate to Gap Group Income** |
|---|---|---|---|
| **Household Income as a Percent of County Median** | **80% or less** | **81% to 120%** | **121% to 160%** |
| Gross Household Monthly Income, Using Maximum for Category (1) | $5,027 | $7,540 | $10,053 |
| Amount Available for Debt Service (2) | $1,508 | $2,262 | $3,016 |
| Maximum Mortgage Amount (3) | $265,592 | $398,387 | $531,183 |
| Down payment at 5% of Sales Price | $13,979 | $20,968 | $27,957 |
| **Total Affordable Purchase Price, Maximum for Category** | **$279,571** | **$419,355** | **$559,140** |
| **Indicated Affordable Price Range for Category (Rounded)** | **Up to $280,000** | **$280,000 to $420,000** | **$420,000 to $560,000** |

***2. Based on Conventional Financing Criteria***

| **Grouping** | **Low Income** | **Below-Moderate to Moderate Income** | **Above-Moderate to Gap Group Income** |
|---|---|---|---|
| Gross Household Monthly Income | $5,027 | $7,540 | $10,053 |
| Maximum Allowable Housing Expense (4) | $1,407 | $2,111 | $2,815 |
| Maximum Mortgage Amount (5) | $247,803 | $371,793 | $495,783 |
| Down payment at 20% of Sales Price (6) | $61,951 | $92,948 | $123,946 |
| **Total Affordable Purchase Price** | **$309,754** | **$464,741** | **$619,729** |
| **Indicated Affordable Price Range for Category (Rounded)** | **Up to $310,000** | **$310,000 to $465,000** | **$465,000 to $620,000** |

Note: Total Purchase Price estimate excludes any points associated with financing.

(1) Utilizing US HUD 2009 median household income for Island of Maui of $75,400 annually (excluding Hana).
(2) Based on Maui County mortgage affordability criteria at 30% of gross income for a three bedroom house, apart from any reserves.
(3) Assuming 5.50% annual interest and 30 year mortgage with 5% down payment, no discount points.
(4) Conventional financing with maximum monthly mortgage payment at 28% of gross income, apart from any reserves.
(5) Assuming 5.50% annual interest and 30 year mortgage, with 20% down payment.
(6) Conventional financing standard.

Source: Maui County Dept. of Housing and Human Concerns, and The Hallstrom Group, Inc.

In theory, development in the study area should generally proceed according to these striated estimates in order to achieve desired market stability during the projection period.

Table 3 displays the calculations of housing price affordability for Maui residents based on HUD/State/County and conventional financing guidelines, as embodied within the updated DHHC calculations for homes.

Using the governmental criteria, households in the "Low Income" grouping, earning 80 percent or less of the island median income, can afford a sales price, or rental equivalent, of $280,000 (rounded) or less. "Below-Moderate to Moderate Income" households, earning 80 to 120 percent of median income, can afford home prices up to $420,000. And, "Above-Moderate and Gap Group Income" households can afford prices up to $560,000. Above this level, prices are considered to be outside the "affordable" pricing segment and in the "market" price range.

Using conventional financing criteria which requires a larger down payment, the affordable housing prices for the respective groups increases by about 10 percent.

Inherently, a large portion of the demand is generated by lower- to middle-income groups who will have difficulty competing in the high-priced Maui marketplace. Upper-middle and above income households have more meaningful purchase alternatives.

About 41 percent of the regional units required through 2030 should be priced below a current level of $550,000, which would be generally affordable to the defined income/workforce housing income groups. Some 25 percent of demand will have price limits between $550,000 and $800,000 (the lower-end of the "market-priced" segment); and, 34 percent will seek properties having a price above $800,000 (high end).

The on-site subject inventory will generally follow this market pricing striation, with 40 percent of the product meeting affordability guidelines (with an additional 250 such units

located off-site), about 10 percent in the low-market priced segment, and 50 percent in the high-end market group.

Demand by unit type (multifamily unit, single family home or house lot) during the projection period is summarized on Table 4. The forecasts are based on historic and forecast development trends coupled with planned inventory additions to the regional supply.

We forecast that multi-family units will increase as a percentage of overall unit construction from a current level of about 40 percent of the total inventory to 46 percent by 2030, averaging 44 percent of additions over the coming two decades.

However, single family product will remain the focus of Kihei-Makena development, although we expect it will decline from the current level of comprising some 60 percent of the sector to 54 percent by 2030.

The total mid-point demand for new multi-family development over the next 22 years is estimated at 3,952 units. For new single-family types the demand will be for 2,974 finished houses and 1,976 building lots.

**TABLE 4**

**DIVISION OF PROJECTED DEMAND BY UNIT TYPE**
**FOR HOUSING UNITS IN KIHEI-MAKENA AREA 2009 TO 2030**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

| | Periodic Demand (1) | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | 2009 to 2010 | 2011 to 2015 | 2016 to 2020 | 2021 to 2025 | 2026 to 2030 | Demand 2009-2030 | Comments |
| ***1. Using "Baseline" Demand Projections*** | | | | | | | |
| Single Family Homes | 97 | 578 | 548 | 539 | 557 | 2,319 | The study area was among the first neighbor island regions to have significant numbers of "tract/spec" homes built relative to size of market, and this type of development has been the primary segment in the single family sector over the past two decades; some devolution anticipated. |
| Percent of Total | 40% | 37% | 33% | 31% | 31% | 33% | |
| Single Family Lots | 49 | 328 | 365 | 400 | 413 | 1,555 | Prior to mid-80s, vacant lots were the primary single family development type. Now mainly limited to smaller and/or more upscale subdivisions. However, several major projects being proposed are expected to have significant lot offerings. |
| Percent of Total | 20% | 21% | 22% | 23% | 23% | 22% | |
| Multifamily Units | 97 | 656 | 730 | 800 | 827 | 3,110 | The primary residential development type in the makai/resort areas of the region, although the number of available and competitive sites has become somewhat limited. Need for affordable/workforce units will fuel continuing development as will demand for more moderate-priced vacation units. |
| Percent of Total | 40% | 42% | 44% | 46% | 46% | 44% | |
| **Total** | **243** | **1,561** | **1,660** | **1,739** | **1,797** | **7,000** | |
| | 100% | 100% | 99% | 100% | 100% | 100% | |
| ***2. Using "Historical Trend Run" Projections*** | | | | | | | |
| Single Family Homes | 358 | 849 | 807 | 803 | 812 | 3,629 | |
| Percent of Total | 40% | 37% | 33% | 31% | 31% | 33% | |
| Single Family Lots | 179 | 482 | 538 | 596 | 603 | 2,397 | |
| Percent of Total | 20% | 21% | 22% | 23% | 23% | 22% | |
| Multifamily Units | 358 | 964 | 1,076 | 1,192 | 1,205 | 4,795 | |
| Percent of Total | 40% | 42% | 44% | 46% | 46% | 44% | |
| **Total** | **894** | **2,295** | **2,446** | **2,591** | **2,620** | **10,846** | |
| | 100% | 100% | 99% | 100% | 100% | 100% | |
| ***Mid-Point*** | | | | | | | |
| Single Family Homes | 227 | 713 | 677 | 671 | 685 | **2,974** | |
| Single Family Lots | 114 | 405 | 452 | 498 | 508 | **1,976** | |
| Multifamily Units | 227 | 810 | 903 | 996 | 1,016 | **3,952** | |
| **Total** | **569** | **1,928** | **2,032** | **2,165** | **2,209** | **8,902** | |

Source: The Hallstrom Group, Inc.

**Identification of Planned Study Area Residential Projects**

*Existing and Recent/In-Sales Supply*

There are approximately 225 single family lots/homes currently available for original purchase in the study area which have yet to be absorbed. Most are located in Kamaole-Wailea neighborhoods. There are an estimated 285 condominium new units which have not been closed by developers; again mostly in greater Wailea.

While this is not as significant of a supply overhang as was experienced in the 1981-82 and early 1990s down market periods, it still represents several years of unabsorbed upper-end supply. There is no meaningful overhang of new low-end supply. Unmet demand still exists for affordable-priced units,

**TABLE 5**

**COMPARISON OF PROPOSED KIHEI-MAKENA AREA LONG-TERM RESIDENTIAL SUPPLY ESTIMATES OVER TIME**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Estimates Include the Proposed Subject Property and Unit Count/Mix at Time of Estimate**

| Estimate Title | Land Use Forecast Technical Study | Land Use Forecast Technical Resource Study | South Maui Development Projects | Advisory Committee Final Recommendations |
|---|---|---|---|---|
| Dated | June 1992 | November 2006 | July 2008 | March 2009 |
| Purpose | To support the 1998 Update of the Kihei-Makena Community Plan | To support the on-going updating of the Kihei-Makena Community Plan | To support the on-going updating of the Kihei-Makena Community Plan | To support the on-going updating of the Kihei-Makena Community Plan |
| Prepared By | Wilson Okamoto & Assoc. | PlanPacific Inc. | Long Range Planning Div. Dept. of Planning, Maui County | Maui General Plan Advisory Committee |
| Basis Terminology | "Developable Lands (in Acres)" | "Supply of Potential Housing Units on Vacant Lands Planned for Housing" | "Projects by Geographic Map Extent" | "GPAC Directed Growth Map" |
| Basis Derivation | All parcels with no improvements and meeting developable criteria, based on SLUC designation | "Known Projects" that have appropriate Community Plan designations for housing | All projects over 6 units/4 lots that have "come to the attention" of Dept regardless of approval status (2) | Evolution of July 2008 map to correspond to proposed Growth Boundaries, includes approved and proposed additions |
| Estimate of Available Supply (1) | | | | |
| "Approved" per Basis | | | | |
| Single Family | 8,692 | 1,987 | 2,741 | No Distinction by Unit Type |
| Multi Family | 15,480 | 1,950 | 2,971 | |
| Rural/Agriculture | 115 | 200 | (3) | - |
| Sub-Total | 24,287 | 4,137 | 5,712 | 5,019 (4) |
| "Proposed"/Other | None | None | | |
| Single Family | | | 6,388 | No Distinction by Unit Type |
| Multi Family | | | 2,192 | |
| Sub-Total | | | 8,580 | 765 (5) |
| **Total Estimated Units (All Types)** | **24,287** | **4,137** | **14,292** | **5,784** |

(1) For consistency purposes, where estimates were expressed in acres instead of unit counts the conversion formulas expressed in the November 2006 forecasts were employed, which call for 4 units per acre on Single Family development sites, 20 units per acre on Multi Family, and 1.4 units per acre for rural/ag lands.
(2) Projects divided into three categories "Planned/Committed", having conforming Comm Plan and zoning status, or otherwise fully approved; "Planned/Designated", having appropriate Urban or Rural designation on Comm Plan but no zoning entitlements; and, "Proposed", which are lacking Comm Plan Urban or Rural designation.
(3) Not identified as separate category.
(4) GPAC Maps include only a portion of the "Proposed/Designated" Ohukai Village project, and as less intense "Country Town". Based on allocation of 1,000 total units for the Kihei Mauka expansion area, it is extrapolated that the unit count for this development has been revised downward from 928 total units to circa 235 total units; likely all single family.
(5) Only two "Proposed" projects from the LRPD Map (one only partially) are included on the GPAC Map, both in the Kihei Mauka area. However, the units counts have also been trimmed in these projects, moving downward from a total of 1,617 units to an extrapolated allocation estimate of 765 total units; likely all single family.

Source: As cited, and The Hallstrom Group, Inc.

but product is quite limited and mortgage loans have become more difficult to come by.

There are several years of supply of luxury and resort-oriented residential product, and will likely take until 2011-12 to fully absorb.

*Proposed Supply*

Precise quantification of probable additions to residential unit supply in the study area over the next 22 years is problematic, due to the size of the region, rapid urbanization and vast number of preliminarily envisioned developments. Table 5 provides a comparison of proposed new residential units in Kihei-Makena during various surveys undertaken over the last 17 years.

Studies completed in the early 1990s indicated that upwards of 24,000 units were being proposed for the Kihei-Makena Community Plan area. Some were approved, some built and some projects abandoned.

As part of the General/Community Plan updating process freshly updated analyses of planned/proposed residential units have been completed. In their November 2006 *Land Use Forecast Technical Resources Study*, Plan Pacific, Inc., estimated there were general approvals in place to support 4,137 housing units, somewhat evenly divided between single and multifamily types.

In July 2008, the Maui County Planning Department Long-Range Planning Division completed a more encompassing survey and identified 5,712 potential units of "planned" supply (having State Land Use and some level of County approvals) and an additional 8,580 units of "proposed" supply (projects having no County approvals). The latter group was intended to be all-inclusive and contains many older, long-abandoned, or never pursued developments.

The General Plan Advisory Committee (GPAC) assimilated the two studies and developed a series of final recommendation "Directed Growth Maps" for South Maui to be used as a basis for the 2030 planning horizon. Although, detailed analyses of

the GPAC findings were awaiting publication during preparation of this report, extrapolation of "Growth Area Unit Count" recommendations in concert with the proposed Growth Boundaries Maps, indicates a total approved/suggested supply of approximately 5,784 residential units in the study area.

All of the recent County-based forecasts include Honuaula as an approved property whose inventory is included in the forecast unit count.

Correlation of the projections indicate the total probable supply of residential units in the Kihei-Makena Corridor to range from circa 4,100 to 5,800 units, including the subject. Apart from the subject, the approved/planned supply would be only some 3,000 to 4,650 units.

**Comparison of Demand and Supply Indicators**

The demand for new housing opportunities in the South Maui study area over the coming 22 years, 2009 through 2030, is estimated at 8,923 total new units (mid-point), of which 4,950 will be oriented toward single family inventory, and 3,952 multifamily product.

Apart from Honuaula, the currently planned level of new residential additions during the same time frame will be between 3,000 to 4,650 units, if all approved/planned projects are actualized and built to maximum densities in a timely manner; which we consider unlikely. There are an additional 510 unsold units/homes/lots of "overhanging" supply.

Therefore, the unsold and approved/planned inventory will fall short of projected demand by more than 3,763 residential units, or 42 percent of total required supply, during the modeling period. On an macro basis, there is substantial, quantifiable market demand in support of the subject community during its proposed offering period.

## Micro Analysis

The Kihei-Makena area residential real estate market, like similar sectors throughout the state, is currently in the midst of slumping market cycle subsequent to reaching a upside peak in





2005-06. The up-cycle activity began in the late 1990s, was set back briefly by 9/11, and reached record levels during each year through mid-decade before retreating in late 2006 and further each following year to the present.

This trending is highly typical of real estate in Hawaii, as evidenced in the cycles of the late 70s/early 80s and late 80s/early 90s, with several years of increasing upward activity reaching a frantic pace in sales and appreciation then slumping dramatically for two to three years before stabilizing and commencing recovery into another upward movement.

In analyzing study region data it is necessary to account for the amount and quality of inventory available at any given time during the cycle, which has a tendency to impact the comparison of statistics from year to year.

Single family residential market activity data in the study area from 2002 through 2009 (extrapolated year-end figures) are summarized on Table 6. During this period sales volumes more than doubled to $357.3 million annually in 2005 before declining to a current level of $100.7 million (based on indicators through April), which is about 40 percent below sales in 2002 at the commencement of the last cycle.

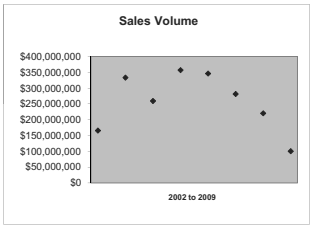
Average sales prices throughout the corridor, despite retreating in each of the last three years to a current level of $1,016,910, are still nearly double the price in 2002. Specifically, median prices in Kihei have increased by 35 percent over the last seven years, from $385,000 to $520,000, and by 179 percent in Wailea-Makena, appreciating from $950,000 to $2,650,000.

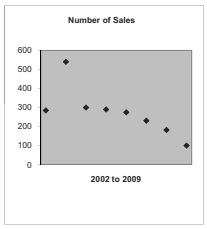
Multifamily indicators, as summarized on Table 7, have followed the same general trending as in the single family sector. Currently, the average price in the sector is at $693,000, with the median price in Kihei at $312,500, off 21 percent from 2008 annualized figures, and at $1,762,500 in Wailea-Makena, down 20 percent from last year. The activity levels (number of sales and total sales volume) are only a quarter of the record highs reached in 2005.

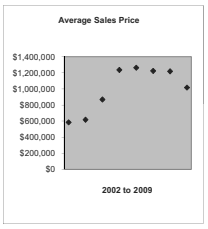
**TABLE 6**

**SUMMARY OF SUBJECT AREA SINGLE FAMILY RESIDENTIAL MARKET ACTIVITY**
**Market Study of the Proposed Honuaulu Community**
**Wailea, Maui, Hawaii**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|
| ***Sales Volume*** | $165,996,006 | $333,401,534 | $259,592,930 | $357,254,398 | $346,281,181 | $281,636,285 | $220,563,811 | $100,674,057 |
| Percent Annual Change | | 100.8% | -22.1% | 37.6% | -3.1% | -18.7% | -21.7% | -54.4% |
| ***Number of Sales*** | 284 | 540 | 299 | 289 | 274 | 230 | 181 | 99 |
| Percent Annual Change | | 90.1% | -44.6% | -3.3% | -5.2% | -16.1% | -21.3% | -45.3% |
| ***Average Sales Price*** | $584,493 | $617,410 | $868,204 | $1,236,174 | $1,263,800 | $1,224,506 | $1,218,585 | $1,016,910 |
| Percent Annual Change | | 5.6% | 40.6% | 42.4% | 2.2% | -3.1% | -0.5% | -16.5% |
| ***Median Sales Price*** | | | | | | | | |
| Kihei | $385,000 | $410,000 | $549,000 | $715,000 | $729,000 | $730,000 | $718,909 | $520,000 |
| Percent Annual Change | | 6.5% | 33.9% | 30.2% | 2.0% | 0.1% | -1.5% | -27.7% |
| Wailea/Makena | $950,000 | $1,287,500 | $1,550,000 | $1,982,500 | $1,580,000 | $2,028,500 | $2,300,000 | $2,650,000 |
| Percent Annual Change | | 35.5% | 20.4% | 27.9% | -20.3% | 28.4% | 13.4% | 15.2% |




Note: Statistics may not include all "original/developer" sales in 2002 and 2003.

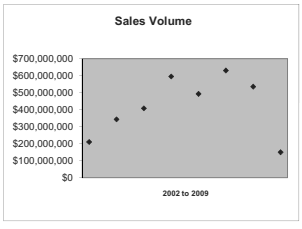
(1) 2009 year-end estimates based on data through April.

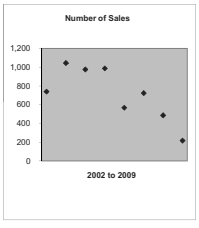
Source: Hawaii Information Service, Maui MLS and The Hallstrom Group, Inc.

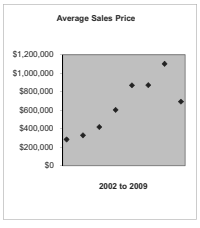
**TABLE 7**

**SUMMARY OF SUBJECT AREA MULTI FAMILY RESIDENTIAL MARKET ACTIVITY**
**Market Study of the Proposed Honuaulu Community**
**Wailea, Maui, Hawaii**
**Excludes Maalaea**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|
| ***Sales Volume*** | $210,138,947 | $343,465,646 | $408,090,219 | $595,399,503 | $492,906,035 | $630,275,954 | $535,444,296 | $149,681,985 |
| Percent Annual Change | | 63.4% | 18.8% | 45.9% | -17.2% | 27.9% | -15.0% | -72.0% |
| ***Number of Sales*** | 739 | 1,044 | 975 | 986 | 567 | 723 | 486 | 216 |
| Percent Annual Change | | 41.3% | -6.6% | 1.1% | -42.5% | 27.5% | -32.8% | -55.6% |
| ***Average Sales Price*** | $284,356 | $328,990 | $418,554 | $603,853 | $869,323 | $871,751 | $1,101,737 | $692,972 |
| Percent Annual Change | | 15.7% | 27.2% | 44.3% | 44.0% | 0.3% | 26.4% | -37.1% |
| ***Median Sales Price*** | | | | | | | | |
| Kihei | $158,000 | $190,000 | $269,000 | $355,000 | $395,000 | $425,000 | $395,000 | $312,500 |
| Percent Annual Change | | 20.3% | 41.6% | 32.0% | 11.3% | 7.6% | -7.1% | -20.9% |
| Wailea/Makena | $515,000 | $560,000 | $737,500 | $1,105,025 | $1,400,500 | $1,328,775 | $2,200,000 | $1,762,500 |
| Percent Annual Change | | 8.7% | 31.7% | 49.8% | 26.7% | -5.1% | 65.6% | -19.9% |




Note: Statistics may not include all "original/developer" sales in 2002 and 2003.

(1) 2009 year-end estimates based on data through April.

Source: Maui MLS and The Hallstrom Group, Inc.

Residential/vacant lot activity for the same period is displayed on Table 8. The trending lines are comparable through 2008, but are erratic for 2009 due to the closing of several upper-end oceanfront lots in Wailea/Makena. Inventory limitations, inclusion of atypical product, and variance in availability may skew indicators for a given year. The current median price for a Kihei house lot is $350,000; in Wailea/Makena it is more than ten times that amount (a figure viewed as atypically high).

While there are major short-term concerns in the market, such cyclical behavior is standard for Maui real estate, and it is highly likely that during the mid-term (three to six years) concerns will once again be hyper-appreciation, scarcity of product, and record setting activity levels. The cycle has run repeatedly over the past three decades. We project the softness to continue through 2009 and into 2010 before stabilizing and moving towards recovery in 2011-12 and an up cycle period by mid-decade.

## THE MAUI RESORT/RESIDENTIAL MARKET

The foundational macro analysis indicates demand for a large number of new residential units across a broad spectrum of product types. The proposed diversity of inventory at Honuaula corresponds well to the quantified regional market requirements over the next two decades.

In addition to appealing to a wide variety of purchasers in the general Kihei-Makena housing market, portions of the subject will also specifically compete within the Maui resort/residential sector.

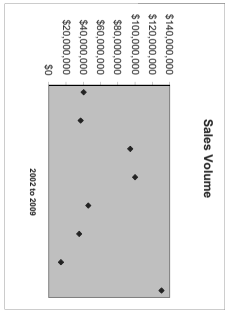
Although not truly a destination resort project, as it is lacking in ocean frontage and transient accommodations, Honuaula will offer some product which will be competitive with the interior (off-water) inventory of the destination communities and attract purchasers from the same market segments.

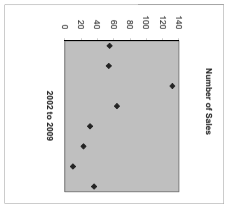


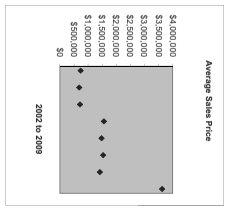
**TABLE 8**

**SUMMARY OF SUBJECT AREA VACANT LAND MARKET ACTIVITY**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|
| ***Sales Volume*** | $40,534,516 | $37,024,500 | $94,429,970 | $99,963,990 | $45,856,900 | $35,323,250 | $14,192,500 | $130,597,500 |
| Percent Annual Change | | -8.7% | 155.0% | 5.9% | -54.1% | -23.0% | -59.8% | 820.2% |
| ***Number of Sales*** | 55 | 54 | 132 | 64 | 31 | 23 | 10 | 36 |
| Percent Annual Change | | -1.8% | 144.4% | -51.5% | -51.6% | -25.8% | -56.5% | 260.0% |
| ***Average Sales Price*** | $736,991 | $685,639 | $715,379 | $1,561,937 | $1,479,255 | $1,535,793 | $1,419,250 | $3,627,708 |
| Percent Annual Change | | -7.0% | 4.3% | 118.3% | -5.3% | 3.8% | -7.6% | 155.6% |
| ***Median Sales Price*** | | | | | | | | |
| Kihei | $230,000 | $275,000 | $285,000 | $375,000 | $632,500 | $675,000 | $323,500 | $350,000 |
| Percent Annual Change | | 19.6% | 3.6% | 31.6% | 68.7% | 6.7% | -52.1% | 8.2% |
| Wailea-Makena | $395,000 | $545,000 | $850,000 | $1,637,500 | $1,250,000 | $2,000,000 | $2,775,000 | $3,925,632 |
| Percent Annual Change | | 38.0% | 56.0% | 92.6% | -23.7% | 60.0% | 38.8% | 41.5% |




Note: Statistics may not include all "original/developer" sales in 2002 and 2003, and may include some builder and/or non-residential sites.

(1) 2009 year-end estimates based on data through April.

Source: Maui MLS and The Hallstrom Group, Inc.

**TABLE 9**

**SUMMARY OF MAUI RESORT-RESIDENTIAL DEMAND IN MAJOR MAUI RESORT COMMUNITIES**
**HISTORIC AND PROJECTED**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Based on Construction and Original/Developer Sales (1)**

| Resort Community | Historic Pre-2000 | Historic 2001-2008 |
|---|---|---|
| ***1. Wailea (2)*** | | |
| Condominium | 1,302 | 413 |
| Annual Average | 52.1 | 51.6 |
| Single Family | 506 | 154 |
| Annual Average | 20.2 | 19.3 |
| Project Total | 1,808 | 567 |
| Cumulative Annual Average | 72.3 | 70.9 |
| ***2. Kaanapali (3)*** | | |
| Condominium | 1,535 | 387 |
| Annual Average | 42.6 | 48.4 |
| Single Family | 383 | 112 |
| Annual Average | 12.8 | 14.0 |
| Project Total | 1,918 | 499 |
| Cumulative Annual Average | 55.4 | 62.4 |
| ***3. Kapalua (4)*** | | |
| Condominium | 564 | 98 |
| Annual Average | 24.5 | 12.3 |
| Single Family | 190 | 56 |
| Annual Average | 14.6 | 7.0 |
| Project Total | 754 | 154 |
| Cumulative Annual Average | 39.1 | 19.3 |
| ***4. Makena*** | | |
| Condominium | No Resort-Residential Projects Undertaken to date by Master Resort Developer | |
| Single Family | | |
| Project Total | | |

| | Historic | | Projected | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-2000 | 2001-2008 | 2009-2010 | 2011-2015 | 2016-2020 | 2021-2025 | 2026-2030 | Total |
| **Maui Resort Totals** | | | | | | | | |
| **Condominium Sales** | **3,401** | **898** | **150** | **500** | **525** | **550** | **550** | **2,275** |
| Annual Average (5) | 94.5 | 112.3 | 75.0 | 100.0 | 105.0 | 110.0 | 110.0 | 103.4 |
| **Single Family Sales** | **1,079** | **322** | **50** | **200** | **225** | **250** | **275** | **1,000** |
| Annual Average (5) | 36.0 | 40.3 | 25.0 | 40.0 | 45.0 | 45.0 | 45.0 | 45.5 |
| **Island Total** | **4,480** | **1,220** | **200** | **700** | **750** | **800** | **825** | **3,275** |
| Annual Average | 130.4 | 152.5 | 100.0 | 140.0 | 150.0 | 155.0 | 155.0 | 148.9 |

(1) Figures for 2001-2008 may include some recently developed product which has yet to sell.
(2) Resort-residential development commenced in the resort in 1975; both single and multi-family uses.
(3) Resort condominium development commenced in 1964, and single family subdivision in 1970.
(4) Multi-family construction began in 1977, and single family development in 1987.
(5) Annual average based from earliest year for product among the communities cited.

Source: The Hallstrom Group, Inc.

The upper-end homes/lots and multifamily "villas" fronting the subject golf course will offer similar characteristics and amenities to the abutting mauka developments in Wailea Resort; albeit lacking somewhat in regards to market prestige. And, will likely prove superior to the residential product in the northerly sections of Wailea, beyond Wailea Ike Drive, which are outside of the resort core.

Given that the three most advanced destination communities, Wailea, Kaanapali and Kapalua, have developed virtually all of their central resort makai lands (with the latter two looking to expand onto mauka holdings), the comparability of the subject prime inventory and its status as a desirable purchase alternative will increase.

The demand for resort/residential real estate within West and South Maui master planned resort communities has become well-established since first being introduced at Kaanapali in 1964. Over the past 35 years some 4,300 in-resort condominium units and 1,400 single family homes/lots have been subdivided within the three major projects (Wailea, Kapalua and Kaanapali), with some 97 percent being successfully absorbed to date.

In response to the demonstrated, continuing demand for Maui resort/residential development, each of the resorts, along with Makena, are planning significant inventory additions over the coming decades.

The historic and projected resort/residential market sector in West and South Maui is summarized on Table 9. Of specific import is the stabilized annual average rate of product absorption over time.

During this decade the three active developments have sold a combined average of 112 condominium units and 40 homes/lots annually, with both averages showing slight gains from pre-2001 figures. Wailea has consistently grabbed the largest market share, averaging some 71 sales per year since introducing its first projects in 1975. This recently equates to a 46 percent capture rate within the overall sector.

As shown across the bottom of the table, we project that following down years in 2009-10, recovery will begin in 2011-15, with general long-term stabilized levels again achieved thereafter. We also forecast there to be continuing nominal gains in the number of single family lot sales annually as this product type further evolves from its more recent emergence.

Over the next 22 years, through 2030, we estimate the demand for resort/residential units in West and South Maui will total some 3,275 units; of which 2,275 will be directed to multifamily inventory and 1,000 towards single family homes/lots. However, the final mix between multifamily and single family units is more a function of supply timing, type and pricing than estimated specific demand, portions of which can/will be redirected between types in accordance with market trends.

The demand will equate to an average of 149 new sales per year over the 22 year projection period, with a stabilized level of 155 sales annually.

Significant additional product is being proposed in the competitive sector, as summarized on Table 10. The four destination communities are currently planning for an additional 3,161 new units, with single family homes/lots comprising about 54 percent of the total.

On a gross basis it appears that demand (3,275 units) and supply (3,161 proposed units) are in general synchronicity. However, upon analysis, such balance is unlikely to be achieved.

Resort/residential development rarely manifests maximum densities, particularly in single family subdivision, due to topographical, shape and infrastructure limitations, and evolving market trends.

And, it will likely take longer than the projection period (through 2030) for all of the units planned for the four major projects to be approved and developed. Makena has yet to launch its resort/residential product despite having most entitlements for several decades, and the Kapalua and

**TABLE 10**
**PROPOSED ADDITIONS TO SUPPLY**
**IN MAJOR MAUI RESORT COMMUNITIES**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

| Resort Community | Units/Lots |
|---|---|
| ***1. Wailea (2)*** | |
| Condominium | 200 |
| Single Family | 180 |
| Project Total | 380 |
| ***2. Kaanapali (3)*** | |
| Condominium | 330 |
| Single Family | 430 |
| Project Total | 760 |
| ***3. Kapalua (4)*** | |
| Condominium | 527 |
| Single Family | 694 |
| Project Total | 1,221 |
| ***4. Makena*** | |
| Condominium | 400 |
| Single Family | 400 |
| Project Total | 800 |
| **Maui Resort Totals** | |
| **Condominium Units** | **1,457** |
| **Single Family Homes/Lots** | **1,704** |
| **Island Total** | **3,161** |

Note: Includes only those projects classified by Maui Planning Dept. as "Planned/Committed" and "Planned/Designated".

Source: The Hallstrom Group, Inc.

Kaanapali expansion areas are still working their way through the approval process which could result in their delay or a diminished unit count. All will require extensive capital infrastructure investments.

We would consider it unduly optimistic to project that more than 80 to 90 percent of the total competitive resort/residential inventory proposed, or about 2,500 to 2,800 units, will be developed by 2030.

Further, Wailea, which has demonstrated the highest sustained level of demand among active projects has the lowest remaining supply of potential inventory with only some 380 units left to develop. This represents only 12 percent of the proposed total competitive supply for a project that has historically captured nearly half of the market.

This bodes well for Honuaula, which will be in position to step-into the established demand patterns enjoyed by Wailea resort/residential units. While a meaningful share of demand for South Maui resort product would be expected to be redirected to Makena in the void following Wailea build-out, its more outlying, lesser intensity, and fewer services traits will diminish some purchaser interest.

For those specifically seeking the locational, view, climate and proximity attributes found at Wailea, the subject will prove a viable alternative. And, as noted in relation to Wailea, the proposed subject upper-end inventory will abut similar mauka subdivisions within Makena Resort, which is southerly adjacent.

Based on a projected demand for some 3,200 resort/residential units in West and South Maui over the next 22 years, and a realistically probable supply of a maximum of 2,500 to 2,800 competitive units being added to the existing resort communities over the same time frame, there would appear to be a potential residual supply shortage of at least 400 to 700 units in the sector which could be readily directed to Honuaula.

As Wailea achieves build-out in the near to mid-term, the subject could anticipate capturing a significant share of its





established market segment, reaching between 40 and 50 units annually on stabilized basis. This would equate to a market share of 25 to 32 percent, a seemingly optimistic figure given there will be four other competing developments, but not unreasonable given it is just more than half of Wailea's historic long-term capture rate.

We conclude the indicators of the Maui resort/residential sector are supportive of the macro projections for the general Kihei-Makena residential market, and demonstrate the ability of the subject to achieve absorption of its 600 units of upper-end priced inventory in a 12 to 15 year market exposure period.

## APPROPRIATENESS OF THE SUBJECT PROPERTY FOR RESIDENTIAL USE AND ABSORPTION ESTIMATES

In light of the quantified market support for the proposed subject residential development, the next step in analysis is to assess whether the site and concept are appropriate from a market perspective, are in concert with macro demand trends, and forecast the probable standing of the Honuaula inventory therein. These insights determine the competitiveness and resulting probable market shares for the residential components of the project.

The master plan for the subject community is consistent with modern urban planning objectives, and will provide a high-quality competitive environment for the 1,150 units proposed. Among the features we consider most relevant relative to maximizing market acceptance:

- The diversity of subject residential product types will reach across virtually the entire market demand spectrum in the Kihei-Makena area, creating a dynamic community with enhanced absorption potentials relative to other, smaller developments offering much more limited types. This will permit a more sustainable development posture over time (and through cycles),

keeping fresh inventory before the public eye, and an on-going market status.

- The location of the project is one of the most desirable in the State, with a superior climate, excellent view panoramas, and close proximity to beaches, recreational amenities, public facilities and supporting commercial services. The direct access onto Piilani Highway is a valued commodity among residents, as will be the unique opportunity to purchase affordable and lower market-priced homes in a resort-like master planned community.

- The parks, golf course, open spaces and greenbelts are integrated into the design as to maximize the frontage offered to abutting developable residential sites. In the northerly portion of the project, which has higher densities, there will be three neighborhood parks and a system of greenbelt paths along the natural drainage ways which touch virtually every development pod.

  In the southerly portion, the golf course, botanical preserve and larger home sites promote a low density ambience, and help establish a feeling of greater exclusivity (a necessary factor to achieve full market standing of the product), while enhancing view potentials. The course also provides a landscaped buffer along portions of the main access roadway. The golf holes are equitably divided between side hill and sloping layouts, which will contribute to the competitiveness and playability of the course.

  The clubhouse and associated recreational facilities will provide both a recreational "anchor" for the community and secondary commercial center, with easy access for residents, club members and their guests.

- The large number and relatively small size of the single family and multifamily development pods will promote a variety of intimate and distinct subdivisions and multifamily products, a major marketing benefit, and an





asset in investment management and timing of construction efforts. Having smaller projects also decreases the economic exposure of the developers at any given time; as during slow periods, the amount of inventory overhang can be more readily controlled.

- Although the primary commercial spaces are intended to service the Honuaula population, they will also help meet the daily shopping needs of residents in proximate neighborhoods outside consumers as well as passer-bys. The placement of the commercial pods at the northerly entrance to the project, at the intersection of Piilani Highway and Wailea Ike Drive, and along the main trunk road into the densest part of the subject community, is prudent.

The master plan is an appropriate use of the subject property from a market demand and economic acceptance perspective based on a variety of criteria, including:

- It will convert an agriculturally and economically non-productive lava and bunch grass "ranchland" holding into an integrally-designed development which will help in meeting future residential needs in the region, while providing a meaningful economic stimulus to the island.

- It is within and consistent with the urban node encompassing the greater Wailea and Makena destination resorts and adjoining projects. And, it will provide a desirable transition from the intense Wailea project to the upslope range.

- The master plan is well suited for the climate of the site, and will serve to attract residents, retirees, and non-resident buyers seeking the slightly cooler and better views available at elevations above the Kihei-Wailea makai urban development corridor.

- The site has favorable frontage/exposure traits along Piilani Highway, with relative ease of access to vital transportation and supporting facilities in Central Maui,

and is nearby the resort services and employment centers.

- Superior ocean and/or upslope panoramas will be available for most properties in Honuaula, a highly desirable asset in the regional market.

- The golf course will further enhance the status of the Kihei-Makena region as being a world-class golf destination and attract more upper-income members and visiting players into the corridor; with the non-resident golfers being among the highest average daily spending visitor segment.

- The subject will help simultaneously fill numerous market niches. A diversity of residential inventory is vital to a stable regional market.

- The overall low intensity of development, at less than two units per acre, will maintain the integrity of the Wailea/Makena resort pod and provide a transition from the more intense urban uses in the makai areas to the upslope range.

- The proposed project will effectively and permanently insulate the Wailea and Makena Resort projects, which are vital to the economic welfare of the region, from incursion by future potentially un-complementary development types. Further, as noted above, the available facilities will benefit some guests of the resorts, increasing their desirability and economic viability. An alternative use of the subject property may prove non-homogeneous with the resorts and fail to enhance their standing.

Based on these attributes of the subject property, our analyses of the Kihei-Makena residential market and the Maui resort/residential sector, and the historic experience of competitive projects in the regional marketplace, we have estimated the probable absorption velocity for the subject inventory using three methodologies:





Gross Demand/Supply Comparison -- This straight-forward technique assumes that if there is insufficient existing and planned supply to meet projected market gross demand levels during the projection period, the proposed subject lots and units will be absorbed in a reasonable manner, regardless of competitive qualities, as there are no other alternatives available.

Over the next two decades, without Honuaula, there will be a mid-point shortfall of some 4,200 residential units in the Kihei-Makena region even if all the presently "planned" (having some level of County entitlements) developments are built to maximum densities in a timely manner. The undersupply condition will ensure there is sufficient to absorb the project within the projection timeframe.

The Residual Method -- In this technique, the "planned" inventory and in-place but unsold units are placed on a time-line depicting the combined sales absorption anticipated by the developers (as estimated by the County, stated in EIS, reported in the media or through interviews) or assuming a reasonable market share. To the extent this supply of units fall short of the forecast demand for product in the study region or exceed the total, a respective undersupply or oversupply situation is present.

Having accounted for all of the planned/approved units in the market, and acknowledging the unlikelihood of otherwise competitive sites in the region, it can be asserted the subject development will capture a significant portion to all of any residual demand. This approach is generally conservative, as it assumes the subject will capture only what is left over after all other projects garner their share. Given the nature of the subject holding we believe it could be a regional market leader, not a follower.

**TABLE 11**

**PROJECTION OF POTENTIAL SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON TOTAL DEMAND FOR RESIDENTIAL UNITS IN THE KIHEI-MAKENA STUDY AREA**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui Hawaii**
**Based on GPAC Final Recommendations Relative to LRPD July 2008 "Planned" Unit Counts**

| Segment | TOTAL UNITS | Sales Period 2009-2010 | 2011-2015 | 2016-2020 | 2021-2025 | 2026-2030 | Total |
|---|---|---|---|---|---|---|---|
| ***Single Family (1)*** | | | | | | | |
| **Identified Supply (2,3)** | 2,638 | 275 | 625 | 850 | 750 | 138 | 2,638 |
| Market Share Percentage of Total Supply | | 47% | 61% | 59% | 56% | 28% | 54% |
| **Regional SF Lot/Home Demand (mid-point)** | **4,950** | **341** | **1,118** | **1,129** | **1,169** | **1,193** | **4,950** |
| **Shortage or (Excess) Supply** | **2,312** | **66** | **493** | **279** | **419** | **1,055** | **2,312** |
| **Potential Residual Subject SF Demand** | | | | | | | |
| at 100% Capture Rate | 2,312 | 66 | 493 | 279 | 419 | 1,055 | 2,312 |
| at 90% Capture Rate | 2,081 | 59 | 444 | 251 | 377 | 950 | 2,081 |
| ***Multi Family*** | | | | | | | |
| **Identified Supply (2,4)** | 2,256 | 305 | 400 | 600 | 600 | 351 | 2,256 |
| Market Share Percentage of Total Supply | | 53% | 39% | 41% | 44% | 72% | 46% |
| **Regional MF Unit Demand (mid-point)** | **3,952** | **227** | **810** | **903** | **996** | **1,016** | **3,952** |
| **Shortage or (Excess) Supply** | **1,696** | **(78)** | **410** | **303** | **396** | **665** | **1,696** |
| **Potential Residual Subject MF Demand** | | | | | | | |
| at 100% Capture Rate | 1,696 | -78 | 410 | 303 | 396 | 665 | 1,696 |
| at 90% Capture Rate | 1,526 | -70 | 369 | 273 | 356 | 599 | 1,526 |
| ***Total Single and Multi Family*** | | | | | | | |
| **Identified Supply** | 4,894 | 580 | 1,025 | 1,450 | 1,350 | 489 | 4,894 |
| Market Share Percentage of Total Supply | | 100% | 100% | 100% | 100% | 100% | 100% |
| **Regional Total Unit Demand (mid-point)** | **8,902** | **568** | **1,928** | **2,032** | **2,165** | **2,209** | **8,902** |
| **Shortage or (Excess) Supply** | **4,008** | **(12)** | **903** | **582** | **815** | **1,720** | **4,008** |
| **Potential Residual Subject Demand** | | | | | | | |
| at 100% Capture Rate | 4,008 | -12 | 903 | 582 | 815 | 1,720 | 4,008 |
| at 90% Capture Rate | 3,607 | -11 | 813 | 524 | 734 | 1,548 | 3,607 |

(1) Includes lots and finished homes.
(2) Timing of unit development based on information from numerous sources, including media articles, developer projections, Maui Affordable Residential Housing Study (12/2006), and logistic/market realities.
(3) Includes recently finished but unsold inventory totaling some 225 lots/homes. Adjusted to exclude the proposed subject homes/lots as estimated by GPAC/LRPD.
(4) Includes recently finished but unsold inventory totaling some 285 units. Adjusted to exclude the proposed subject units as estimated by GPAC/LRPD.

Source: Maui County, Developers/Agents, & The Hallstrom Group, Inc.

We completed the residual modeling effort for single and multifamily types on an individual and combined basis, as shown on Table 11.

Even with a supply overhang of some 225 recently constructed but unsold homes/lots (most towards the upper-end of the market), there will still be a shortfall as the market recovers and they are absorbed. In the anticipated offering period for the subject inventory, commencing in 2012, there will be a shortfall of 700 homes/lots over the subsequent nine years (through 2020). This will be more than sufficient to absorb the 400 homes of Honuaula, resulting in an estimated sales period of from four to seven years for this component using the residual method.

The multifamily sector has a larger current overhang of some 285 units, with another 20 scheduled for completion in the near-term. And, as they represent a smaller portion of total demand than single family they will take longer to absorb; by which time additional other inventory will be coming on line. As a result, the potential residual demand flowing to the subject is somewhat less favorable for the multifamily component.

From the beginning of pre-sales in 2012, this technique indicates that full absorption of the 750 multifamily units would require about 11 to 14 years. However, we believe this to be a strongly conservative conclusion given the long-standing demand for affordable-priced units in the region which will comprise 450 of the subject units.

On a combined overall basis, the total residual demand available for Honuaula will result in absorption in about eight to ten years.

The Market Shares Method -- This approach accounts for the probable competitiveness of the subject inventory regardless of the total level of product being otherwise offered on the market. In essence, it is an estimate of how much of the total forecast demand in the Kihei-

Makena residential sectors the subject could expect to capture on an annual basis in light of its locational, pricing and amenity characteristics.

Generally moderate in application, this technique tests "pure" competitiveness and is considered the classic methodology, but does require judgment in the selection of factors.

Table 12 displays the Market Shares Method for the Honuaula single family inventory under conservative and optimistic demand and capture rate alternatives. We forecast the subject will be able to achieve market penetration, or a share, ranging from 15.5 to 16.6 percent of the total regional single family demand during its sales period, resulting in an absorption period of 8.7 to 13.7 years, or a mid-point of 11.2 years.

The multifamily analysis is shown on Table 13. Because of the latent demand for and high-desirability of the subject affordable/workforce housing component, it will experience rapid absorption of the 450 units of this product type, resulting in an atypically high market share while this inventory lasts.

We estimate that during the sales of the affordable-priced units the subject will capture in the mid to upper-40s percent of the regional multifamily demand. This figure is comprised of a circa 12 to 14 percent of total market share for the market-priced units and about a 36 percent share of the multifamily market flowing to the affordable-priced product.

Because eligible affordable unit purchasers represent some 45 percent of the total market that has been under-supplied for many years, and there will be limited (and much less competitive) future buying opportunities, Honuaula will capture a disproportionate share of demand. After they are sold out, the subject share will be comprised only of the market-priced units and drop down to 12 to 14 percent until sell-out.



**TABLE 12**

**SUMMARY OF SUBJECT PROJECTED SINGLE FAMILY DEMAND LEVELS**
**USING THE MARKET SHARES METHOD**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Assuming Sales/Pre-Sales of 400 Subject Lots/Homes to Begin in 2012**

**Scenario One: Using Conservative Assumptions**

| Sales Year | Total Regional SF Demand (1) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 181 | 10.00% | 18 |
| 2013 | 181 | 12.00% | 22 |
| 2014 | 181 | 15.00% | 27 |
| 2015 | 181 | 17.00% | 31 |
| 2016 | 183 | 17.00% | 31 |
| 2017 | 183 | 17.00% | 31 |
| 2018 | 183 | 17.00% | 31 |
| 2019 | 183 | 17.00% | 31 |
| 2020 | 183 | 17.00% | 31 |
| 2021 | 188 | 17.00% | 32 |
| 2022 | 188 | 17.00% | 32 |
| 2023 | 188 | 17.00% | 32 |
| 2024 | 188 | 17.00% | 32 |
| 2025 | 188 | 10.00% | 19 |
| **Totals** | **2,579** | **15.51%** | **400** |

**Scenario Two: Using Optimistic Assumptions**

| Sales Year | Total Regional SF Demand (2) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 266 | 12.00% | 32 |
| 2013 | 266 | 14.00% | 37 |
| 2014 | 266 | 16.00% | 43 |
| 2015 | 266 | 19.00% | 51 |
| 2016 | 269 | 19.00% | 51 |
| 2017 | 269 | 19.00% | 51 |
| 2018 | 269 | 19.00% | 51 |
| 2019 | 269 | 19.00% | 51 |
| 2020 | 269 | 12.50% | 34 |
| **Totals** | **2,409** | **16.62%** | **400** |

| **ANALYSIS MID-POINT** | | | |
|---|---|---|---|
| **11.2 Years** | **2,494** | **16.04%** | **400** |

(1) Using "Baseline" Demand Projections.
(2) Using "Historic Trend Run" Demand Projections.

Source: The Hallstrom Group, Inc.

**TABLE 13**

**SUMMARY OF SUBJECT PROJECTED MULTI FAMILY DEMAND LEVELS**
**USING THE MARKET SHARES METHOD**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Assuming Pre-Sales of 750 Subject Units to Begin in 2012**

**Scenario One: Using Conservative Assumptions**

| Sales Year | Total Regional MF Demand (1) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 162 | 42.00% | 68 |
| 2013 | 162 | 44.00% | 71 |
| 2014 | 162 | 46.00% | 75 |
| 2015 | 162 | 46.00% | 75 |
| 2016 | 181 | 46.00% | 83 |
| 2017 | 181 | 46.00% | 83 |
| 2018 | 181 | 46.00% | 83 |
| 2019 | 181 | 46.00% | 83 |
| 2020 | 181 | 46.00% | 83 |
| 2021 | 199 | 12.00% | 24 |
| 2022 | 199 | 11.00% | 22 |
| **Totals** | **1,949** | **38.45%** | **750** |

**Scenario Two: Using Optimistic Assumptions**

| Sales Year | Total Regional MF Demand (2) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 193 | 44.00% | 85 |
| 2013 | 193 | 46.00% | 89 |
| 2014 | 193 | 48.00% | 93 |
| 2015 | 193 | 48.00% | 93 |
| 2016 | 215 | 48.00% | 103 |
| 2017 | 215 | 48.00% | 103 |
| 2018 | 215 | 48.00% | 103 |
| 2019 | 215 | 14.00% | 30 |
| 2020 | 215 | 14.00% | 30 |
| 2021 | 238 | 9.00% | 21 |
| **Totals** | **2,086** | **35.97%** | **750** |

| | | | |
|---|---|---|---|
| **ANALYSIS MID-POINT** | | | |
| **10.3 Years** | **2,018** | **37.17%** | **750** |

**Note: Availability of affordable units within planned community will result in a meaningfully increased market share during the offering of those 450 subject units.**

(1) Using "Baseline" Demand Projections.
(2) Using "Historic Trend Run" Demand Projections.

Source: The Hallstrom Group, Inc.

The indicated market share over the 10.2 year mid-point sales period is 37.2 percent.

The combined market shares application for all 1,150 subject units are displayed on Table 14. The indicated mid-point sales period required for full absorption is 11.4 years with an average capture rate of 23.2 percent of the total market.

As Honuaula product represents between 20 and 28 percent of the total residential inventory planned for the study area, achieving a 23 percent market share seems readily achievable with the high-desirability and likely market standing of the community.

**Correlation**

Based on absorption analysis, we estimate the full-absorption of the subject residential component will require just over 11 years, with a maximum sales rate of 128 units annually reached in the years immediately following initial ramp-up and while there are still affordable-priced units remaining. At stabilized mid-point absorption the project would sell 60 affordable units per year, along with 28 market-priced multifamily units and 40 single family homes/lots.

## QUANTIFICATION OF DEMAND FOR SUBJECT COMMERCIAL USES

The proposed 100,000-square-foot commercial component is intended to meet the "neighborhood" and daily goods and services needs of the Honuaula community population, other users and employees, its immediate neighbors in Maui Meadows and north/mauka Wailea who have no commercial opportunities within their proximate trade area, and the passer-bys utilizing the Piilani Highway/Wailea Ike Drive intersection. It is not envisioned as serving any regional or major destination-based demand which may exist.

Therefore, our analysis is summary in nature and specifically assessing the reasonable level of demand for commercial floor space these identified user groups will express within the

**TABLE 14**

**SUMMARY OF SUBJECT PROJECTED TOTAL UNIT DEMAND LEVELS**
**USING THE MARKET SHARES METHOD**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**Assuming Sales/Pre-Sales of 1,150 Subject Units to Begin in 2012**

**Scenario One: Using Conservative Assumptions**

| Sales Year | Total Regional Residential Demand (1) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 343 | 25.11% | 86 |
| 2013 | 343 | 27.11% | 93 |
| 2014 | 343 | 29.64% | 102 |
| 2015 | 343 | 30.70% | 105 |
| 2016 | 364 | 31.40% | 114 |
| 2017 | 364 | 31.40% | 114 |
| 2018 | 364 | 31.40% | 114 |
| 2019 | 364 | 31.40% | 114 |
| 2020 | 364 | 31.40% | 114 |
| 2021 | 387 | 14.43% | 56 |
| 2022 | 387 | 13.91% | 54 |
| 2023 | 387 | 8.25% | 32 |
| 2024 | 387 | 8.25% | 32 |
| 2025 | 387 | 4.86% | 19 |
| **Totals** | **5,126** | **22.42%** | **1,149** |

**Scenario Two: Using Optimistic Assumptions**

| Sales Year | Total Regional Residential Demand (2) | Effective Subject Share | Indicated Total Subject Absorption |
|---|---|---|---|
| 2012 | 459 | 25.45% | 117 |
| 2013 | 459 | 27.45% | 126 |
| 2014 | 459 | 29.45% | 135 |
| 2015 | 459 | 31.19% | 143 |
| 2016 | 484 | 31.89% | 154 |
| 2017 | 484 | 31.89% | 154 |
| 2018 | 484 | 31.89% | 154 |
| 2019 | 484 | 16.78% | 81 |
| 2020 | 484 | 13.17% | 64 |
| 2021 | 518 | 4.14% | 21 |
| **Totals** | **4,774** | **24.10%** | **1,151** |

| | | | |
|---|---|---|---|
| **ANALYSIS MID-POINT** | | | |
| **11.4 Years** | **4,950** | **23.23%** | **1,150** |

**Note: Availability of affordable units within planned community will result in a meaningfully increased market share during the offering of those 450 subject units.**

(1) Using "Baseline" Demand Projections.
(2) Using "Historic Trend Run" Demand Projections.

Source: The Hallstrom Group, Inc.

context of the subject Village Mixed-Use and Clubhouse sites. The larger Kihei-Makena commercial market sector long-term demand and supply trends are not particularly relevant on a macro basis given the limited scale and targeted patronage.

For purposes of this assignment it is assumed the VMX sites will be used exclusively for commercial purposes and the primary focus of business activity in the community, with the two parcels totaling six acres supporting a combined 88,000 square feet of gross leasable area. The clubhouse pod will contain some 12,000 square feet of secondary commercial space in addition to the 12,000 square feet oriented towards the golf and club operations (including the pro shop, cart storage, maintenance areas, bar & grill, spa/fitness facilities).

As shown on Table 15, the demand for non-hotel retail and restaurant commercial space created by each person in the islands (de facto population) is about 20 square feet. On Maui, which is commercial space "rich" relative the other islands due to its large upper-end visitor industry, the total is 23 square feet of space per capita.

This demand for space is divided among several use types, such as neighborhood, regional, big box, destination, specialized, in-resort, etc. The "neighborhood" retail and restaurant segment is the largest component at up to 55 percent of total demand; the grocery, drug store, restaurants, bank, salon, and other businesses patronized on a regular/daily basis.

To efficiently and effectively attract and service potential customers, the business has to be located on a easy access/high exposure property within the briefest possible travel time for its target patrons. To the extent it takes longer than five to eight minutes to reach a store or restaurant, it is outside the desirable limits of a typical "neighborhood" trade area.

Traffic interception within the trade area is also a meaningful attribute. And, neighborhood retailers generally look favorably on underserviced trade areas populated be 3,000 to 5,000 persons.

Within these broad demand parameters, the Honuaula commercial component appears to be an appropriately supportable use, vital not only to the lifestyle of the subject community but also a well-placed attribute to the immediate trade area.

Table 16 contains a summary calculation of stabilized demand for general/neighborhood commercial uses which would likely seek location in the subject projects at build-out.

Starting with an estimate of daily de facto population of 1,871 persons (discussed in the Economic Impact Analysis section), the average per capita demand for neighborhood retail and restaurant space is quantified at 11.0 square feet. Added to this are allowances for other non-retail/restaurant uses found within modern suburban trade areas, including Service Commercial, Medical, Support Commercial, and Neighborhood Business Office.

The cumulative demand for local-oriented commercial space is estimated at 20.9 square feet per person within the Honuaula community, or 39,100 square feet total. The subject businesses would be expected to capture virtually all of this residential neighborhood-based patronage. To this figure is combined with an allowance of 5,000 square feet of secondary demand arising from the members, guests and other patrons of the golf operation, which would flow to restaurants/lounges, apparel boutiques, and upper-end specialty shops in the clubhouse development. The total on-site demand created at stabilization will be some 44,000 square feet.

Other patronage sources were estimated as a percentage of base subject population demand at:

- 25 percent for employees, day workers, and other daily visitors to the community.
- 85 percent for nearby populations within the trade area which are currently not-serviced. This is a moderate allowance given there are some 3,000 in-place persons comprising the group, creating demand for circa 63,000

**TABLE 15**

**SUMMARY OF EXISTING RETAIL/RESTAURANT COMMERCIAL SPACE DEVELOPMENT IN HAWAII**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**As of First Quarter 2009, Major Islands Only**

| County | C& C of Honolulu | Maui | Kauai | Hawaii | State Totals |
|---|---|---|---|---|---|
| Resident Population | 918,194 | 144,159 | 64,061 | 173,290 | 1,283,388 |
| De Facto Population | 1,000,194 | 189,159 | 84,061 | 198,290 | 1,471,704 |
| ***1. Summary of Inventory*** | | | | | |
| Number of Major Retail Centers | 123 | 51 | 16 | 36 | 226 |
| Gross Leasable Area in Centers (1) (Square Feet) | 16,555,631 | 3,875,941 | 1,218,989 | 3,110,518 | 24,761,079 |
| Other Gross Leasable Area (2) (Square Feet) | 3,475,000 | 510,000 | 192,500 | 625,000 | 4,802,500 |
| **Total Estimated Commercial GLA** (Square Feet) | **20,030,631** | **4,385,941** | **1,411,489** | **3,735,518** | **29,563,579** |
| ***2. Per Capita Spatial Allowance (Square Feet per Person)*** | | | | | |
| Per Resident Population Member | 21.82 | 30.42 | 22.03 | 21.56 | 23.04 |
| Per De Facto Population Member | 20.03 | 23.19 | 16.79 | 18.84 | 20.09 |

(1) Complexes with circa 50,000 square feet and up.
(2) Includes smaller projects and hotels. Does not include space within mixed-use, multi-tenant buildings located in Light Industrial parks.

Source: CB Richard Ellis, State DBEDT and The Hallstrom Group, Inc.

**TABLE 16**

**SUMMARY OF NEIGHBORHOOD COMMERCIAL SPACE DEMAND CREATED BY SUBJECT RESIDENTS AT BUILD-OUT**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**

| | | |
|---|---|---|
| ***1. Stabilized Subject Population*** | | |
| Full-Time Residents | | 1,541 |
| Non-Full Time Resident Owners and Guests (1) | | 292 |
| Total Daily De Facto Population | | 1,833 |
| ***2. Per Capita Demand for Commercial Space (in Gross Square Feet per Person)*** | | |
| Total for All Commercial Needs | | 20.0 |
| "Neighborhood" Space Demand as Percent of Total (2) | | 55% |
| Total Per Capita "Neighborhood" Commercial Space Demand in Square Feet | | 11.0 |
| Allowance for "Service Commercial/Medical" Space | | 4.4 |
| Allowance for "Support Commercial" Space | | 2.8 |
| Allowance for "Neighborhood Business" Office Space | | 2.8 |
| Total Per Capita Floor Space Demand for Local-Oriented Commercial Space | | 20.9 |
| ***3. Indicated Subject Commercial Floor Space Demand*** | | |
| From Community De Facto Population | | 38,306 |
| From Golf Course/Clubhouse Members/Users | | 5,000 |
| Patronage From Other Sources | **% of Community Demand** | |
| Employees and Day Workers in Community | 25% | 9,576 |
| Nearby Population in Non-Subject Projects (3) | 85% | 32,560 |
| Passer-Bys/Intercept and Others | 30% | 11,492 |
| **Total Estimated Gross Floor Space Demand at Stabilization** | | **96,934** |

(1) "Guests" are non-owners visiting units owned by non-residents. There will be no Transient Vacation Rentals in the project.
(2) Subject developers are not seeking to attract significant levels of outside patrons via Regional, Specialty or Destination type commercial development, but to provide community residents and other users will proximate goods and services.
(3) The subject commercial space will be the most proximate neighborhood shopping opportunity for Maui Meadows, Mauka North Wailea, and along upper Okolani Drive. this immediate trade area has a de facto population of several thousand persons.

Source: The Hallstrom Group, Inc.



square feet of neighborhood-type businesses. We are assuming the subject centers capture only about half this demand even though they will be the most proximate and readily reachable alternative.

- 30 percent for passer-bys entering/exiting the Wailea-Makena region via Piilani Highway and Wailea Ike Drive, the intercept potentials the subject will have by being the closest non-resort shopping alternatives for the Wailea and Makena populations, and other incidental patronage groups.

The total quantified, specifically demonstrable demand for the Honuaula commercial component is 98,900 square feet; or, commensurate with the 100,000 square feet proposed in the master plan.

## ECONOMIC IMPACTS OF THE PROPOSED DEVELOPMENT

The development of Honuaula will result in significant expenditures that will favorably impact the Maui economy on both a direct and indirect basis, increasing the level of capital investment and capital flow in the region, which will in turn create employment and widen the tax base.

From a direct perspective, the proposed 400 single-family homes, 750 multi-family units, golf course facility and 100,000 square foot of commercial space will create numerous construction, equipment operator and specialty trade jobs on- and off-site, directly and indirectly, during the planning and emplacement of the infrastructure, and building of the improvements.

After completion of the common systems, vertical construction, support facilities and amenities over a multi-phase, one to two decade development period, there will be permanent employment positions created by the golf course, clubhouse, retail/commercial operations, and the buildings themselves

(landscape, service, maintenance, and renovation needs in the course of their use).

Numerous local businesses will see significant profit opportunities arising for contracting companies constructing the improvements, and for local businesses which would supply a substantial portion of the materials needed in the building efforts.

The general island economy also will benefit from the subject development, as its residents, non-resident owners/users, employees and businesses will spend large amounts of discretionary income in off-site shops, restaurants, and service establishments throughout Maui, and in purchasing goods and services. Non-residents owners, users and their guests will be generally upper-income and have daily expenditures comparable with those found at Hawaii's upscale vacation communities.

Indirectly, as these wages, profits, and expenditures move through the regional economy, they will have a ripple, or "multiplier," effect which increases the amount of capital flowing to the entire community resulting from the development of the subject.

Construction, operational and other workers earning wages via Honuaula development and associated off-site/supporting efforts will spend the majority of their income on living and entertainment expenses while supporting and patronizing other island businesses. Much of this spending would be re-directed by these businesses to other island industries, and significant portions of these secondary profits would in turn be put back through the region's economic and tax structure.

These substantial direct and indirect economic impacts associated with the proposed subject project, as quantified in the following sections, are all the result of the capital investment and entrepreneurship necessary to convert undeveloped, fair/poor quality agricultural lands into a low intensity diverse residential community. The Maui County economy will be meaningfully stimulated by the capital investments,





population/user spending and business operations of the development.

We note, our economic modeling is based on a 13-year build-out and absorption period. The construction may take longer, particularly if large numbers of house lots are sold instead of finished homes. However, whether full development takes 10 or 20 years, the stabilized "operation" of the community and its de facto population will be the same following completion. As constant, uninflated 2009 dollars are used throughout the model, time is not a significant variable in the analysis.

It is anticipated that final approvals, surveys and planning will require approximately 18 months (through 2010), the initial phase of infrastructure and product development occurring over a two-year period (2011-2012), with occupancy and use commencing at the beginning of 2013. Pre-sales would begin in early 2012 with the first closing at year-end.

Infrastructure would be completed in a series of connected phases, which we have spread over five years for modeling purposes, with finished inventory being delivered on a consistent basis from 2013 through build-out in 2023.

**Capital Investment and Construction Costs**

The subject will bring an estimated $1.2 billion in direct development capital into Maui over the build-out period for the project, as summarized on Table 17.

Infrastructure cost estimates prepared for Honuaula Partners LLC are forecast at $236.5 million, including design, entitlement and indirect expenses incurred in the islands. The golf course and golf-oriented clubhouse facilities were estimated at $45.0 million. The first phase of infrastructure, and the course and clubhouse would be finished during the initial two-year construction increment.

Unit/Home construction costs would total $907.2 million during modeling period. This is based on average vertical construction costs per unit of:

TABLE 17

**CONSTRUCTION COSTS AND CONTRACTOR AND SUPPLIER PROFIT ESTIMATES**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Development Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Infrastructure and Initial Product Completed During First Two Years | | Occupancy & Use Begins | | | | |
| Construction Costs (1) | | | | | | | |
| Infrastructure (2) | $94,600,000 | $47,300,000 | $47,300,000 | $23,650,000 | $23,650,000 | | |
| Golf Course Construction (3) | $22,500,000 | $22,500,000 | | | | | |
| Commercial Construction (4) | | $9,097,000 | $11,253,000 | | | $7,150,000 | |
| Unit/Home Construction | | $59,714,496 | $72,027,432 | $84,340,368 | $91,540,368 | $91,540,368 | $91,540,368 |
| TOTAL CONSTRUCTION COSTS | $117,100,000 | $138,611,496 | $130,580,432 | $107,990,368 | $115,190,368 | $98,690,368 | $91,540,368 |
| CONTRACTOR'S PROFIT | $11,710,000 | $13,861,150 | $13,058,043 | $10,799,037 | $11,519,037 | $9,869,037 | $9,154,037 |
| SUPPLIER'S PROFIT | $3,738,000 | $5,071,460 | $4,750,217 | $4,083,115 | $4,371,115 | $3,947,615 | $3,661,615 |

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | |
|---|---|---|---|---|---|---|---|
| Development Year | 8 | 9 | 10 | 11 | 12 | 13 | Totals |
| Construction Costs (1) | | | | | | | |
| Infrastructure (2) | | | | | | | $236,500,000 |
| Golf Course Construction (3) | | | | | | | $45,000,000 |
| Commercial Construction (4) | | | | | | | $27,500,000 |
| Unit/Home Construction | $91,540,368 | $86,500,368 | $81,460,368 | $81,460,368 | $67,060,368 | $8,521,560 | $907,246,800 |
| TOTAL CONSTRUCTION COSTS | $91,540,368 | $86,500,368 | $81,460,368 | $81,460,368 | $67,060,368 | $8,521,560 | $1,216,246,800 |
| CONTRACTOR'S PROFIT | $9,154,037 | $8,650,037 | $8,146,037 | $8,146,037 | $6,706,037 | $852,156 | $121,624,680 |
| SUPPLIER'S PROFIT | $3,661,615 | $3,460,015 | $3,258,415 | $3,258,415 | $2,682,415 | $340,862 | $46,284,872 |

(1) Estimates for "Infrastructure" and "Golf Course" items provided by Honuaula Partners LLC. Vertical construction estimates generated by The Hallstrom Group, Inc.
(2) Assuming on-going, multi-phase project, with the initial increment requiring circa 18 month construction period.
(3) Assumes circa 24 month construction period, including 12,000 square foot facility for clubhouse and golf-oriented uses. Costs divided evenly between Years 1 and 2.
(4) Assuming circa 18 month construction period, with 1/3 of costs in Year 2, the remaining 2/3 in Year 3 for initial center, and one year construction for second center in Year 6.

Source: As Cited, and The Hallstrom Group, Inc.

- $168,000 for the affordable-priced multifamily units (average size of 800 square feet and construction cost of $210 per square foot, exclusive of land).
- $540,000 for the market-priced townhouse multifamily units (average size of 1,800 square feet at $300 per square foot).
- $1,008,000 for the luxury villa units (2,400 square feet at $420 per square foot).
- $1,440,000 for the single family homes (average size of 3,000 square feet at $480 per square foot).

The estimates include allowances for landscaping and common element emplacement expenses, and as noted the sizes and associated costs of the single family component could be much higher, ranging up to 5,000+ square feet estates with multi-million dollar construction budgets

Commercial construction is estimated to cost $27,500,000 total, all-in including any tenant allowances, which is based on a figure of $275 per square foot overall for the 88,000 square feet in the two primary Village Mixed-Use centers and the 12,000 square feet of non-golf oriented floor space to be located adjacent to the clubhouse facility.

Honuaula development will infuse on average an anticipated $92.1 million annually into the Maui building industry on average over the build-out period. This will provide a significant near to mid-term boost for the construction trades, which have been hit particularly hard during the current recession.

## Direct Business Profits From Construction

While a significant percentage of the materials needed to build the subject infrastructure, golf course facility, and residential and commercial structures must be imported to Maui, a portion of the construction costs spent in the development will directly

flow to local businesses in the form of contractor profits and supplier profits.

Typically, within the industry net contractor profit margins are expected to be at 8 to 20 percent of total construction costs. We have used a conservative ten percent figure. Supplier profits were extrapolated at four percent of total costs. The estimates were shown along the bottom of Table 17.

The total Contractor's Profit generated by Honuaula for local building companies ranges from $850,000 to $13,500,000 per year, with a cumulative profit of $119.6 million over the construction period. The total annual Supplier's Profit ranges from a low of $340,000 to a high of $4,950,000, and equates to $45.7 million in aggregate.

**Employment Opportunities Created**

Based on indicators provided by the construction of comparable sized projects and Hawaii industry averages, we have estimated the demand for on- and off-site, direct and indirect, full-time equivalent employment positions associated with laying of initial infrastructure systems, golf facility, construction of the units/homes and commercial spaces, the on-going businesses in the project, and in providing continuing services to the occupied buildings.

The construction, maintenance, and indirect/off-site employment opportunities created by the subject development will not be "new" jobs requiring new Maui residents, but will be vitally needed new opportunities for in-place resident construction trade workers and existing local businesses. The jobs associated with the golf, commercial, and owners association operations will represent an expansion of the employment pool; although, some tenants in the commercial centers may be relocating from elsewhere and not generate "new" positions.

It is assumed the off-site/indirect work created will be steered towards existing Maui supply, equipment providers, and other service companies, which are experiencing a "lean" period





following the large scale development activity earlier in the decade.

In this regard, the combination of employment types generated by the subject development with most going to support existing businesses, but providing a not insubstantial number of new employment opportunities, is what is needed in Maui over the coming five years.

Overall, unemployment on the island is presently at 8.5 percent, among the highest levels in this generation, with many businesses continuing to cut back workers. So there is a need to both bolster existing companies so they can recover "lost" jobs and to provide some new employment for the natural growth of the community. Each year in Maui some 1,600 youths turn 18 and become potential entrants into the workforce, with most requiring either a job opportunity or facing out-migration.

Our employment estimates on are based on full-time "worker-years," although one worker-year (or circa 2,080 working hours) may be comprised of many employees involved in specialized tasks of a much shorter duration.

Our projections are founded on examples provided by various resort/residential developments undertaken on the neighbor islands over the past decade, and via formulae expressing relationships between total worker wages/benefits and construction task costs.

Infrastructure and golf course construction employment forecasts are taken from discussions with developers, review of project records and ratios of direct costs to job creation, which currently project one worker-year for every $500,000 in development costs expended. The ratio of job creation to costs is relatively low for these components due to the high equipment, materials and systems expenses associated with major site work.

Unit/home and commercial vertical construction, which are more labor intensive in regards to overall costs, are anticipated

to require one worker-year per $300,000 in construction expenses.

Golf operations are estimated at 28 full-time equivalent positions encompassing the pro shop, starter/range personnel, course and equipment maintenance, and management, based on the experience of similar quality neighbor island facilities.

Commercial operations in the Village Mixed-Use centers and within the clubhouse pod are forecast to generate one FTE for every 400 square feet of gross floor area.

The finished homes, condominium units, and community assets will require maintenance, landscaping, service, and renovation and repair workers and common element staff. We project centralized community management and upkeep personnel of seven workers, with maintenance and common element staff at the equivalent of one FTE worker for every 15 completed residential units.

Off-site employees were estimated at 33 percent of on-site workers, and are comprised of three groups:

- Off-site building/trade industry positions will be enhanced by the subject development, including such jobs as administration, office help, material providers, equipment maintenance and specialty tasks.

- Off-site support businesses, including contractor/retail/counter sales, fuel providers, shipping, storage and professional services will also benefit.

- Each on-site worker creates demand for services (and related employment) during and directly attributable to the work day. These positions include food businesses, providers of tools and trade goods, payroll/financial and insurance businesses, medical requirements and other secondary indirect/off-site employment.





Application of these ratios to the proposed Honuaula master plan is shown on the top half of Table 18, which is spread across two pages as are many of the tables in this section of the report.

During the 13-year modeling period the number of worker-years created on- and off-site, directly and indirectly, by the development varies from 351 to 868 positions annually, totaling 9,537 worker-years over the entire timeframe. Of this total, 3,692 worker-years (an annual average of 284 positions) are direct construction-oriented, 3,480 (or 268 per year) are on-going, on-site business operating and maintenance positions; and 2,366 are off-site/indirect worker-year requirements.

On a stabilized basis, after the completion of construction (year 13 and beyond), the project will generate some 518 permanent full-time equivalent employment opportunities--382 directly related to on-site activities, and 136 indirect positions throughout the island.

**Wage Income Generated**

In accordance with data compiled by the state Department of Labor and Industry Relations, as tempered through our analysis, we have estimated the personal income (in the form of wages) which will flow to Maui workers as a result of Honuaula construction and use. The results are presented along the bottom of Table 18 in correspondence to the estimate worker requirements.

The gross full-time equivalent wage estimates for a worker-year according to the identified employment categories for 2009 are as follows:

- Construction workers (covering all trades), $71,000 per year.

- Golf course employees, $30,000 annually.

- Commercial businesses workers, $34,000.

**TABLE 18**

**EMPLOYEE JOB COUNT AND WAGE ESTIMATES**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | Infrastructure and Initial Product Built 1 | 2 | Occupancy & Use Begins 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **Worker Requirements (1)** | | | | | | | | |
| **Infrastructure Construction (2)** | 189 | 95 | 95 | 47 | | | | |
| **Golf Course Construction (2)** | 75 | 75 | | | | | | |
| **Commercial Construction (3)** | | 30 | 38 | | | 24 | | |
| **Unit/Home Construction (3)** | | 199 | 240 | 281 | 305 | 305 | 305 | 305 |
| **Golf Course Employees (4)** | | | 28 | 28 | 28 | 28 | 28 | 28 |
| **Commercial Businesses Workers (5)** | | | 143 | 205 | 205 | 205 | 250 | 270 |
| **Maint. & Common Element Staff (6)** | | | 14 | 21 | 28 | 35 | 42 | 49 |
| **Off-Site Employees (7)** | 87 | 132 | 184 | 192 | 187 | 197 | 206 | 215 |
| **TOTAL EMPLOYMENT CREATED** | **351** | **531** | **741** | **775** | **754** | **795** | **832** | **868** |
| **Worker Wages** | | | | | | | | |
| **Infrastructure (8)** | $13,433,200 | $6,716,600 | $6,716,600 | $3,358,300 | $0 | $0 | $0 | $0 |
| **Golf Construction (8)** | $5,325,000 | $5,325,000 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Commercial Construction (8)** | $0 | $2,152,957 | $2,663,210 | $0 | $0 | $1,692,167 | $0 | $0 |
| **Unit/Home Construction (8)** | $0 | $14,132,431 | $17,046,492 | $19,960,554 | $21,664,554 | $21,664,554 | $21,664,554 | $21,664,554 |
| **Golf Course/Clubhouse Employees (9)** | $0 | $0 | $840,000 | $840,000 | $840,000 | $840,000 | $840,000 | $840,000 |
| **Commercial Businesses Workers (10)** | $0 | $0 | $4,845,000 | $6,970,000 | $6,970,000 | $6,970,000 | $8,500,000 | $9,180,000 |
| **Maint. & Common Element Staff (11)** | $0 | $0 | $590,864 | $877,864 | $1,164,864 | $1,451,864 | $1,738,864 | $2,025,864 |
| **Off-Site Employees (11)** | $3,574,626 | $5,398,086 | $7,537,736 | $7,885,905 | $7,665,366 | $8,082,541 | $8,463,636 | $8,828,946 |
| **TOTAL ANNUAL WAGES PAID** | **$22,332,826** | **$33,725,074** | **$40,239,902** | **$39,892,623** | **$38,304,784** | **$40,701,125** | **$41,207,054** | **$42,539,364** |

(1) All job counts expressed as "full-time" equivalent positions.
(2) Based on one worker year for every $500,000 in construction costs.
(3) Based on one worker year for every $300,000 in construction costs.
(4) For course operations and pro shop only. Workers in clubhouse commercial areas accounted for in "Commercial Businesses" category.
(5) For employees in non-golf clubhouse businesses and in the two commercial centers. Ratio of one FTE worker for each 400 SF of GLA.
(6) Includes common element administration and maintenance staff of 7 jobs, and ratio of one full-time-equivalent landscaping/maintenance/repair worker for every 15 units.
(7) Off-site employees at 33% of on-site workers.
(8) Based on average annual wages of $71,000.
(9) Based on average annual wage of $30,000.
(10) Based on average annual wage of $34,000.
(11) Based on average annual wage of $41,000.

Source: Various, and The Hallstrom Group, Inc.

**TABLE 18 -- Continued**

**EMPLOYEE JOB COUNT AND WAGE ESTIMATES**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | 9 | 10 | 11 | 12 | 13 | Totals for Years 1 Through 13 | Stabilized Annually Thereafter |
|---|---|---|---|---|---|---|---|
| **Worker Requirements (1)** | | | | | | | |
| **Infrastructure Construction (2)** | | | | | | 426 | |
| **Golf Course Construction (2)** | | | | | | 150 | |
| **Commercial Construction (3)** | | | | | | 92 | |
| **Unit/Home Construction (3)** | 288 | 272 | 272 | 224 | 28 | 3,024 | |
| **Golf Course Employees (4)** | 28 | 28 | 28 | 28 | 28 | 308 | 28 |
| **Commercial Businesses Workers (5)** | 270 | 270 | 270 | 270 | 270 | 2,628 | 270 |
| **Maint. & Common Element Staff (6)** | 56 | 63 | 70 | 77 | 84 | 544 | 84 |
| **Off-Site Employees (7)** | 212 | 209 | 211 | 198 | 136 | 2,366 | 136 |
| **TOTAL EMPLOYMENT CREATED** | **855** | **842** | **851** | **797** | **546** | **9,537** | **518** |
| **Worker Wages** | | | | | | | |
| **Infrastructure (8)** | | | | | | $30,224,700 | |
| **Golf Construction (8)** | | | | | | $10,650,000 | |
| **Commercial Construction (8)** | | | | | | $6,508,333 | |
| **Unit/Home Construction (8)** | $20,471,754 | $19,278,954 | $19,278,954 | $15,870,954 | $2,016,769 | $214,715,076 | |
| **Golf Course/Clubhouse Employees (9)** | $840,000 | $840,000 | $840,000 | $840,000 | $840,000 | $9,240,000 | $840,000 |
| **Transient Unit Support Employees (10)** | $9,180,000 | $9,180,000 | $9,180,000 | $9,180,000 | $9,180,000 | $89,335,000 | $9,180,000 |
| **Maint. & Common Element Staff (11)** | $2,312,864 | $2,599,864 | $2,886,864 | $3,173,864 | $3,460,864 | $22,284,505 | $3,460,864 |
| **Off-Site Employees (11)** | $8,696,352 | $8,563,758 | $8,658,468 | $8,103,738 | $5,558,348 | $97,017,503 | $5,558,348 |
| **TOTAL ANNUAL WAGES PAID** | **$41,500,970** | **$40,462,576** | **$40,844,286** | **$37,168,556** | **$21,055,981** | **$479,975,118** | **$19,039,212** |

(1) All job counts expressed as "full-time" equivalent positions.
(2) Based on one worker year for every $500,000 in construction costs.
(3) Based on one worker year for every $300,000 in construction costs.
(4) For course operations and pro shop only. Workers in clubhouse commercial areas accounted for in "Commercial Businesses" category.
(5) For employees in non-golf clubhouse businesses and in the two commercial centers. Ratio of one FTE worker for each 400 SF of GLA.
(6) Includes common element administration and maintenance staff of 7 jobs, and ratio of one full-time-equivalent landscaping/maintenance/repair worker for every 15 units.
(7) Off-site employees at 33% of on-site workers.
(8) Based on average annual wages of $71,000.
(9) Based on average annual wage of $30,000.
(10) Based on average annual wage of $34,000.
(11) Based on average annual wage of $41,000.

Source: Various, and The Hallstrom Group, Inc.

- Maintenance/common element and off-site and indirect employment, $41,000.

Overall average wages paid via the subject development are equal to $50,330 per worker-year created during the modeling time-frame.

In the first year of development, the "Total Annual Wages Generated" by the subject development effort would be $22.3 million, increasing to as high as $42.5 million in year 8. After completion of all construction, the stabilized on-going golf course and commercial operations, maintenance/common element, off-site and indirect employment would result in total annual wages of $19 million thereafter in uninflated 2009 dollars. This is equates to an average wage of $36,750 per worker-year.

During the development period, on- and off-site, direct and indirect worker wages would total $480 million.

## Population, Income and Expenditures

The homes and units of Honuaula will be a collection of primary and second home residences. These resident households and non-resident owners and guests will constitute the de facto population of the community members, whose income and discretionary expenditures will create major positive impacts on the Maui economy.

We have quantified these focal statistics within the modeling process. The results are shown on Table 19.

The top half of the table depicts the construction/absorption of the 1,150 residential units and their expected division between resident and non-resident ownership. We project that 649 of the subject units/homes, including the large majority of multifamily units will be purchased by full-time residents, with the remaining 501 units, including the majority of single family product, will be bought by non-residents.



**TABLE 19**

**DE FACTO POPULATION AND DISCRETIONARY EXPENDITURES**
**Market Study of the Proposed Honuaula Community**
**Wailea-Makena, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| | 2013 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Occupancy Commences 3 | 4 | 5 | 6 | 7 | 8 | |
| **Development Year** | | | | | | | |
| **Cumulative Unit/Home Development** | | | | | | | |
| Multifamily Unit Development | 76 | 158 | 246 | 334 | 422 | 510 | |
| Single Family Home Development | 25 | 55 | 90 | 130 | 170 | 210 | |
| **Total Finished Rooms/Units/Homes** | 101 | 213 | 336 | 464 | 592 | 720 | |
| **Use by Product type** | | | | | | | |
| Full-Time Resident Multifamily Units | 69 | 138 | 207 | 276 | 345 | 414 | |
| Non-Resident Multifamily Units | 7 | 20 | 39 | 58 | 77 | 96 | |
| Full-Time Resident Single Family Homes | 5 | 11 | 18 | 26 | 34 | 42 | |
| Non-Resident Single Family Homes | 20 | 44 | 72 | 104 | 136 | 168 | |
| **Total** | **101** | **213** | **336** | **464** | **592** | **720** | |
| **Average Daily Resident/Guest Population** | | | | | | | |
| Full-Time Residents (1) | 181 | 365 | 551 | 740 | 929 | 1,117 | |
| Non-Residents and Their Guests (2) | 15 | 36 | 62 | 91 | 119 | 148 | |
| **Total De Facto Population** | **196** | **401** | **613** | **831** | **1,048** | **1,265** | |
| **Total Full-Time Resident Population** | 181 | 365 | 551 | 740 | 929 | 1,117 | |
| **Estimated Actual Public School Children (3)** | 44 | 88 | 132 | 178 | 223 | 268 | |
| **FULL-TIME RESIDENT HOUSEHOLD INCOME (4)** | **$8,103,000** | **$16,315,500** | **$24,637,500** | **$33,069,000** | **$41,500,500** | **$49,932,000** | |
| **OWNER/GUEST DISCRETIONARY (TAXABLE) EXPENDITURES (5)** | **$7,474,470** | **$15,837,715** | **$25,089,735** | **$34,739,970** | **$44,390,205** | **$54,040,440** | |

(1) Assumes 98% occupancy of units with average household size of 2.5 persons.
(2) Assumes 20% occupancy with average party size of 2.8 persons.
(3) Estimated at 24% of the resident population.
(4) Estimated at circa $109,500 annually per full-time resident household based on unit mix and pricing guidelines, or about 145% of the expected 2009 household average for Maui.
(5) Based on average daily expenditures of $400 daily for non-resident owners & guests, and 65% of resident household incomes.

Source: Various, and The Hallstrom Group, Inc.

It is projected the average resident household size will be 2.5 persons, and that units will be occupied on average 98 percent of the time. This equates to a stabilized resident population of 1,541 persons upon build-out. These figures are taken from our macro demand analysis.

Based on investigation of similar quality projects on Maui and in West Hawaii, we estimate that the non-resident units will be occupied 20 percent of the time with an average party size of 2.8 persons. This generates an average daily non-resident population count of 292 persons.

The total de facto population at build-out is forecast to be 1,833 persons.

Of the full-time resident group, we estimate 24 percent, or 370 persons will be of school age (5 to 18).

Based on affordable-pricing guidelines coupled with the level of income necessary to support the purchase of the market-priced inventory, we estimate the average annual income for resident households at Honuaula will be $109,500 in 2009 dollars. This is the equivalent of 145 percent of Maui average (excluding Hana). During occupancy of the build-out period, the total resident household income will be $496.9 million, and at $68.9 million annually thereafter.

The de facto population of the project will place significant discretionary expenditure dollars into the Maui economy. This will be comprised of the year-round, daily expenditures by the full-time resident group, and the purchases made by non-resident owners and guests during use of their units. In light of the cost of the market-priced finished homes and units, the non-resident segment will be in the upper-income brackets with substantial available income for such spending.

We estimate that full-time resident households will spend about 50 percent of their total income on discretionary items, with the remainder going towards mortgage debt service and fixed expenses. The daily per capita spending by non-resident owners and their guests in the Maui economy is estimated will

**TABLE 19 -- Continued**

**DE FACTO POPULATION AND DISCRETIONARY EXPENDITURES**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | 9 | 10 | 11 | 12 | Stabilized 13 | Totals Years 1 Through 13 |
|---|---|---|---|---|---|---|
| **Cumulative Unit/Home Development** | | | | | | |
| Multifamily Unit Development | 598 | 656 | 684 | 712 | 750 | 750 |
| Single Family Home Development | 250 | 290 | 330 | 370 | 400 | 400 |
| **Total Finished Rooms/Units/Homes** | 848 | 946 | 1,014 | 1,082 | 1,150 | 1,150 |
| **Use by Product type** | | | | | | |
| Full-Time Resident Multifamily Units | 483 | 522 | 531 | 540 | 549 | 549 |
| Non-Resident Multifamily Units | 115 | 134 | 153 | 172 | 201 | 201 |
| Full-Time Resident Single Family Homes | 50 | 58 | 66 | 74 | 80 | 80 |
| Non-Resident Single Family Homes | 200 | 232 | 264 | 296 | 320 | 320 |
| **Total** | **848** | **946** | **1,014** | **1,082** | **1,150** | **1,150** |
| **Average Daily Resident/Guest Population** | | | | | | |
| Full-Time Residents (1) | 1,306 | 1,421 | 1,463 | 1,504 | 1,541 | 1,541 |
| Non-Residents and Their Guests (2) | 176 | 205 | 234 | 262 | 292 | 292 |
| **Total De Facto Population** | **1,482** | **1,626** | **1,696** | **1,766** | **1,833** | **1,833** |
| **Total Full-Time Resident Population** | 1,306 | 1,421 | 1,463 | 1,504 | 1,541 | 1,541 |
| **Estimated Actual Public School Children (3)** | 313 | 341 | 351 | 361 | 370 | 370 |
| **FULL-TIME RESIDENT HOUSEHOLD INCOME (4)** | **$58,363,500** | **$63,510,000** | **$65,371,500** | **$67,233,000** | **$68,875,500** | **$496,911,000** |
| **OWNER/GUEST DISCRETIONARY (TAXABLE) EXPENDITURES (5)** | **$54,936,150** | **$61,679,160** | **$66,779,670** | **$71,880,180** | **$77,034,710** | **$513,882,405** |

(1) Assumes 98% occupancy of units with average household size of 2.5 persons.
(2) Assumes 20% occupancy with average party size of 2.8 persons.
(3) Estimated at 24% of the resident population.
(4) Estimated at circa $109,500 annually per full-time resident household based on unit mix and pricing guidelines, or about 145% of the expected 2009 household average for Maui.
(5) Based on average daily expenditures of $400 daily for non-resident owners & guests, and 65% of resident household incomes..

Source: Various, and The Hallstrom Group, Inc.

**TABLE 20**

**PROJECTION OF OPERATING ECONOMIC ACTIVITY**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | Operations Commence 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|
| *1. Commercial Operations (1)* | | | | | | | |
| **Annual Gross Sales** | **$16,000,000** | **$45,600,000** | **$65,600,000** | **$65,600,000** | **$65,600,000** | **$80,000,000** | **$86,400,000** |
| In-Project Patronage Percentage | 45% | 45% | 45% | 45% | 45% | 45% | 45% |
| Outside Project Patronage Expenditures | **$8,800,000** | **$25,080,000** | **$36,080,000** | **$36,080,000** | **$36,080,000** | **$44,000,000** | **$47,520,000** |
| *2. Golf Club Operations (2)* | | | | | | | |
| **Total Sales/Year** | **$3,864,000** | **$4,416,000** | **$4,968,000** | **$5,520,000** | **$5,520,000** | **$5,520,000** | **$5,520,000** |
| In-Project Patronage Percentage | 70% | 70% | 70% | 70% | 70% | 70% | 70% |
| Outside Project Patronage Expenditures | **$1,159,200** | **$1,324,800** | **$1,490,400** | **$1,656,000** | **$1,656,000** | **$1,656,000** | **$1,656,000** |
| *3. Maintenance/Landscaping/Renovations (3)* | | | | | | | |
| **Total Sales/Year** | **$400,000** | **$800,000** | **$1,200,000** | **$1,600,000** | **$2,000,000** | **$2,400,000** | **$2,800,000** |
| In-Project Patronage Percentage | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| Outside Project Patronage Expenditures | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** |
| **ANNUAL OPERATING ECONOMIC ACTIVITY** | **$20,264,000** | **$50,816,000** | **$71,768,000** | **$72,720,000** | **$73,120,000** | **$87,920,000** | **$94,720,000** |
| **Outside Project Patronage Expenditures** | **$9,959,200** | **$26,404,800** | **$37,570,400** | **$37,736,000** | **$37,736,000** | **$45,656,000** | **$49,176,000** |

| Development Year | 10 | 11 | 12 | 13 | Totals Years 1 Through 13 | Stabilized Operations |
|---|---|---|---|---|---|---|
| *1. Commercial Operations (1)* | | | | | | |
| **Annual Gross Sales** | **$86,400,000** | **$86,400,000** | **$86,400,000** | **$86,400,000** | **$770,400,000** | **$86,400,000** |
| In-Project Patronage Percentage | 45% | 45% | 45% | 45% | 45% | 45% |
| Outside Project Patronage Expenditures | **$47,520,000** | **$47,520,000** | **$47,520,000** | **$47,520,000** | **$423,720,000** | **$47,520,000** |
| *2. Golf Club Operations (2)* | | | | | | |
| **Total Sales/Year** | **$5,520,000** | **$5,520,000** | **$5,520,000** | **$5,520,000** | **$22,080,005** | **$5,520,000** |
| In-Project Patronage Percentage | 70% | 70% | 70% | 70% | 20% | 22% |
| Outside Project Patronage Expenditures | **$1,656,000** | **$1,656,000** | **$1,656,000** | **$1,656,000** | **$6,624,000** | **$4,305,600** |
| *3. Maintenance/Landscaping/Renovations* | | | | | | |
| **Total Sales/Year** | **$3,200,000** | **$3,600,000** | **$4,250,000** | **$5,000,000** | **$16,050,000** | **$5,000,000** |
| In-Project Patronage Percentage | 100% | 100% | 100% | 100% | 100% | 100% |
| Outside Project Patronage Expenditures | **$0** | **$0** | **$0** | **$0** | **$471,328,000** | **$0** |
| **ANNUAL OPERATING ECONOMIC ACTIVITY** | **$95,120,000** | **$95,520,000** | **$96,170,000** | **$96,920,000** | **$383,730,000** | **$96,920,000** |
| **Outside Project Patronage Expenditures** | **$49,176,000** | **$49,176,000** | **$49,176,000** | **$49,176,000** | **$196,704,000** | **$49,176,000** |

(1) Estimated average sales for all commercial uses at $800 per square foot of floor space, per year. Includes 20,000 square feet in Golf Course Clubhouse project.
(2) Includes monthly membership expenditure requirements for 375 golf memberships, guests of members and other green fees, cart rentals, pro shop sales and lessons, and other misc. revenues.

Source: The Hallstrom Group, Inc.

be on average $400; or about double what the typical Maui visitor spends daily. This pays for all food, entertainment, household goods, locally purchased fixtures and furnishings, utilities, clothing, and other daily items.

By build-out, the total de facto population discretionary expenditures made by subject project owners in the local market will be at $77 million annually on a stabilized basis, in 2009 dollars. During the 13-year development and stabilization model period, the total sum of these expenditures will be $513.9 million.

While meaningful portions of these discretionary income will be spent in the on-site "neighborhood" businesses and via the golf facility, much will flow into other South Maui and islandwide companies.

## Operating Economic Activity

The estimated level of total gross on-site economic activity within the proposed Honuaula community during the modeling period and on a stabilized basis is summarized on Table 20. The contributing activity includes:

- Commercial Operations in the 100,000 square feet of leasable area in the primary general/neighborhood mixed-use centers at the entry to the project (88,000 square feet) and the secondary non-golf oriented floor space in the clubhouse pod (12,000 square feet). Also included is the estimated 8,000 square feet of golf and club-related commercial business within the clubhouse facility (apart from the pro shop/course operations spaces). Overall, these businesses are projected to have average sales volumes of $800 per square foot annually, of which an estimated 45 percent will be from the on-site population and 55 percent will be from outside project patronage.

- Golf Club Operations produce modest gross revenues on an on-going basis due to the membership orientation of the club, which limits daily use/play fees collected, and

**TABLE 21**

**SUMMARY OF ECONOMIC IMPACTS ASSOCIATED WITH DEVELOPMENT**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| ANNUAL WAGES GENERATED | $22,332,826 | $33,725,074 | $40,239,902 | $39,892,623 | $38,304,784 | $40,701,125 | $41,207,054 | $42,539,364 |
| CONTRACTOR'S PROFIT | $11,710,000 | $13,861,150 | $13,058,043 | $10,799,037 | $11,519,037 | $9,869,037 | $9,154,037 | $9,154,037 |
| SUPPLIER'S PROFIT | $3,738,000 | $5,071,460 | $4,750,217 | $4,083,115 | $4,371,115 | $3,947,615 | $3,661,615 | $3,661,615 |
| OUTSIDE PATRONAGE SPENDING | | | $9,959,200 | $26,404,800 | $37,570,400 | $37,736,000 | $37,736,000 | $45,656,000 |
| PROJECT POPULATION EXPENDITURES | | | $7,474,470 | $15,837,715 | $25,089,735 | $34,739,970 | $44,390,205 | $54,040,440 |
| **TOTAL BASE ECONOMIC IMPACT** | **$37,780,826** | **$52,657,683** | **$75,481,832** | **$97,017,289** | **$116,855,070** | **$126,993,747** | **$136,148,910** | **$155,051,455** |
| Multiplier Effect Ratio | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **TOTAL OVERALL IMPACT** | **$75,561,652** | **$105,315,367** | **$150,963,665** | **$194,034,578** | **$233,710,140** | **$253,987,494** | **$272,297,820** | **$310,102,910** |

| Development Year | 9 | 10 | 11 | 12 | 13 | Totals Years 1 Through 13 | Stabilized Operations |
|---|---|---|---|---|---|---|---|
| ANNUAL WAGES GENERATED | $41,500,970 | $40,462,576 | $40,844,286 | $37,168,556 | $21,055,981 | $479,975,118 | $19,039,212 |
| CONTRACTOR'S PROFIT | $8,650,037 | $8,146,037 | $8,146,037 | $6,706,037 | $852,156 | $121,624,680 | |
| SUPPLIER'S PROFIT | $3,460,015 | $3,258,415 | $3,258,415 | $2,682,415 | $340,862 | $46,284,872 | |
| OUTSIDE PATRONAGE SPENDING | $49,176,000 | $49,176,000 | $49,176,000 | $49,176,000 | $49,176,000 | $440,942,400 | $49,176,000 |
| PROJECT POPULATION EXPENDITURES | $54,936,150 | $61,679,160 | $66,779,670 | $71,880,180 | $77,034,710 | $513,882,405 | $77,034,710 |
| **TOTAL BASE ECONOMIC IMPACT** | **$157,723,171** | **$162,722,187** | **$168,204,407** | **$167,613,187** | **$148,459,709** | **$1,602,709,475** | **$145,249,922** |
| Multiplier Effect Ratio | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| **TOTAL OVERALL IMPACT** | **$315,446,342** | **$325,444,374** | **$336,408,814** | **$335,226,374** | **$296,919,418** | **$3,205,418,950** | **$290,499,843** |

Source: Various, and The Hallstrom Group, Inc.



are anticipated to stabilize at $5.5 million per year, with 70 percent being spent by in-project members and users. We have not included initial membership fees in our analysis.

- Maintenance/Landscaping/Renovations will be required by the residential components of the development. We have estimated these costs for the 450 affordable-priced multifamily units will be an average $2,000 per year, at $3,000 per year for the market-priced multifamily units; and, $8,000 per year for the single family inventory.

Overall, Honuaula will create taxable gross operating revenues of $96.9 million per year following stabilization, of which about $49.2 million (or just over half) will be from outside project patronage and $47.7 million will be spent by the on-site population. During the development period, this model projects total on-site sales of $383.7 million.

## Summary of Direct, Local Economic Impacts

As correlated on Table 21, annual Total Base Economic Impact from the subject increases from $37.8 in year 1 of the development effort to a peak of $168.2 million by year 11 (in 2009 dollars) before stabilizing after build-out at $145.2 million per year. During the development period, the aggregate total is $1.6 billion.

These dollars will be spent, then re-spent, on goods and services on the island, diminishing in impact on the local economy with each turnover as a portion flows off Maui for goods, services and financing commitments. First Hawaiian Bank studies have concluded the appropriate economic multiplier rates in Hawaii are from 1.2 to 3.5 times (or 20 to 250 percent) of the base impact amount. Mainland studies (by the Urban Institute and others) tend toward the upper end of this range, and reach multipliers as high as 4.0.

Due to the need to import more than 80-plus percent of supplies/goods used on Maui, the multiplier impact for the island is not as great as for mainland locales, particularly for

construction-based expenditures. We have therefore tested multiplier rates at the mid-point of the market spectrum, ranging from 1.5 to 3.5 times.

On a conservative basis, using a relatively low-end multiplier effect ratio of 2.0, the total overall direct impact on the Maui County economy resulting from the Honuaula project would be $3.2 billion over the 13-year projection period. On a stabilized annual basis thereafter, the overall impact would be at $290.5 million.

**Ancillary Economic (Phase II) Impacts**

From a real property/land use perspective, the subject development has the potential to present socio-economic impacts in the surrounding community. However, we do not believe the effect of the project will meaningfully escalate or negatively impact these issues, or that foregoing the project would mitigate the concerns in any notable way.

There are two potential negative market-based impacts:

- Real Property Values -- Demand for developable land and residential units in the South Maui area have been increasing over the long-term (within discrete market cycle) for more than three decades. During this period median prices have increased in some sectors by more than five-fold, surpassing compounded annual appreciation rates in excess of five percent. Wailea and Makena prices are now among the highest on average in the state.

  These trends exist externally to the subject property, and would be anticipated to continue reasonably unabated over the long-term regardless whether or not Honuaula were developed. There is little rational or demonstrable market support suggesting regional demand and associated pricing trends will recede if the subject lands were left vacant.





Conversely, the Honuaula units will likely provide a specific mitigating effect to price increases in Greater Wailea, by placing 450 affordable-priced units into an area where there are currently virtually none. And providing substantial amounts of new product will help ease buyer and pricing concerns due to an artificial scarcity of supply.

Without the 1,150 proposed units/homes, which represent nearly a quarter of all planned inventory additions in the Kihei-Makena Corridor over the next two decades, a significant undersupply situation would again develop in the area, laying the groundwork for a hyper-appreciation cycle of the type that has periodically plagued Maui residents since the mid-1970s.

- Affordable Housing -- The inclusion 450 affordable-priced units on-site within Honuaula, in addition to 250 units to be constructed off-site, will constitute one of the largest proportionate allowances of affordable units within a new master-planned project in state history.

  The subject development will be in full-compliance with Maui County affordable/workforce housing ordinances and guidelines, and will more than off-set any needs resulting from new job creation or in-migration associated with the community.

  Again, the impact of Honuaula will be positive on the study area in this regard.

## PUBLIC COSTS/BENEFITS FROM THE PROPOSED DEVELOPMENT

The purpose of this assessment is to delineate the direct areas in which the construction and long-term operation of Honuaula will potentially impact the public "purse". Specifically, the goal is to quantify and compare the costs of providing expanded County and State services to the project and its population versus the economic benefits that accrue to governmental

coffers via an increase in local and state tax and fee payments arising from the new economic activity associated with the development.

Among the major direct potential costs to governmental services and programs are:

-- Police Protection
-- Fire Protection
-- Public Oversight Agencies
-- Infrastructure Systems
-- Recreational Demands
-- Educational Needs
-- County and State Oversight and Administration
-- Public Capital Improvements
-- Various Other Services and Financial Commitments

Primary direct public fiscal (taxes and fees) benefits to the state and county funds will primarily flow from the project and its operation over time from four major sources:

-- Real Property Taxes
-- Gross Excise Tax Receipts
-- State Income Taxes
-- Development Fees

Some cost/benefit issues are considered as off-setting, or "a wash," as the cost of the services to the government is theoretically directly reimbursed in the form of user fees. Building permits and utility hook-up fees are two prime examples. Other such items include workers compensation premiums and benefits, utility operations and associated use billing rates, and business oversight/registration versus licensing fees. These items are excluded from this study.

As a privately built project using private capital for its major infrastructure components, some of identified public costs will not be directly increased on the state or county levels as a result of the proposed subject project. Further, the relatively low occupancy of the non-resident homes and units means about 44





percent of the residential inventory would not need daily services a majority of the time.

However, the diversity of unit types and businesses within Honuaula will result in a development which is highly reflective of the larger Kihei-Makena community in regards to population, use and household make-up, and as such it would be expected to carry its fair share of public costs burdens on a per capita contribution basis.

This perspective, where each person of the islandwide de facto population is responsible for a comparable cost contribution towards public services, either directly or indirectly as part of the commonwealth, is very appropriate for a development as the subject which will have some members in need of above-average amounts of services and others with below-average demands.

Government services are holistic in nature, providing a foundation throughout a community, regardless of any actual or specific impact on any given land holding. Parks and schools are essential to the residents (full or part-time), resident and non-residents, whether or not they specifically use them, as these facilities create the climate in which local businesses, the real estate market and the general economy operates. Similarly, government administration, capital projects and public welfare items may have no direct relation to a particular development, but provide the economic underpinnings that enhances overall regional sustainability.

We have therefore looked at the public costs issue only from a per capita contribution allocation basis, and have not considered the estimating of actual costs as being an appropriate method for use in this specific analysis.

## Public Costs

**Per Capita Costs Contribution**

The selected method for determining public costs was through assessment of per capita contributions to expenditures incurred by the State of Hawaii and Maui County relative to the de facto population area of the jurisdiction. As noted foregoing, this is

founded on the principal that each individual on the island equitably benefits from all governmental costs, regardless of type or focus throughout the day, with each new member of the community (whether resident or non-resident) creating a proportionate new cost burden on public services in their daily home and working life.

This is a typical application as most costs are viewed as accruing to residential aspects of a person's lifestyle and land use. We consider it as the best means of demonstrating the maximum overall public fiscal impact potential of the proposed subject project. We judge this method as setting the absolute upper limit on all public costs (actual, indirect and inferred).

According to their Financial Services/Budgeting database, the state expects to spend a total of $10.8 billion on services, salaries, infrastructure, and financing in the coming 2009-10 fiscal year. Of this figure, approximately $7.5 billion will be raised from taxation of persons in-state; the remainder from federal funds and other sources. The total de facto population in the state on an average daily basis at present is about 1,400,000 persons, including residents, tourists, and military personnel.

The per capita contributions by the Hawaii population towards expenditures by the state will thus be about $5,346 for this year ($7,484,000,000 divided by 1,400,000).

The average de facto population (residents, non-residents and their guests) at Honuaula at build-out will be 1,833 persons, a figure reached in year 13 of the development process. The annual total "per capita fair contribution" to the State's public purse from the subject at stabilization would be $9.8 million in constant year 2009 dollars.

Analyzed on a similar basis, the county of Maui's budget for the island government in year 2009 calls for the County's population to contribute $561 million towards local services (the remainder coming from federal, state and other sources). The current de facto population in Maui County is some 182,000 persons. The resulting de facto per capita contribution towards





county expenditures for this year is therefore anticipated to be $3,082.

Application of this County-based per person fair contribution figure to the total on-site de facto population at subject build out would be $5.65 million annually in costs to the county government on a stabilized basis (1,833 population x $3,082).

Total Public Costs -- On a per capita fair contribution basis, at build-out the total governmental costs to the state and county would be $15.4 million annually.

**Public Fiscal Benefits**

Real Property Taxes -- Property taxes paid by landowners in the subject project were calculated using the 2009 tax rates for both land and buildings, improved and unimproved. The basis for the calculations were generally presented within the body of the report, and can be summarized as follows:

- *Affordable Multifamily Resident Units* were assumed to have an average assessed value of $375,000, coupled with the current homeowner's exemption of $300,000, the net average taxable assessment would be $100,000, with an associated owner/occupant tax rate of $2.00 per $1,000 in value.

- *Market Multifamily Resident Units* are projected to have an average assessed value of $1,548,000, resulting in a $1,248,000 taxable assessment after homeowner's exemption, and would also be taxed at the discounted owner/occupant rate of $2.00 per $1,000 in net assessment.

- *Market Multifamily Non-Resident Units* are projected to have an average assessed value of $1,800,000, with no exemptions, and an effective tax rate of $4.55 per $1,000.

- *Resident Single Family Homes* are forecast to be assessed at an average of $2,850,000, are eligible for the $300,000 exemption and the $2.00 per $1,000 tax rate.

- *Non-Resident Single Family Homes* are also assumed to be assessed at an average of $2,850,000, with no exemptions and an effective rate of $4.85 per $1,000.

- *Commercial Components* are forecast to have a total assessed value of $38,172,200 (land and improvements) and an effective tax rate of $6.25.

- *The Golf Course Facility* is projected to have a total assessed value of $65 million and a tax rate of $4.50.

- *The Underlying, Fully-Entitled Site* was estimated to have a pre-development assessed value of $250 million, increasing to $523 million after infrastructure emplacement and subdivision, with an assessment rate of $4.50.

The total assessments and resulting taxes for the finished units, commercial and golf course components are added to the tax rolls as they are completed and absorbed. Conversely, the assessed value and taxes attributable to the underlying land diminishes as it is built-out and sold.

The total real property taxes to be paid to Maui County in 2009 dollars ranges from $1,250,000 in year 1 of development, to a stabilized level of $7,251,000 at build-out in year 13 and beyond. The aggregate taxes paid over the development modeling time-frame will be $55.5 million.

State Income Tax -- The state will receive income taxes from three sources:

- the wages of the workers associated with the construction, maintenance, and operation of the Honuaula components;

- the corporate profits from contractors and suppliers serving the construction and maintenance phases of the development, and as generated by on-going commercial and golf operations; and





- the income of full-time residents of the development.

According to DBEDT data, individual State of Hawaii income tax liability as a ratio to gross income has averaged ranged from about 5.6 to just over 5.80 percent during the past two decades, with the more current figures tending toward the mid to upper-end of the range. We have employed an effective tax rate of 5.80 percent of gross personal income for individual workers and full-time residents.

The effective tax rate for the corporate income is estimated at 2.00 percent of gross operating profits, based on available DBEDT statistics.

The total income tax revenues to be received by the state are projected at $1.3 million in the first year of construction increasing to a maximum level at year 11 of $6.4 million. On a stabilized basis, after build-out, the permanent worker incomes, building maintenance and off-site workers, and operating businesses, would pay an annual state income tax of about $5.3 million.

Over the 13-year projection period, the cumulative income taxes paid are estimated at $58.7 million.

We have not included any corporate income or other taxes which will be paid by the developing venture as a result of its profits from undertaking the subject development, or from the secondary jobs created by the discretionary spending of owners, workers and businesses. Such items have the potential to be substantial contributions to the state coffers.

State Gross Excise Tax -- This 4.166 percent of expenditures tax was applied against:

- the total estimated construction contract costs;

- discretionary spending of wage income by workers associated with the project's construction and operation;

- expenditures of Honuaula unit owners and their guests on and off-site; and

- non-resident patronage expenditures in the subject community businesses.

The anticipated state excise tax receipts arising from the subject development range from an estimated $5.5 million in the first year of development to a peak of $9.3 million. Over the 13-year study period, the receipts total $103.3 million and stabilize at circa $6.1 million per year.

We have not included any excise tax revenues associated with the direct, local "multiplier effect" expenditures on Maui, or those created in the secondary market by the suppliers to the operating businesses or secondary worker expenditures.

State and County Development Fees -- Each Honuaula residential unit is subject to total fees upon permitting of $25,240, comprised of:

- Traffic improvement fees of $5,000 per unit payable to the County of Maui.

- Park assessment fee currently at $17,240 per unit payable to County of Maui.

- School impact fee currently at $3,000 per unit payable to the State.

The fees are shown on the model as they are incurred as units are constructed. In addition to these fees, which total $29 million during build-out, the developer is also committed to a $5 million contribution towards the Kihei Regional Park, another $550,000 towards the South Maui Police Station, and providing a two-acre site for a future fire station (not shown in model).

Total Public Benefits (Revenues) -- In constant 2009 dollars, the rounded aggregate annual tax revenues flowing from the





subject development during the construction and at full project build-out range from:

- $1.1 million to $8.7 million per year for the county of Maui, stabilizing over time at $7.25 million annually and totaling $81.1 million over the 13-year development projection time-frame;

- $6.8 million to $15.9 million annually for the State of Hawaii, stabilizing at $11.3 million per year, and cumulatively at $165.4 million over the modeling period; and

- $7.9 million to $23.7 million annually in total to the combined County and State public purse, stabilizing at about $18.6 million per year, and cumulatively at $246.5 million over the modeling period.

**Correlation**

Our public cost/benefit assessment model for Honuaula is compiled on Table 22, with the correlation of per capita public service fair contribution "costs" and the specifically anticipated public fiscal (taxes and fees) revenue "benefits" shown on the bottom line. As construction activity (which generates tax revenues) is completed and the full de facto population is established (which results in increasing public costs), the net returns to governmental entities decrease.

The summarized indicators are as follows:

- The net fiscal benefit (revenue contributions less per capita costs) to Maui County from the development of the subject increases from $1.1 million in Year 1 to a peak of $4.1 million per year, with stabilization at $1.6 million and an aggregate benefit of $41.8 million during the study period.

- The net fiscal benefit to the State of Hawaii ranges from a low of $2.5 million to maximum net gain of $9.4 million, totaling $97.2 million during the modeling period. On a stabilized basis following build-out, the net gain to the State will be $1.5 million annually.

**TABLE 22**

**PUBLIC COSTS/BENEFITS SUMMARY TABLE**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **PUBLIC BENEFITS (Revenues)** | | | | | | | | |
| **1. REAL PROPERTY TAXES** | | | | | | | | |
| **Total Assessed Value** | $250,000,000 | $250,000,000 | $535,284,250 | $681,247,650 | $823,631,900 | $980,266,150 | $1,136,900,400 | $1,303,077,700 |
| **TOTAL REAL PROPERTY TAXES (1)** | **$1,125,000** | **$1,125,000** | **$2,258,249** | **$2,811,459** | **$3,295,268** | **$3,839,466** | **$4,383,665** | **$4,987,507** |
| **2. STATE INCOME TAXES** | | | | | | | | |
| Taxable Personal Income | $22,332,826 | $33,725,074 | $48,342,902 | $56,208,123 | $62,942,284 | $73,770,125 | $82,707,554 | $92,471,364 |
| Taxable Corporate Profits | $1,544,800 | $1,893,261 | $3,807,226 | $6,569,815 | $8,765,815 | $8,653,665 | $8,593,565 | $10,073,565 |
| Personal Taxes Paid | $1,295,304 | $1,956,054 | $2,803,888 | $3,260,071 | $3,650,652 | $4,278,667 | $4,797,038 | $5,363,339 |
| Corporate Taxes Paid | $30,896 | $37,865 | $76,145 | $131,396 | $175,316 | $173,073 | $171,871 | $201,471 |
| **TOTAL STATE INCOME TAXES** | **$1,326,200** | **$1,993,920** | **$2,880,033** | **$3,391,467** | **$3,825,969** | **$4,451,741** | **$4,968,909** | **$5,564,810** |
| **3. STATE GROSS EXCISE TAX** | | | | | | | | |
| Taxable Transactions | | | | | | | | |
| Construction Contracts | $117,100,000 | $138,611,496 | $130,580,432 | $107,990,368 | $115,190,368 | $98,690,368 | $91,540,368 | $91,540,368 |
| Worker Disposable Income Purchases | $14,516,337 | $21,921,298 | $26,155,936 | $25,930,205 | $24,898,109 | $26,455,731 | $26,784,585 | $27,650,586 |
| Unit Owner/Guest Expenditures (on/off site) | | | $7,474,470 | $15,837,715 | $25,089,735 | $34,739,970 | $44,390,205 | $54,040,440 |
| Non-Resident Patronage Expenditures | | | $9,959,200 | $26,404,800 | $37,570,400 | $37,736,000 | $37,736,000 | $45,656,000 |
| Total Taxable Transactions | $131,616,337 | $160,532,794 | $174,170,038 | $176,163,088 | $202,748,612 | $197,622,069 | $200,451,158 | $218,887,394 |
| **TOTAL STATE EXCISE TAX** | **$5,483,137** | **$6,687,796** | **$7,255,924** | **$7,338,954** | **$8,446,507** | **$8,232,935** | **$8,350,795** | **$9,118,849** |
| **4. DEVELOPMENT FEES TO STATE AND COUNTY** | | | | | | | | |
| Payable to Maui | | | $2,246,240 | $2,490,880 | $2,735,520 | $2,846,720 | $2,846,720 | $2,846,720 |
| Payable to State | | | $303,000 | $336,000 | $369,000 | $384,000 | $384,000 | $384,000 |
| **Total** | **$0** | **$0** | **$2,549,240** | **$2,826,880** | **$3,104,520** | **$3,230,720** | **$3,230,720** | **$3,230,720** |
| **TOTAL GROSS PUBLIC REVENUES** | | | | | | | | |
| To Maui County (Items #1 & #4) | $1,125,000 | $1,125,000 | $4,504,489 | $5,302,339 | $6,030,788 | $6,686,186 | $7,230,385 | $7,834,227 |
| To State (Items #2, #3 & #4) | $6,809,337 | $8,681,716 | $10,438,957 | $11,066,422 | $12,641,476 | $13,068,676 | $13,703,705 | $15,067,659 |
| **AGGREGATE TAXES & FEES REVENUES** | **$7,934,337** | **$9,806,716** | **$14,943,445** | **$16,368,761** | **$18,672,264** | **$19,754,862** | **$20,934,089** | **$22,901,886** |
| **PUBLIC COSTS (Expenses)** | | | | | | | | |
| By Maui County | | | $605,448 | $1,235,710 | $1,890,786 | $2,560,318 | $3,229,850 | $3,899,382 |
| By State of Hawaii | | | $1,050,020 | $2,143,074 | $3,279,161 | $4,440,320 | $5,601,479 | $6,762,638 |
| **TOTAL PUBLIC COSTS** | | | **$1,655,468** | **$3,378,784** | **$5,169,947** | **$7,000,637** | **$8,831,328** | **$10,662,019** |
| **TOTAL NET PUBLIC BENEFITS** | | | | | | | | |
| To Maui County | $1,125,000 | $1,125,000 | $3,899,040 | $4,066,629 | $4,140,002 | $4,125,868 | $4,000,535 | $3,934,846 |
| To State of Hawaii | $6,809,337 | $8,681,716 | $9,388,937 | $8,923,348 | $9,362,315 | $8,628,356 | $8,102,226 | $8,305,022 |
| **AGGREGATE NET BENEFITS** | **$7,934,337** | **$9,806,716** | **$13,287,977** | **$12,989,977** | **$13,502,317** | **$12,754,225** | **$12,102,761** | **$12,239,867** |

(1) Real property taxes include $300,000 homeowners exemption for "resident" units. Tax rates of $2 per $1,000 for homeowners/residents, $4.55 for non-resident multifamily and $4.85 for non-resident single family.

Source: The Hallstrom Group, Inc.

**TABLE 22 -- Continued**

**PUBLIC COSTS/BENEFITS SUMMARY TABLE**
**Market Study of the Proposed Honuaula Community**
**Wailea, Maui, Hawaii**
**All Amounts Expressed in Constant, Uninflated 2009 Dollars**

| Development Year | 9 | 10 | 11 | 12 | 13 | Total Years 1 Through 13 | Stabilized Operations |
|---|---|---|---|---|---|---|---|
| **PUBLIC BENEFITS (Revenues)** | | | | | | | |
| **1. REAL PROPERTY TAXES** | | | | | | | |
| **Total Assessed Value** | $1,434,590,000 | $1,582,230,000 | $1,683,200,000 | $1,797,050,000 | $1,916,250,000 | | $1,916,250,000 |
| **TOTAL REAL PROPERTY TAXES (1)** | **$5,399,705** | **$5,949,515** | **$6,335,435** | **$6,779,315** | **$7,251,075** | **$55,540,659** | **$7,251,075** |
| **2. STATE INCOME TAXES** | | | | | | | |
| Taxable Personal Income | $99,864,470 | $103,972,576 | $106,215,786 | $104,401,556 | $89,931,481 | $976,886,118 | $87,914,712 |
| Taxable Corporate Profits | $10,683,005 | $10,652,445 | $10,692,445 | $10,555,845 | $9,811,302 | $102,296,755 | $9,692,000 |
| Personal Taxes Paid | $5,792,139 | $6,030,409 | $6,160,516 | $6,055,290 | $5,216,026 | $56,659,395 | $5,099,053 |
| Corporate Taxes Paid | $213,660 | $213,049 | $213,849 | $211,117 | $196,226 | $2,045,935 | $193,840 |
| **TOTAL STATE INCOME TAXES** | **$6,005,799** | **$6,243,458** | **$6,374,364** | **$6,266,407** | **$5,412,252** | **$58,705,330** | **$5,292,893** |
| **3. STATE GROSS EXCISE TAX** | | | | | | | |
| Taxable Transactions | | | | | | | |
| Construction Contracts | $86,500,368 | $81,460,368 | $81,460,368 | $67,060,368 | $8,521,560 | $1,216,246,800 | |
| Worker Disposable Income Purchases | $14,516,337 | $21,921,298 | $26,155,936 | $25,930,205 | $24,898,109 | $307,734,673 | $19,039,212 |
| Unit Owner/Guest Expenditures (on/off site) | $54,936,150 | $61,679,160 | $66,779,670 | $71,880,180 | $77,034,710 | $513,882,405 | $77,034,710 |
| Non-Resident Patronage Expenditures | $49,176,000 | $49,176,000 | $49,176,000 | $49,176,000 | $49,176,000 | $440,942,400 | $49,176,000 |
| **Total Taxable Transactions** | **$205,128,855** | **$214,236,826** | **$223,571,974** | **$214,046,753** | **$159,630,379** | **$2,478,806,278** | **$145,249,922** |
| **TOTAL STATE EXCISE TAX** | **$8,545,668** | **$8,925,106** | **$9,314,008** | **$8,917,188** | **$6,650,202** | **$103,267,070** | **$6,051,112** |
| **4. DEVELOPMENT FEES TO STATE AND COUNTY** | | | | | | | |
| Payable to Maui | $2,846,720 | $2,179,520 | $1,512,320 | $1,512,320 | $1,512,320 | $25,576,000 | |
| Payable to State | $384,000 | $294,000 | $204,000 | $204,000 | $204,000 | $3,450,000 | |
| **Total** | **$3,230,720** | **$2,473,520** | **$1,716,320** | **$1,716,320** | **$1,716,320** | **$29,026,000** | |
| **TOTAL GROSS PUBLIC REVENUES** | | | | | | | |
| To Maui County (Items #1 & #4) | $8,246,425 | $8,129,035 | $7,847,755 | $8,291,635 | $8,763,395 | $81,116,659 | $7,251,075 |
| To State (Items #2, #3 & #4) | $14,935,467 | $15,462,564 | $15,892,373 | $15,387,595 | $12,266,454 | $165,422,400 | $11,344,005 |
| **AGGREGATE TAXES & FEES REVENUES** | **$23,181,892** | **$23,591,599** | **$23,740,128** | **$23,679,230** | **$21,029,849** | **$246,539,058** | **$18,595,080** |
| **PUBLIC COSTS (Expenses)** | | | | | | | |
| By Maui County | $4,568,913 | $5,011,888 | $5,228,304 | $5,444,721 | $5,649,486 | $39,324,805 | $5,649,486 |
| By State of Hawaii | $7,923,797 | $8,692,040 | $9,067,368 | $9,442,696 | $9,797,817 | $68,200,408 | $9,797,817 |
| **TOTAL PUBLIC COSTS** | **$12,492,710** | **$13,703,928** | **$14,295,672** | **$14,887,417** | **$15,447,302** | **$107,525,213** | **$15,447,302** |
| **TOTAL NET PUBLIC BENEFITS** | | | | | | | |
| To Maui County | $3,677,512 | $3,117,147 | $2,619,451 | $2,846,914 | $3,113,909 | $41,791,853 | $1,601,589 |
| To State of Hawaii | $7,011,671 | $6,770,524 | $6,825,005 | $5,944,899 | $2,468,637 | $97,221,991 | $1,546,188 |
| **AGGREGATE NET BENEFITS** | **$10,689,182** | **$9,887,672** | **$9,444,456** | **$8,791,813** | **$5,582,546** | **$139,013,845** | **$3,147,778** |

(1) Real property taxes include $300,000 homeowners exemption for "resident" units. Tax rates of $2 per $1,000 for homeowners/residents, $4.55 for non-resident multifamily and $4.85 for non-resident single family.

Source: The Hallstrom Group, Inc.

- The overall yearly net benefit to local governmental agencies (state and county) varies from $5.6 million to a peak of $13.5 million during development, with a cumulative "profit" figure of $139 million during construction. Annually, after stabilization is reached, the net combined governmental gains are $3.1 million

In no single year, or following stabilization, does either the State or County suffer a fiscal "loss" from the development and servicing of Honuaula from a "fair contributions per capita" perspective.

**Limiting Conditions and Assumptions**

The research, analysis, and conclusions for valuation or market studies, performed by The Hallstrom Group, Inc., are subject to and influenced by the following:

- The report expresses the opinion of the signers as of the date stated in the letter of transmittal, and in no way has been contingent upon the reporting of specified values or findings. It is based upon the then present condition of the national and local economy and the then purchasing power of the dollar.

- Legal descriptions used within the report are taken from official documents recorded with the State of Hawaii, Bureau of Conveyances, or have been furnished by the client, and are assumed to be correct. No survey is made for purposes of the report.

- Any sketches, maps, plot plans, and photographs included in the report are intended only to show spatial relationships and/or assist the reader in visualizing the property. They are not measured surveys or maps and we are not responsible for their accuracy or interpretive quality.

- It is assumed that the subject property is free and clear of any and all encumbrances other than those referred to herein, and no responsibility is assumed for matters of a





legal nature. The report is not to be construed as rendering any opinion of title, which is assumed to be good and marketable. No title information or data regarding easements which might adversely affect the use, access, or development of the property, other than that referenced in the report, was found or provided. The property is analyzed as though under responsible ownership and competent management.

- Any architectural plans and/or specifications examined assume completion of the improvements in general conformance with those documents in a timely and workmanlike manner.

- Preparation for, attendance, or testimony at any court or administrative hearing in connection with this report shall not be required unless prior arrangements have been made therefor.

- If the report contains an allocation of value between land and improvements, such allocation applies only under the existing program of utilization. The separate valuations for land and building must not be used in conjunction with any other purpose and are invalid if so used.

- If the report contains a valuation relating to a geographical portion or tract of real estate, the value reported for such geographical portion relates to such portion only and should not be construed as applying with equal validity to other portions of the larger parcel or tract; and the value reported for such geographical portion plus the value of all other geographical portions may or may not equal the value of the entire parcel or tract considered as an entity.

- If the report contains a valuation relating to an estate in land that is less than the whole fee simple estate, the value reported for such estate relates to a fractional interest only in the real estate involved, and the value of this fractional interest plus the value of all other

fractional interest may or may not equal to the value of the entire fee simple estate considered as a whole.

- It is assumed that there are no hidden or inapparent conditions of the property, subsoil, or structures which would render it more or less valuable; we assume no responsibility for such conditions or for engineering which might be required to discover such factors.

- Nothing in the report should be deemed a certification or guaranty as to the structural and/or mechanical (electrical, heating, air-conditioning, and plumbing) soundness of the building(s) and associated mechanical systems, unless otherwise noted.

- Information, estimates, and opinions provided by third parties and contained in this report were obtained from sources considered reliable and believed to be true and correct. However, no responsibility is assumed for possible misinformation.

- Possession of the report, or a copy thereof, does not carry with it the right of publication, and the report may not be used by any person or organization except the client without the previous written consent of the appraiser, and then only in its entirety. If the client releases or disseminates the reports to others without the consent of the appraiser, the client hereby agrees to hold the appraiser harmless, and to indemnify the analysts from any liability, damages, or losses which the analysts might suffer, for any reason whatsoever, by reason of dissemination of the report by the client. Further, if legal action is brought against the analyst by a party other than the client concerning the report or the opinions stated therein, the client agrees, in addition to indemnifying the analysts for any damages or losses, to defend said analysts in said action at client's expense. However, nothing herein shall prohibit the client or analysts from disclosing said report or opinions contained therein as may be required by applicable law.





- Disclosure of the contents of this report is governed by the By-Laws and Regulations of the Appraisal Institute. Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the appraisers or the firm which they are connected, or any reference to the Appraisal Institute or to the MAI designation) shall be disseminated to the public through advertising media, public relations media, news media, sales media, or any public means of communication without the prior consent and approval of the appraisers.

- Unless otherwise stated in this report, the existence of hazardous material, which may or may not be present on the property, was not observed by the appraiser. The appraiser has no knowledge of the existence of such materials on or in the property. The appraiser, however, is not qualified to detect such substances. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for any such conditions, or for any expertise or engineering knowledge required to discover them. The client is urged to retain an expert in this field, if desired.

- The Americans with Disabilities Act (ADA) became effective January 26, 1992. We have not made a specific compliance survey and analysis of this property to determine whether or not it is in conformity with the various detailed requirements of the ADA. It is possible that a compliance survey together with a detailed analysis of the requirements of the ADA could reveal that the property is not in compliance with one or more of the requirements of the act. If so, this fact could have a negative effect upon the value of the property. We did not consider possible noncompliance with the requirements of ADA in estimating the value of the property.

- The function of this report is for the sole purpose(s) stated herein. It may not be used in connection with any proposed or future construction for a real estate syndicate(s), real estate investment trust(s) or limited partnership to solicit investors or limited partners, and may not be relied upon for such purposes.

- The appraiser's conclusion of value is based upon the assumption that there are no hidden or unapparent conditions of the property that might prevent buildability. The appraiser recommends that due diligence be conducted through the local building department or the municipality to investigate buildability and whether the property is suitable for its intended use. The appraiser makes no such representations, guarantees or warranties.

## CERTIFICATION

The undersigned does hereby certify that, to the best of his knowledge and belief, the statements of fact contained in this report are true and correct. It is further certified that the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are his personal, impartial, and unbiased professional analyses, opinions, conclusions and recommendations. He further certifies that he has no present or prospective interest in the property that is the subject of this report, and has no personal interest with respect to the parties involved. He has no bias with respect to the property that is the subject of this report or the parties involved with this assignment. His engagement in this assignment was not contingent upon developing or reporting predetermined results. His compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the





intended use of this report. The analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Uniform Standards of Professional Appraisal Practice. The undersigned certifies that he has made a personal visit to the property that is the subject of this report. No other persons provided significant real property consulting assistance other than the undersigned.

Tom W. Holliday
Supervisor/Senior Analyst

/as

3065NR01

# ADDENDA

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THE HALLSTROM GROUP INC.
REAL ESTATE
CONSULTANTS
& APPRAISERS

## PROFESSIONAL BACKGROUND AND SERVICES

The Hallstrom Group, Inc. is a Honolulu based independent professional organization that provides a wide scope of real estate consulting services throughout the State of Hawaii with particular emphasis on valuation studies. The purpose of the firm is to assist clients in formulating realistic real estate decisions. It provides solutions to complex issues by delivering thoroughly researched, objective analyses in a timely manner. Focusing on specific client problems and needs, and employing a broad range of tools including after-tax cash flow simulations and feasibility analyses, the firm minimizes the financial risks inherent in the real estate decision making process.

The principals and associates of the firm have been professionally trained, are experienced in Hawaiian real estate, and are actively associated with the Appraisal Institute and the Counselors of Real Estate, nationally recognized real estate appraisal and counseling organizations.

The real estate appraisals prepared by The Hallstrom Group accomplish a variety of needs and function to provide professional value opinions for such purposes as mortgage loans, investment decisions, lease negotiations and arbitrations, condemnations, assessment appeals, and the formation of policy decisions. Valuation assignments cover a spectrum of property types including existing and proposed resort and residential developments, industrial properties, high-rise office buildings and condominiums, shopping centers, subdivisions, apartments, residential leased fee conversions, special purpose properties, and vacant acreage, as well as property assemblages and portfolio reviews.

Market studies are research-intensive, analytical tools oriented to provide insight into investment opportunities and development challenges, and range in focus from highest and best use determinations for a specific site or improved property, to an evaluation of multiple (present and future) demand and supply characteristics for long-term, mixed-use projects. Market studies are commissioned for a variety of purposes where timely market information, insightful trends analyses, and perceptive conceptual conclusions or recommendations are critical. Uses include the formation of development strategies, bases for capital commitment decisions, evidence of appropriateness for state and county land use classification petitions, fiscal and social impact evaluations, and the identification of alternative economic use/conversion opportunities.

## PROFESSIONAL QUALIFICATIONS OF THOMAS W. HOLLIDAY

**Business Background**

| | |
|---|---|
| Senior Analyst | The Hallstrom Group, Inc.<br>Honolulu, Hawaii<br>Since 1980 |
| Former Staff Appraiser | Davis-Baker Appraisal Co.<br>Avalon, Santa Catalina Island, California |

**Education**

- B.A. (Communications/Journalism) 1978 California State University at Fullerton
- SREA Course 201- Principles of Income Property Appraising
- Expert witness testimony before State of Hawaii Land Use Commission and various state and county boards and agencies since 1983.
- Numerous professional seminars and clinics
- Contributing author to Hawaii Real Estate Investor, Honolulu Star Bulletin

On January 1, 1991, the American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated, forming the Appraisal Institute (AI).

**Recent Kauai and Neighbor Island Assignments**

- Market Study, Economic Impact Analyses and Public Costs/ Benefits Assessments
  - -- Village at Poipu (Resort/Residential)
  - -- Ocean Bay Plantation (Resort/Residential)
  - -- Waipono/Puhi (Mixed-Use Planned Development)
  - -- Eleele Commercial Expansion (Commercial)
  - -- Kona Kai Ola (Mixed-Use Resort Community)
  - -- Waikoloa Highlands (Residential)
  - -- Waikoloa Heights (Mixed-Use Residential Development)
  - -- Upcountry Town Center (Mixed-Use Planned Development)
  - -- Maui Lani (Residential and Industrial Components of Master Planned Community)
  - -- Maui Business Park, Phase II (Industrial/Commercial)
  - -- Four Seasons Private Estates and Residences Club (Resort/Residential)
  - -- Kualono Subdivision (Residential)
  - -- Kapalua Mauka (Master Planned Community)
  - -- Hailiimaile (Mixed-Use Master Planned Community)
  - -- Pulelehua (Master Planned Community)
  - -- Westin Kaanapali Ocean Villas Expansion (Resort/ Timeshare)



- Major Valuation Assignments
  - -- Coco Palms Resort
  - -- Grand Hyatt Kauai
  - -- Islander on the Beach
  - -- Waimea Plantation Cottages
  - -- Coconut Beach Resort
  - -- Keauhou Beach Hotel
  - -- Sheraton Maui Hotel
  - -- Outrigger Wailea Resort Hotel
  - -- Maui Lu Hotel
  - -- Coconut Grove Condominiums
  - -- Palauea Bay Holdings
  - -- Wailea Ranch
  - -- Maui Coast Hotel
  - -- Westin Maui Hotel
  - -- Maui Marriott Hotel
  - -- Waihee Beach
  - -- Kapalua Bay Hotel and The Shops at Kapalua

**Email Address** TWH@HallstromGroup.com

# Appendix R

Pi‘ilani Highway Widening Project Final EA

# VOLUME I OF II

# Final Environmental Assessment

## PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE DRIVE)

**Prepared for:**

**Honua`ula Partners, LLC,**
**A&B Wailea LLC,**
**Keaka LLC, and ATC Makena Holdings LLC**

**for the**

**Agency/Accepting Authority:**

**State of Hawaii ,**
**Department of Transportation**

**May 2012**

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**PROPOSED PIILANI HIGHWAY WIDENING PROJECT**
**(KILOHANA DRIVE TO WAILEA IKE DRIVE)**

**Final Environmental Assessment/**
**Findings of No Significant Impact**

Submitted Pursuant to the Hawai'i Revised Statutes, Chapter 343

State of Hawai'i, Department of Transportation, Highways Division

APR 26 2012
Date of Approval

For State of Hawai'i, Department of Transportation

Glenn M. Okimoto, PH.D.
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, HI 96813
Phone: (808) 587-2150

This Final Environmental Assessment (FEA) documents impact studies of proposed improvements to Piilani Highway on the island of Maui between Kilohana Drive to Wailea Ike Drive.

Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC, in coordination with the State of Hawai'i, Department of Transportation, Highways Division proposes to implement the construction of two (2) additional lanes and related improvements to Piilani Highway from approximately 1,000 ft. to beginning of taper north of Kilohana Drive to Wailea Ike Drive at Piilani Highway's existing terminus. Proposed improvements include excavation and embankment work, widening of the road with asphaltic concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention systems, retaining walls, sound attenuation walls, relocation of electrical transmission lines, guard rails, installation of utilities as may be necessary, and adjustments to existing utilities, including as may be necessary the relocation of existing waterlines. Reconstruction of the existing traffic signal at the Kilohana Drive/Mapu Place/Piilani Highway intersection and installation of new traffic signals at Okolani Drive/Mikioi Place/Piilani Highway intersection, and Wailea Ike Drive/Piilani Highway/proposed Honua`ula project access road intersection are also proposed. A five (5)-acre temporary construction baseyard and staging area will also be located to the east of the Wailea Ike Drive/Piilani Highway intersection within the Honua`ula project district.

The project is not expected to cause substantial environmental impacts, but there will be short-term construction-related impacts from traffic, noise, and dust. The majority of work would occur within the existing highway right-of-way, except for ancillary improvements which will occur on lands owned by the County of Maui or are on private property. Measures to mitigate impacts are available and will be implemented in accordance with applicable regulations and based on consultations with various agencies. As a result, a Finding of No Significant Impact (FONSI) has been issued under HRS, Chapter 343.

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## Executive Summary

| | | |
|---|---|---|
| **Project Name:** | | Pi`ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) |
| **Type of Document:** | | Final Environmental Assessment |
| **Legal Authority:** | | Chapter 343, Hawaii Revised Statutes |
| **Agency Determination:** | | Finding of No Significant Impact (FONSI) |
| **Applicable Environmental Assessment review "trigger"** | | Use of State and County Lands |
| **Location:** | | Kihei, Hawaii<br>Island of Maui |
| **Landowners:** | | State of Hawaii<br>County of Maui |
| **Applicants:** | (1) | Honua`ula Partners, LLC<br>P.O. Box 220<br>Kihei, Hawaii 96753<br>Contact: Charles Jencks<br>Phone: (808) 879-5205 |
| | (2) | A&B Wailea LLC<br>11 Pu`unene Avenue<br>Kahului, Hawaii 96732<br>Contact: Randy Endo<br>Phone: (808) 877-5523 |
| | (3) | Keaka LLC<br>2005 East Main Street<br>Wailuku, Hawaii 96793<br>Contact: Everett Dowling<br>Phone: (808) 244-1500 |
| | (4) | ATC Makena Holdings LLC<br>c/o Stanford Carr Development, LLC<br>1100 Alakea Street, 27th Floor<br>Honolulu, Hawaii 96813<br>Contact: Richard B. Riegels<br>Phone: (808) 537-5220 |



| | |
|---|---|
| **Agency/Accepting Authority:** | Department of Transportation<br>State of Hawaii<br>869 Punchbowl Street<br>Honolulu, Hawaii 96813<br>Contact: Glenn Okimoto, Director<br>Phone: (808) 587-2150 |
| **EA Preparer:** | Munekiyo & Hiraga, Inc.<br>305 High Street, Suite 104<br>Wailuku, Hawaii 96793<br>Contact: Gwen Ohashi Hiraga, Principal<br>Phone: (808) 244-2015 |
| **Project Summary:** | Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC, in coordination with the State of Hawaii , Department of Transportation, Highways Division proposes to implement the construction of two (2) additional lanes and related improvements to Pi'ilani Highway from approximately 1,000 ft. to beginning of taper north of Kilohana Drive to Wailea Ike Drive at Pi'ilani Highway's existing terminus. Proposed improvements include excavation and embankment work, widening of the road with asphaltic concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention systems, retaining walls, sound attenuation walls, relocation of electrical transmission lines, guard rails, installation of utilities as may be necessary, and adjustments to existing utilities, including as may be necessary the relocation of existing waterlines. Reconstruction of the existing traffic signal at the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection and installation of new traffic signals at Okolani Drive/Mikioi Place/Pi`ilani Highway intersection, and Wailea Ike Drive/Pi`ilani Highway/proposed Honua`ula project access road intersection are also proposed. A five (5)-acre temporary construction baseyard and staging area will also be located to the east of the Wailea Ike Drive/Pi`ilani Highway intersection within the Honua`ula project district. |

# I. PROJECT OVERVIEW

# I. PROJECT OVERVIEW

## A. BACKGROUND

The applicants for the proposed widening of Pi'ilani Highway, from Kilohana Drive to Wailea Ike Drive, include the following four (4) entities:

1. Honua'ula Partners, LLC
2. A&B Wailea LLC ("Wailea Resort")
3. Keaka LLC
4. ATC Makena Holdings LLC ("Makena Resort")

These companies, collectively, are collaborating with the Hawaii Department of Transportation (HDOT) to design and construct the project in order to address traffic mitigation needs of the Wailea-Makena region of South Maui. Honua'ula, LLC, Keaka LLC and ATC Makena Holdings LLC are engaged in the project in furtherance of conditions of zoning imposed on the Honua'ula and Makena Resort projects. Conditions of zoning pertinent to the Honua'ula project are identified as Condition Nos. 2a, 2c, 2d and 2f, all of which are restated below.

a. *Upgrade Pi'ilani Highway, from Kilohana Drive to Wailea Ike Drive, to four (4) lanes of traffic. The improvements shall be completed prior to the commencement of any construction on the site, with the exception of grading.*

c. *Signalize the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection and provide an exclusive left-turn lane on Okolani Drive prior to occupancy of the first unit in Kihei-Makena Project District 9.*

d. *Modify the Pi'ilani Highway/Wailea Ike Drive intersection into a signalized intersection and provide a free right-turn lane from Pi'ilani Highway to Wailea Ike Drive and a second right-turn lane from Wailea Ike Drive to northbound Pi'ilani Highway prior to occupancy of the first unit in Kihei-Makena Project District 9.*

*f. Modify the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection to provide an exclusive left-turn lane, and the southbound Pi'ilani Highway approach to provide an exclusive right-turn lane into Mapu Place prior to occupancy of the first unit in Kihei-Makena Project District 9.*

With regard to Keaka LLC and ATC Makena Holdings LLC, the Makena Resort change in zoning, Condition No. 12 applies, which states:

*12. Upon commencement of the first phase of construction, the developer shall pay its pro-rata share to upgrade Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive to four lanes of traffic, and shall cooperate with the State Department of Transportation and other area developers to implement such improvements concurrent with development.*

All four (4) entities are working collaboratively to not only meet the applicable conditions of zoning, but to enable regional traffic conditions to be maintained at acceptable operating levels for residents, employees and guests to this sub-region of South Maui.

## B. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC, in coordination with the State of Hawaii , Department of Transportation, Highways Division (HDOT) propose to implement the construction of two (2) additional lanes and related improvements to a 1.44-mile section of the Pi`ilani Highway approximately 1,000 ft. north of Kilohana Drive to Wailea Ike Drive, in the south, on the island of Maui. See **Figure 1** and **Figure 2**.

Pi`ilani Highway (Route 31) is a four (4) lane principal arterial roadway from Mokulele Highway to Kilohana Drive in Wailea. The highway reduces to two (2) lanes from its intersection with Kilohana Drive to its existing terminus at Wailea Ike Drive. The highway right-of-way along the project corridor ranges from 110 feet to 250 feet. Pi`ilani Highway runs in a north-south direction, with travel lanes separated by a double yellow striped pavement marking. The highway also contains a shared shoulder/bike lane on each side of the roadway, except near the intersections. Pi`ilani Highway provides access to residential and resort areas of Kihei, Wailea and Makena. The posted speed limit is generally 40 miles per hour (mph). The speed limit on Pi`ilani Highway is 45 mph in the northbound direction



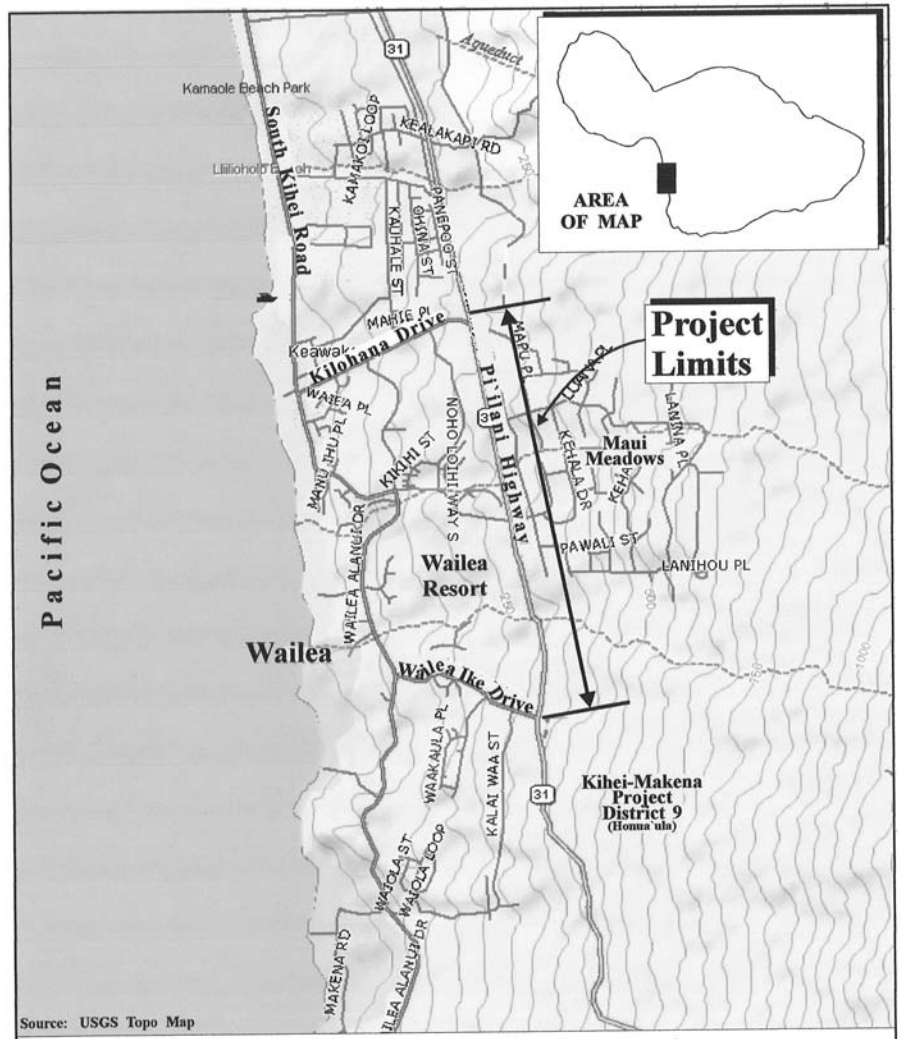



Figure 1 Pi`ilani Highway Widening Project
Regional Location Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\PilaniWidening\regional

from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive. There are three (3) intersections along the proposed project improvement corridor consisting of the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection, Okolani Drive/Mikioi Place/Pi`ilani Highway intersection and Wailea Ike Drive/Pi`ilani Highway intersection. The intersection at Kilohana Drive/Mapu Place/Pi`ilani Highway is signalized.

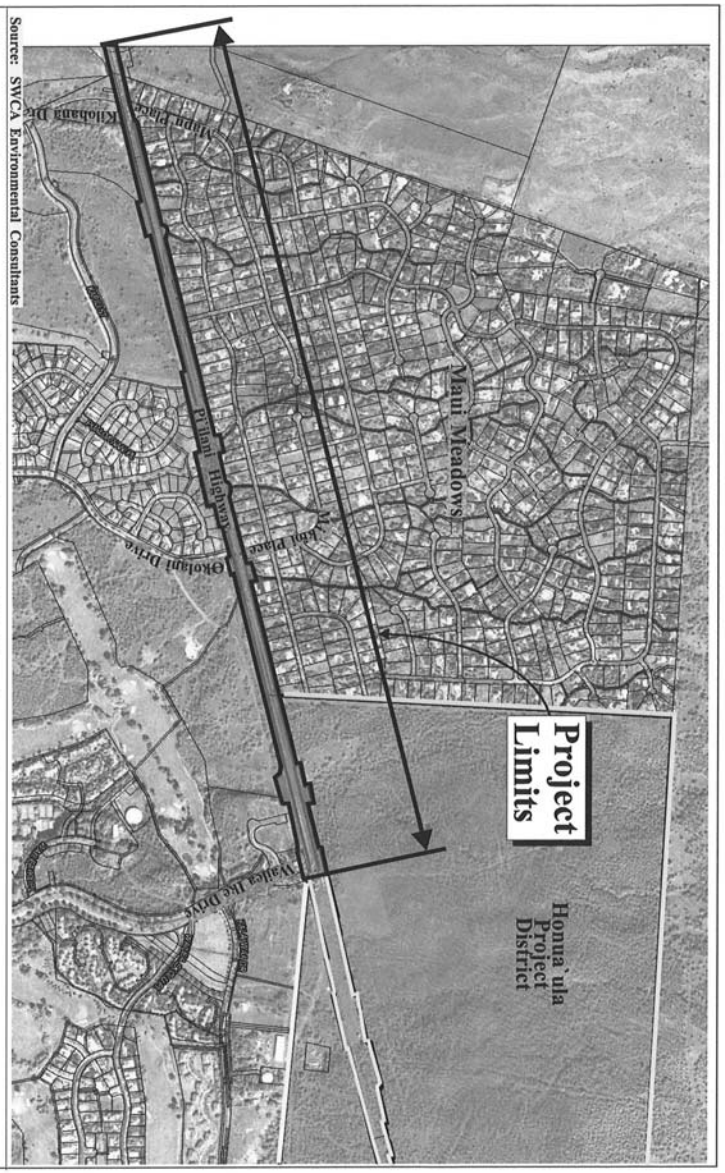
Within the 1.44-mile project corridor, Pi`ilani Highway traverses lands which are bordered primarily by single-family residences, condominiums, apartment complexes, commercial and retail businesses, public utilities, recreational uses, and agricultural lands.

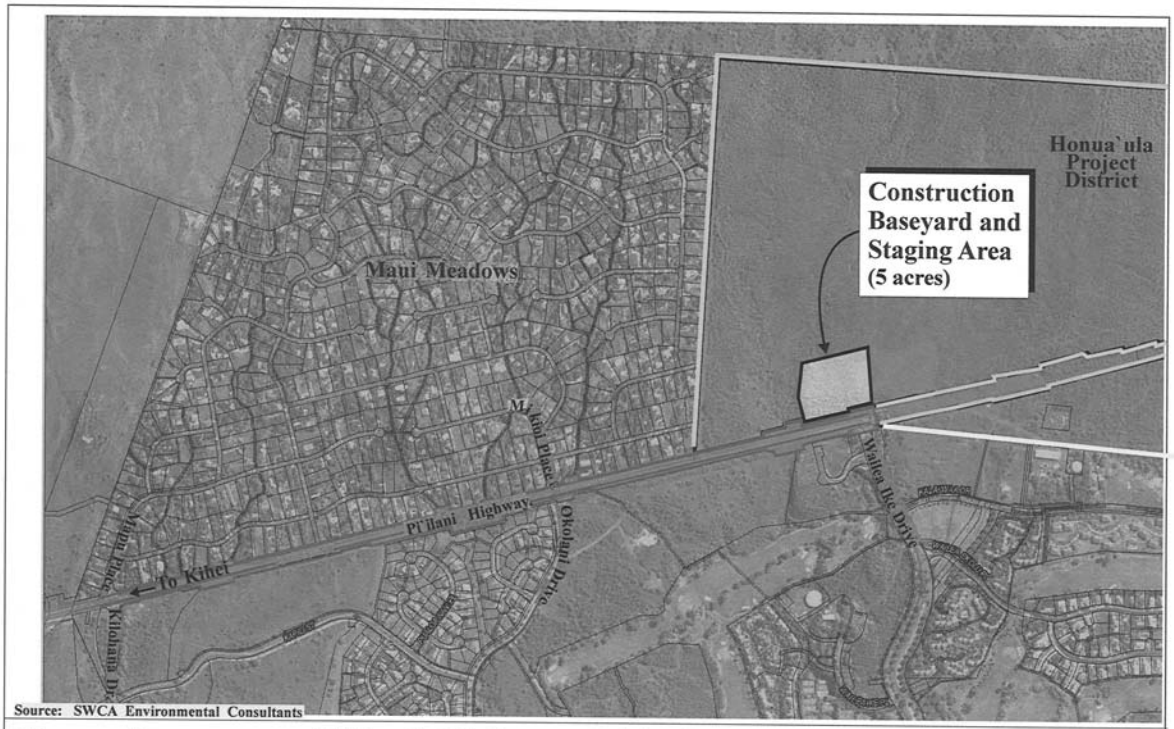
Proposed improvements to Pi`ilani Highway along this corridor will be conducted essentially within the roadway's existing right-of-way (ROW) except for ancillary improvements north of Kilohana Drive and at Wailea Ike Drive, which will occur on lands owned by the County of Maui and at Okolani Street, where a portion of the improvements are on private property. (As used in this document, "corridor" or "project corridor" shall be defined as the existing Pi`ilani Highway right-of-way and as noted on portions of land owned by the County of Maui and by private property owners on Okolani Street from approximately 1,000 ft. north of Kilohana Drive to Wailea Ike Drive.) A portion of the intersection improvements will be located within the right-of-way of the secondary streets.

Pi`ilani Highway and a portion of Kilohana Drive are owned and maintained by the State of Hawaii. Mapu Place, Okolani Drive, Mikioi Place, and Wailea Ike Drive intersecting Pi`ilani Highway, fall under the ownership of the County of Maui.

A temporary construction baseyard and staging area for the project will be located adjacent to the highway ROW on approximately five (5) acres of land owned by Honua`ula Partners LLC located directly across the Wailea Ike Drive intersection with Pi`ilani Highway. See **Figure 3**. Approximately 1.4 acres will be utilized as the construction baseyard containing construction offices and meeting space, equipment storage and repair, storage for construction tools and parking. Approximately 2.8 acres will be used as the construction staging area for bulk material storage, a rock processing and crushing facility and if needed, overflow parking for construction employees. Approximately 0.8 acre will remain as unimproved area or will be used as a temporary stormwater retention for the site. See **Figure 4**.








Source: SWCA Environmental Consultants

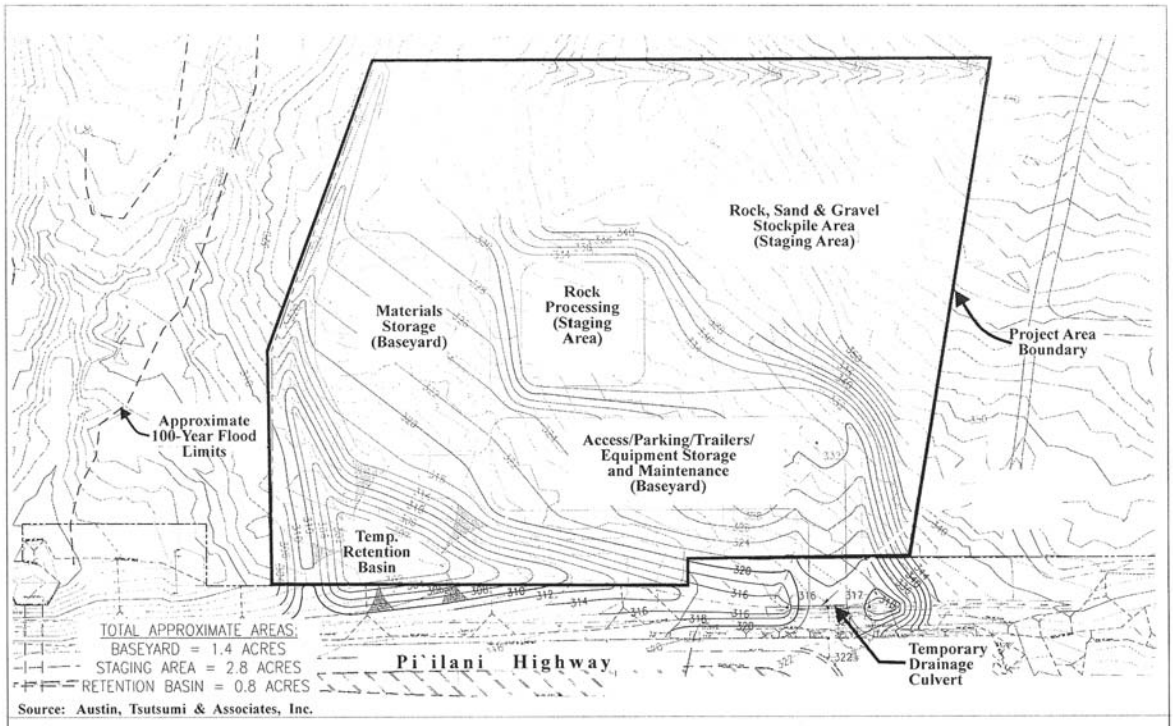
Figure 3 Pi`ilani Highway Widening Project NOT TO SCALE

Temporary Construction Baseyard and Staging Area Location Map

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\PiilaniWidening\FinalEA\Baseyard




Source: Austin, Tsutsumi & Associates, Inc.

Figure 4 Pi`ilani Highway Widening Project NOT TO SCALE

Temporary Construction Baseyard and Staging Area Site Plan

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\PiilaniWidening\FinalEA\TempConstructionBaseyardStagingAreaSitePlan

## C. PROPOSED ACTION

### 1. Project Purpose and Need

The segment of Pi`ilani Highway that is proposed to be improved begins approximately 1,000 ft. to beginning of taper north of Kilohana Drive and terminates in the south at the intersection of Pi`ilani Highway and Wailea Ike Drive, a distance of approximately 1.44 miles. Within this segment of highway, the roadway right-of-way varies from 110 feet to 250 feet. There are three (3) intersections within this segment of Pi`ilani Highway consisting of the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection, Okolani Drive/Mikioi Place/Pi`ilani Highway intersection, and Wailea Ike Drive/Pi`ilani Highway intersection. Only Kilohana Drive is controlled by a traffic signal.

The Pi`ilani Highway is a key component of the regional transportation system and serves two (2) transportation functions. Primarily, it is an arterial roadway for the communities of Kihei, Wailea and Makena providing the main north-south transportation corridor to Central and West Maui. The Pi`ilani Highway is also used increasingly as an intra-community transportation circulator in certain areas, serving short distance trips of less than one (1) mile for the residents of Kihei, Wailea and Makena.

According to the Traffic Impact Analysis Report (presented in **Appendix "I"** of this document), without the Honua`ula project, traffic on Pi`ilani Highway will increase and impact the existing intersections by the Year 2016. As a result of growth and known developments the Kilohana Drive, Mapu Place, Okolani Drive and Mikioi Place intersections with Pi`ilani Highway will operate at an unacceptable Level of Service (LOS F) and over capacity conditions. To mitigate future over capacity conditions, the proposed widening of Pi`ilani Highway is needed for the following reasons:

- To provide an efficient system linkage between Pi`ilani Highway and intersecting roadways in the Wailea area.
- To provide a safer roadway for motorists, bicyclists and pedestrians.
- To increase Pi`ilani Highway, approximately 1,000 feet north of Kilohana Drive from four (4) lanes to two (2) lanes. This is the last segment of the highway to be upgraded to four (4) lanes as identified in State and County transportation plans.
- Due to planned growth in the area, without the improvements the LOS at the intersections will be "F" and over capacity conditions.



Further, the widening of Pi`ilani Highway to four (4) lanes will meet the following HDOT transportation objectives:

- *Achieve transportation goal(s) identified in the approved plans – Hawaii Statewide Transportation Plan, Statewide Land Transportation Plan, and Strategic Highway Safety Plan.*
- *Support land use, economic development, or growth objectives established in applicable Federal, State and County plans.*
- *Serve national defense, national security, or other national objectives, as established in Federal law, plans, or policies.*

The proposed Pi`ilani Highway Widening project will meet the transportation objections of HDOT identified in the following approved plans.

### 1. Hawaii Statewide Transportation Plan, 2002

The Hawaii Statewide Transportation Plan (HSTP) is intended to guide the public, planning professionals, and decision makers as they implement the statewide transportation process to the Year 2025. The statement of goals, objectives, strategies, and examples of implementing actions is a key element of the HSTP. The HSTP is currently being updated by HDOT.

The mission of the HSTP is to provide for the safe, economic, efficient and convenient movement of people and goods. The proposed Pi`ilani Highway Widening project is intended to meet the following goals of the HSTP:

**Goal I:** *Achieve an integrated multi-modal transportation system that provides mobility and accessibility for people and goods.*

**Goal II:** *Ensure the safety and security of the air, land, and water transportation systems.*

**Goal III:** *Protect and enhance Hawaii's unique environment and improve the quality of life.*

**Goal IV:** *Support Hawaii's economic vitality.*

**Goal V:** *Implement a statewide planning process that is comprehensive, cooperative, and continuing.*

2. **Hawaii Statewide Land Transportation Plan**

The HDOT is in the process of developing the Hawaii Statewide Land Transportation Plan (HSLTP) which is intended to provide a basis for making informed land transportation decisions through the year of 2035. As part of the process, the Regional Long Range Land Transportation Plans (RLRLTPs) will be updated for the islands, including Maui/Molokai/Lanai. Goal priorities for each region were set by the Technical Advisory Committee for each island with input from the Stakeholder Advisory Committee and the Citizen Advisory Committee. The proposed Pi`ilani Highway Widening project meets the following goal priorities:

- *Maintain a safe, efficient and complete transportation system for the long term.*
- *Improve the capacity and efficiency of the existing transportation system for long term benefit.*
- *Maintain a safe transportation system for all modes.*

3. **Strategic Highway Safety Plan 2007 Through 2012**

The mission of the Strategic Highway Safety Plan (SHSP) is to reduce the number and severity of traffic-related injuries and death on Hawaii's



roadways. The goal of the SHSP is to reduce the average annual number of deaths from 135 to 100 or fewer within five (5) years. To achieve this goal, the SHSP proposes two (2) of the following goals related to the proposed Pi`ilani Highway Widening project.

- *Safeguarding Pedestrians and Bicyclists.*
- *Building Safer Roadways by Design.*

The proposed Pi`ilani Highway Widening project will improve pedestrian and bicycle safety by providing bike lanes and sidewalks along both sides of the highway corridor as well as improve roadway safety by increasing highway capacity to accommodate future growth by increasing the number of lanes from two (2) lanes to four (4) lanes, providing medians and improving existing intersections.

In summary, the proposed Pi`ilani Highway Widening project is the last segment of improving Pi`ilani Highway to four (4) lanes. As such, the project will improve traffic flow and optimize highway operations in the area to accommodate anticipated growth identified on State and County land use plans as well as to promote economic development. The improvements include medians, turning lanes, deceleration and acceleration lanes, sidewalks and bike lanes along both sides of the highway to promote public safety as well as encourage walking and bicycling as another mode of transportation. The improved roadway will also provide for national defense and security by providing a reliable and safer mode of land transportation for the Kihei-Makena region in times of emergency.

The need to upgrade the Pi`ilani Highway from two (2) lanes to four (4) lanes has also been identified in the following studies:

a. **County of Maui Long-Range Land Transportation Plan**, Final Report, February 1997, published cooperatively by the HDOT, the Maui County Department of Public Works and Waste Management (DPWWM) and the Maui County Department of Planning.

The Maui Long-Range Land Transportation Plan recommended island-wide highway improvements which include improvement No. S6 for Pi`ilani Highway from Mokulele Highway to Wailea and that it be "widen from two to four lanes".

b. **Kihei Traffic Master Plan**, October 1996, published cooperatively by the HDOT, the County of Maui, DPWWM and the County of Maui, Department of Planning.

The Kihei Master Plan included a list of long-range improvements proposed for Kihei. Recommended improvement No. 2 states "Widening of Pi`ilani Highway from two to four lanes from Mokulele Highway to south of Kilohana Drive."

c. **Kihei-Makena Community Plan (1998)**, County of Maui Ordinance No. 2641, Bill No. 5 (1998).

The Kihei-Makena Community Plan Transportation Objectives and Policies state that "Undertake transportation system improvements concurrently with planned growth of the Kihei-Makena region. Require adequate interregional highway capacity; including the widening of Piilani and Mokulele Highways to four lanes, prior to the construction of major projects south of Kilohana Road or mauka of Piilani Highway."

d. **Traffic Study, Wailea 670 Development**, May 2001, and Revised Update Traffic Study for the Honua`ula Development dated June 2005, Parsons Brinckerhoff Quade & Douglas for 670 Wailea Associates, LLC (owners of Wailea 670 property now known as Honua`ula and owned by Honua`ula Partners, LLC).

The traffic studies for Honua`ula identified future improvements to Pi`ilani Highway that would include upgrading the facility to full-standard four-lane configuration and extending the four-lane cross-section to Wailea Ike Drive.

e. **Kihei Traffic Master Plan Study**, September 2003, Parsons Brinckerhoff Quade & Douglas for the County of Maui, DPWWM.

The Kihei Traffic Master Plan Study recommended that the Maximum Pi`ilani Highway Corridor alternative be adopted. In order to achieve this alternative, Pi'ilani Highway in the interim would be widened from two (2) to four (4) lanes. Ultimately Pi`ilani Highway would be widened to six (6) lanes or an alternative parallel roadway would be constructed mauka of Pi`ilani Highway.

f. **Traffic Impact Analysis Report, Wailea Resort, Revised Master Plan-2005**, May 2005, Austin, Tsutsumi & Associates, Inc. for A&B Wailea LLC.



The Wailea Resort Traffic Impact Analysis Report recommended the following widening improvements to Pi`ilani Highway:

- "Widen Pi`ilani Highway to four (4) lanes, two (2) lanes in each direction, from Kilohana Drive to beyond Okolani Drive by Year 2007.

- "Widen Pi`ilani Highway to four (4) lanes, two (2) lanes in each direction, from beyond Okolani Drive to Wailea Ike Drive such that the entire section of Pi`ilani Highway between Kilohana Drive and Wailea Ike Drive is four lanes by Year 2012."

g. **Makena Resort Master Plan Traffic Study**, July 2007, Phillip Rowell and Associates for R. M. Towill Corporation.

The Makena Resort Master Plan Traffic Study assumed by the Year 2017 traffic improvements recommended for the Wailea Resort and Wailea 670 would be in place, such as "Pi`ilani Highway between Kilohana Drive and Wailea Ike Drive has been widened from two to four lanes" and that this widening would be in place by 2012."

## 2. Proposed Improvements

The proposed project will widen Pi`ilani Highway from a two-lane highway to a four-lane highway from approximately 1,000 ft. north of Kilohana Drive/Mapu Place up to its existing terminus at Wailea Ike Drive. Proposed improvements include excavation and embankment work, widening of the road with asphaltic concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention systems, retaining walls, sound attenuation walls, relocation of electrical transmission lines, guard rails, installation of utilities as may be necessary, and adjustments to existing utilities, including as may be necessary the relocation of existing waterlines. Reconstruction of the existing traffic signal at the Kilohana Drive/Mapu Place/Pi'ilani Highway intersection and installation of new traffic signals at Okolani Drive/Mikioi Place/Pi'ilani Highway intersection, as part of the Special Management Area Permit issued to the Kai Malu project in Wailea Resort, and when warranted at Wailea Ike Drive/Pi'ilani Highway/proposed Honua`ula project access road intersection are also proposed. See **Figure 5**.

All plans, specifications and estimates shall be in compliance with HDOT requirements. Work being conducted will be within the existing State ROW and County ROW and lands, except for portions of the Okolani Drive/Pi'ilani Highway intersection which is on private land. Preliminary engineering plans for these improvements are contained in **Appendix "A"**.

A temporary construction baseyard and staging area for the project will be located adjacent to the highway ROW on approximately five (5) acres of land owned by Honua'ula Partners, LLC located directly across the Wailea Ike Drive intersection with Pi'ilani Highway. Refer to **Figure 3**.

Approximately 1.4 acres will be utilized as the temporary construction baseyard containing construction offices and meeting space, equipment storage and repair, storage for construction tools and materials, and construction employee parking. Approximately 2.8 acres will be used as the temporary construction staging area for bulk material storage, a rock processing and crushing facility and if needed overflow parking for construction employees. Approximately 0.8 acre will remain as unimproved area or will be used for a temporary stormwater retention for the site. Refer to **Figure 4**.

The temporary construction baseyard and staging area are located a significant distance south of the Maui Meadows subdivisions and Wailea Resort residential projects. The nearest development is the Wailea Gateway project located makai of the intersection of Pi'ilani Highway and Wailea Ike Drive. To reduce impacts from the construction baseyard and staging area minimal grading is proposed and appropriate Best Management Practices (BMPs) will be implemented in accordance with the requirements of the County of Maui's grading ordinance.

## D. REGULATORY CONTEXT AND CHAPTER 343, HAWAII REVISED STATUTES

The Pi'ilani Highway widening and related improvements will involve the use of State and County lands. As such, the processing of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) will be required. This EA is being prepared pursuant to both HRS, Chapter 343 and Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules. Accordingly, this document (prepared for the approving agency, the HDOT) addresses the project's technical



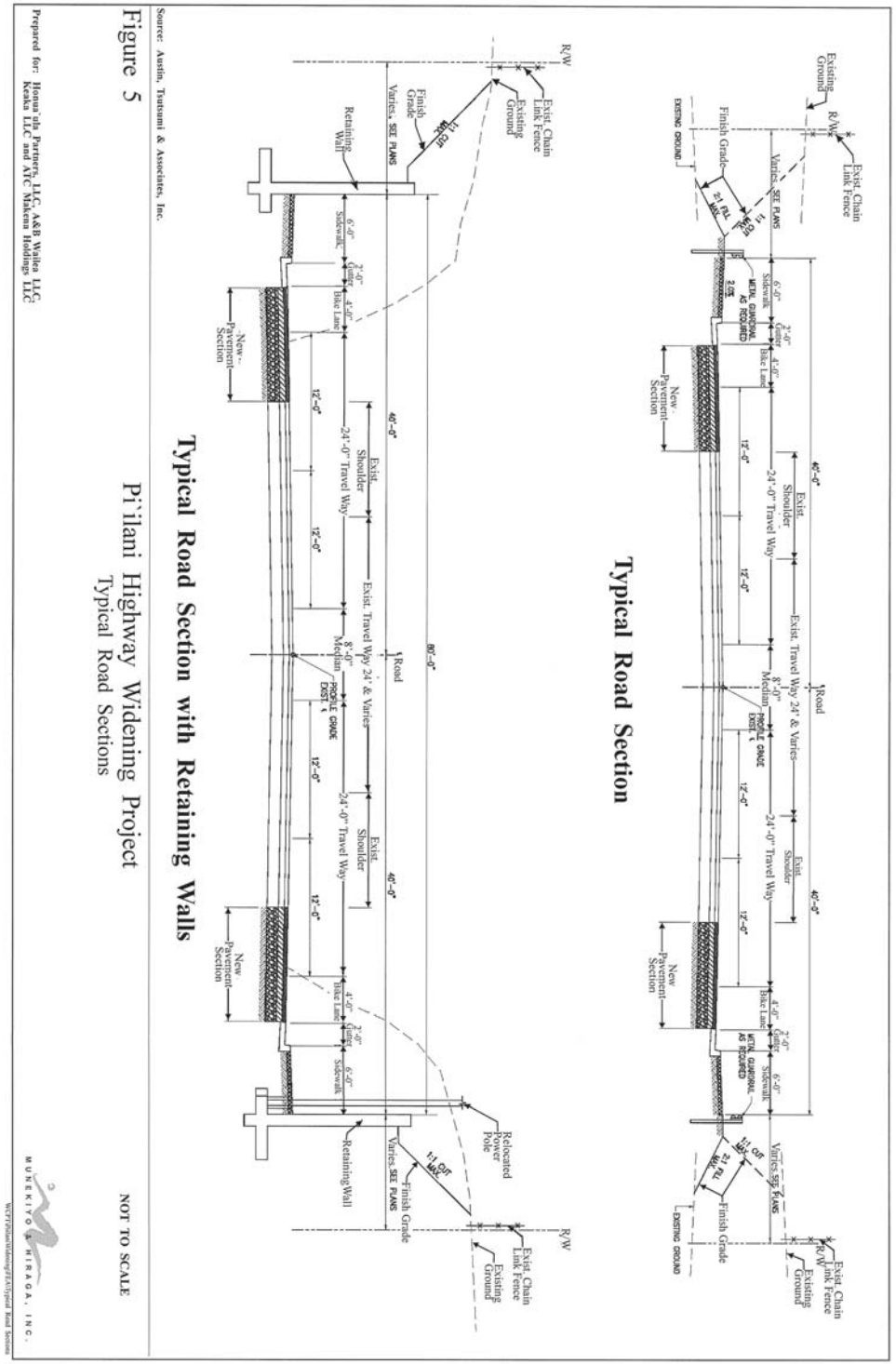



Figure 5

Pi'ilani Highway Widening Project

Typical Road Sections

NOT TO SCALE

Source: Austin, Tsutsumi & Associates, Inc.

Prepared for: Honua'ula Partners, LLC, A&B Wailea, LLC, Kenta, LLC and ATC Makena Holdings LLC

characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the proposed action.

## E. ESTIMATED PROJECT COST AND CONSTRUCTION CONSIDERATIONS

The proposed project will involve the use of State and County lands with design and construction to be undertaken by a collaboration of private sector organizations, namely, Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC. It is estimated the proposed construction of the improvements will cost approximately $26.0 million.

Construction of the project will commence upon receipt of applicable regulatory permits and approvals. The construction duration of the project is estimated to be approximately 18 months.



# II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

# II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

## A. PHYSICAL SETTING

### 1. Surrounding Land Uses

#### a. Existing Conditions

The project corridor is located in the community of Kihei, between 0.5 to 1.0 mile inland from the south Maui shoreline. It runs in a north to south direction for a distance of 1.44 miles commencing at approximately 1,000 ft. north of Kilohana Drive and terminating at Wailea Ike Drive in the south.

The region is known for the resort destinations of Kihei, Wailea and Makena, its magnificent beaches, as well as its residential, retail and commercial developments.

Lands in the region are primarily occupied by single-family residences, condominium and apartment complexes, retail and commercial developments, golf course, public utilities, recreational uses and agricultural lands. Notable uses along the project corridor include the Maui Meadows Subdivisions and the Wailea Resort.

#### b. Potential Impacts and Mitigation Measures

The proposed action is intended to address existing traffic capacity constraints, as well as projected increases in volume along the project corridor anticipated with development of the Honua`ula Project District, and the Wailea and Makena Resorts. Land use patterns along the corridor and beyond are not anticipated to change as a direct result of the proposed action. Land use designations set forth by the Kihei-Makena Community Plan will continue to guide growth and development along the project corridor.



To minimize impacts on the surrounding land uses the preferred alternative is to widen the highway within the existing right-of-way (ROW) and eliminate the need for land acquisition from adjoining properties much of which is developed with single-family dwellings. Also, acquiring more ROW would eliminate any setback between the existing structures and the highway creating more impacts to adjoining residents.

### 2. Climate

#### a. Existing Conditions

The Kihei coast is generally sunny, warm and dry the entire year. The average annual temperatures in Kihei range between the low 60's to the low 90's. June through August are historically the warmer months of the year, while the cooler months are January to March.

Average rainfall distribution in the Kihei-Makena region varies from under ten (10) inches per year to twenty (20) inches per year in the higher elevations. The average rainfall in 2009 was 7.33 inches. Rainfall in the Kihei-Makena region is highly seasonal, with most of the precipitation occurring in the winter months (Source: Maui County Data Book, 2010).

Northeast tradewinds prevail approximately 80 to 85 percent of the time. Winds average ten (10) to fifteen (15) miles per hour during afternoons, with slightly lighter winds during mornings and nights.

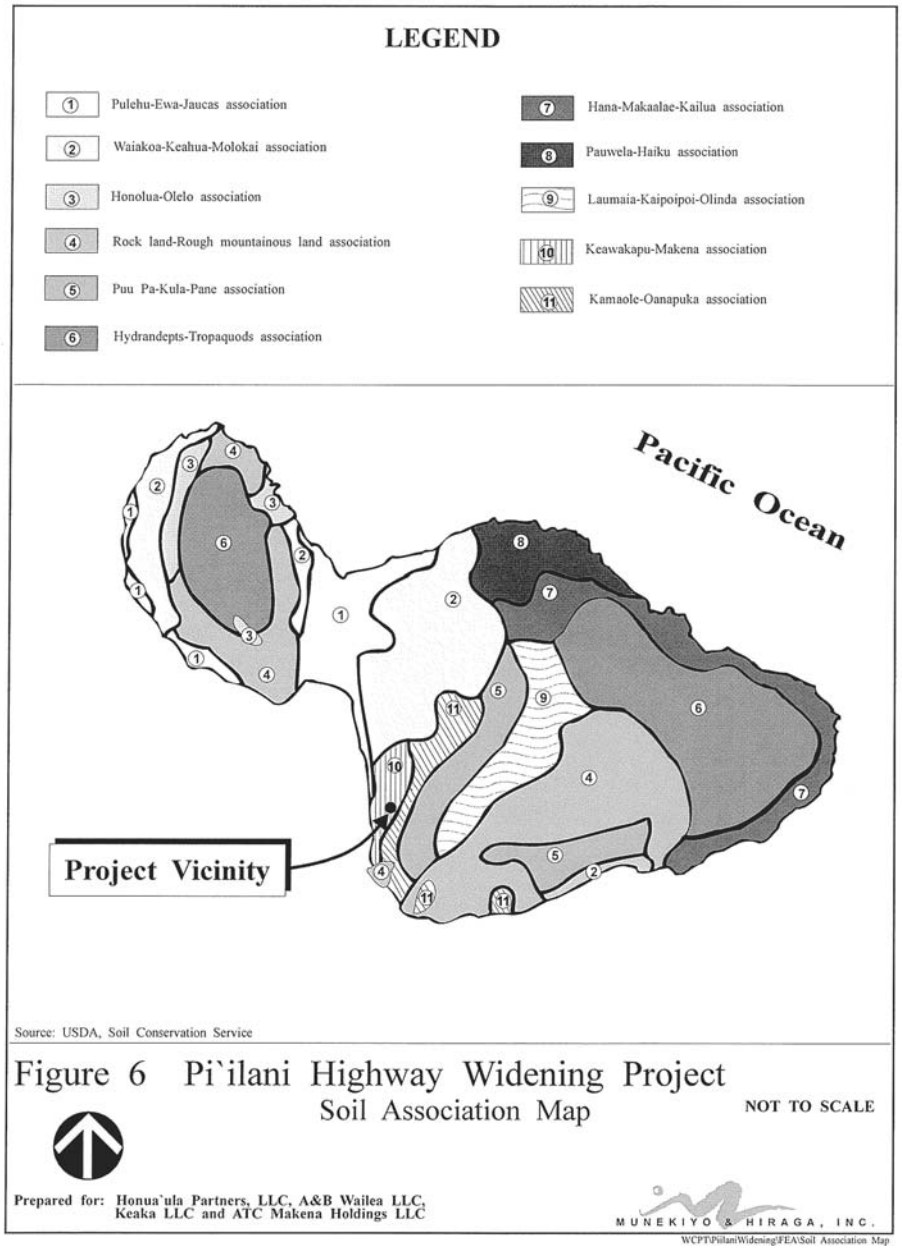
#### b. Potential Impacts and Mitigation Measures

The project involving the upgrade of an existing roadway will not impact local climatic conditions within the Kihei-Makena region.

### 3. Topography and Soils Conditions

#### a. Existing Conditions

Underlying the project corridor and temporary construction baseyard and staging area is the Keawakapu-Makena soil association. See **Figure 6**. The




Source: USDA, Soil Conservation Service

Figure 6 Pi`ilani Highway Widening Project
Soil Association Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Piilani\Widening\FEA\Soil Association Map

soil survey of the islands of Kauai, Oahu, Maui, Molokai and Lana`i, State of Hawaii characterizes the soils of this association as gently sloping to moderately steep and well drained. The underlying material is fine-textured to medium-textured subsoil and ranges in depth from shallow to deep and is comprised of fragmental A`a lava.

The Soil Survey, prepared by the U.S. Soil Conservation Service, identifies the soils in the project corridor as Makena loam, stony complex, 3 to 15 percent slopes (MXC) and Keawakapu exteremely stony silty clay loam, 3 to 25 percent slopes (KNXD). See **Figure 7**.

MXC, is generally found on the lower leeward slopes of Haleakala, between Makena and Kamaole, and consists of Makena loam and stony land. Stony land occurs on the low ridges and makes up to 30 to 60 percent of the complex. Makena loam is a dark brown to dark yellowish brown well drained soil, developed from volcanic ash, and is usually located between the low ridges of stony land. Makena loam is characterized by a relatively high permeability, and a low shrink swell potential. Permeability on stony land is very rapid.

KNXD is generally found on upland areas on the island of Maui. These soils are dark reddish brown in color and were developed in volcanic ash. Keawakapu extremely stony silty clay loam is characterized by moderate permeability, and a low shrink-swell potential.

Highly vesicular basalt with an irregular and spiny surface, referred to as *aa* lava, underlies both soil types at depths of usually less than about five (5) feet. In some areas, outcrops of *aa* lava cover as much as 15 percent of the land.

Pursuant to a visual reconnaissance, the existing roadway appears to be located on both fill and cut areas. The fill and cut areas alternate along the length of the proposed widening. Fill areas appear to consist of the onsite silty clay, mixed with cobbles and boulders. Cut areas generally expose moderately weathered basalt with occasional clinker layers.

b. **Potential Impacts and Mitigation Measures**

According to a geotechnical analysis by Hirata & Associates, Inc., soil excavations related to the proposed improvements can be accomplished using conventional excavating equipment. Excavations into the basalt may require pneumatic equipment, especially for confined excavation such as trenching. As the proposed widening will be located within the existing roadway ROW, extensive excavation work involving removal of significant quantities of basalt is not anticipated. See **Appendix "B"**.

The existing geological conditions may allow the use of construction equipment for rock removal. As an alternative, chemical demolition will be considered, however, blasting may become necessary.

Appropriate measures, such as Best Management Practices (BMPs) to stabilize soils both during and after construction will be included in the construction engineering plans for the project.

4. **Flood and Tsunami Hazards**

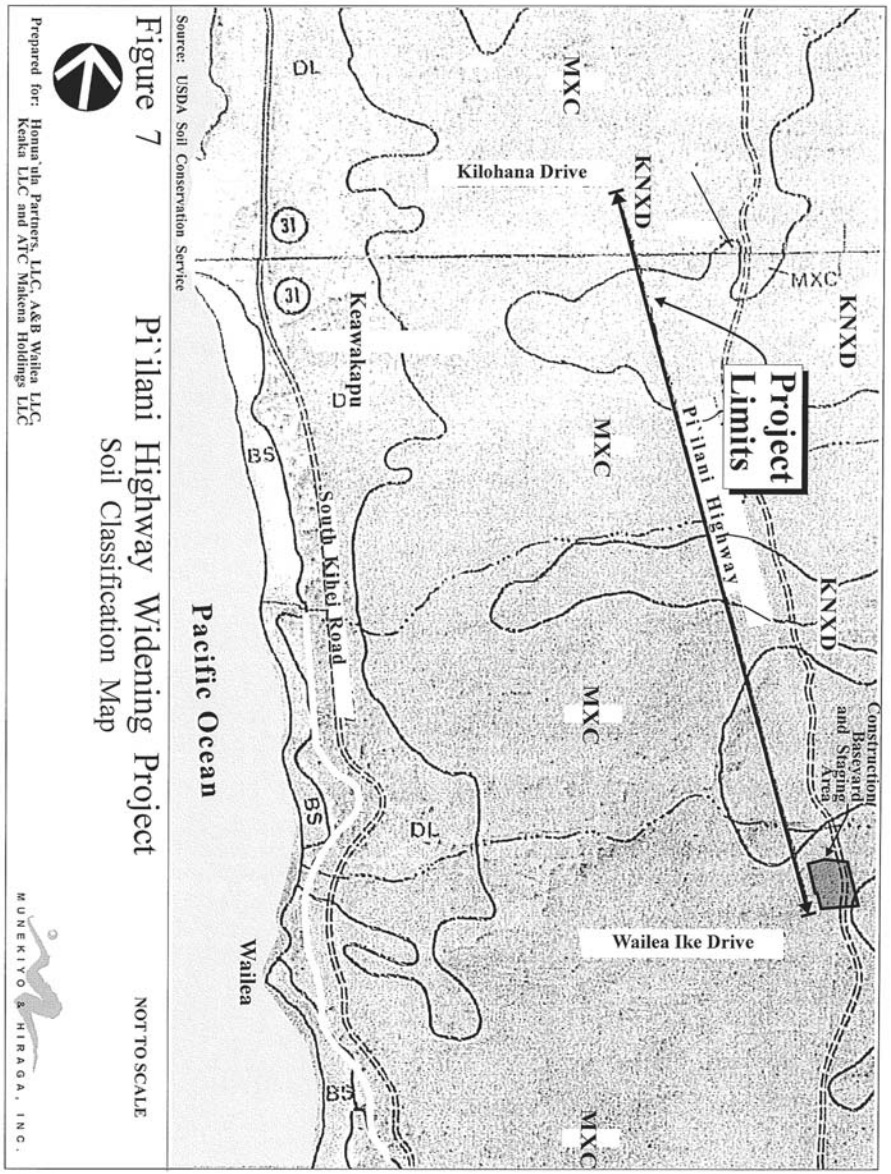
a. **Existing Conditions**

According to the Flood Insurance Rate Maps, the project corridor and temporary construction baseyard and staging area are located in flood zone "X", areas determined to be outside the 0.2 percent annual chance floodplain of minimal flooding. See **Figure 8**. Further, the project corridor is located significantly inland from the shoreline and outside of the tsunami inundation zone.

b. **Potential Impacts and Mitigation Measures**

The project corridor and temporary construction baseyard and staging area are located outside of any flood and tsunami evacuation areas. As such, no impacts on these parameters are anticipated with the project implementation.






Source: USDA Soil Conservation Service

Figure 7 Pi`ilani Highway Widening Project
Soil Classification Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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5. **Flora and Fauna**

a. **Existing Conditions**

(1) **Flora**

A botanical survey was completed for the project corridor in February 2009. See **Appendix "C"**. No federally listed threatened, endangered, or candidate endangered plant species were observed within the project corridor. No rare native plant species were found during the survey along the highway. A total of 88 plant species were recorded of which three (3) species are native. Two (2) indigenous species, *`ilima* (Sida fallax) and *uhaloa* (Waltheria indica), were common along both sides of the highway. The third native species, *milo* (Thespesia populnea), was only found at one (1) location adjacent to a homeowner's backyard.

The vegetation along both sides of the project corridor consists primarily of buffel grass grassland. *Kiawe* (Prosopis juliflora) trees and shrubs of *koa haole* (Luceana leucocephala), *slender mimosa* (Desmanthus pernambucanus) *castor* (Ricinus communis), *fuzzy rattle pod* (Crotolaria incana), *hairy abutilon* (Abutilon grandifolium) and *tree tobacco* (Nicotiana glauca) are also common along the project corridor. *Sow thistle* (Sonchus oleraceus), *golden crown beard* (Verbesina enceloides) and *spurge* (Chamaecyse hirta) are some examples of the common herbaceous plants in the project corridor. *Hairy merremia* (Merremia aegyptia) and *wild bean* (Macroptilium lathyroides) are examples of vines commonly found on both sides of the highway. Compared to the east side, the vegetation along the west side of the highway has a higher diversity of introduced weedy species. Monotypic stands of buffel grass were also found along stretches of the project corridor on the east side of the highway. Evidence of fire damage to vegetation was identified on the west side of Pi`ilani Highway. Refer to **Appendix "C"**.

The temporary construction baseyard and staging area for the project are proposed to be located on the northern portion of the Honua`ula property across the Wailea Ike Drive intersection with Pi`ilani



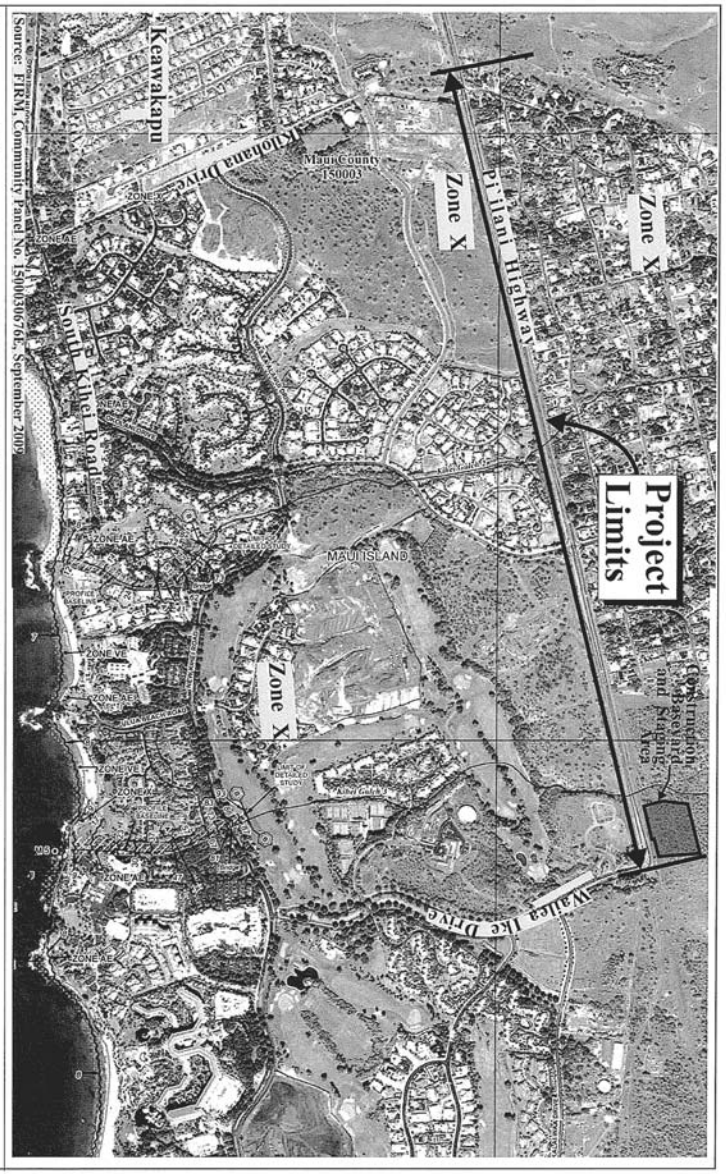


Figure 8 Pi`ilani Highway Widening Project

Flood Insurance Rate Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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Highway. According to the Botanical Survey of Honua`ula (SWCA Environmental Consultants), about 75 percent of the northern portion of the Honua`ula property consists of *kiawe*-buffelgrass grasslands. There is scattered evidence of *kiawe* logging activities in this area. In addition to buffelgrass, guinea grass (*Panicum maximum*), natal redtop (*Rhynchelytrum repens*), and sour grass (*Digitaria insularis*) are also scattered throughout the northern portion of the Honua`ula property. Other plants found in this area include the invasive *koa haole* (*Leucaena leucocephala*), lantana (*Lantana camara*), partridge pea (*Chamaecrista nictitans*) and cow pea (*Macroptilium lathyroides*). The area has been disturbed throughout by numerous jeep trails and unrestricted grazing by axis deer (*Axis axis*). Some open areas that appeared to be heavily grazed were devoid of buffelgrass, but contained the native shrubs *'ilima* and hoary abutilon, and the introduced golden crown beard (*Verbesina encelioides*).

**(2) Fauna**

A Wildlife Survey was completed for the project corridor in March 2009. See **Appendix "D"**. No endangered species of fauna were identified during the survey of the project corridor. Wildlife species present within the project corridor are found commonly throughout Maui and the main Hawaiian Islands.

Non-native tree tobacco (Nicotiana glauca) is present along the ROW. Though not identified during the fauna survey, it is noted that caterpillars of the Blackburn's sphinx moth have been found on tree tobacco plants elsewhere in Kihei and within the adjacent Honua`ula project site (SWCA 2009). Refer to **Appendix "D"**.

The temporary construction baseyard and staging area for the project are proposed to be located on the northern portion of the Honu`aula property. The wildlife survey for Honu`aula (SWCA Environmental Consultants) found evidence of the endangered Blackburn's Sphinx moth (*Manduca blackburni*) as well as sighting of a single Hawaiian hoary bat (*Lasiurus cinereus semotus*) traversing the southern end of the property. *Kiawe* trees, which are abundant on the Honua`ula property, have been documented as roost trees for the Hawaiian hoary



bat, thus, while not observed, it is possible that Hawaiian hoary bats roost within the Honua`ula property.

Further, the endemic *pueo* (*Asio flammeus sandwichensis*) (short-eared owl) was the only native bird species sighted in grassland habitat on the Honua`ula property, but no owl nests were found. Grasslands are likely to provide good foraging and nesting habitat for owls; however, ground nesting increases vulnerability to predation by rats (*Rattus* spp.), cats (*Felis catus*), and the small Indian mongoose (*Herpestes auropunctatus*), all of which are present in the area.

**b. Potential Impacts and Mitigation Measures**

**(1) Flora**

The proposed road widening on Pi`ilani Highway and the temporary construction baseyard and staging area will not have a significant negative impact on the botanical resources in the ROW area north of Kilohana Drive to Wailea Ike Drive and on the Honua`ula property. The majority of the plants observed within these areas are introduced species. The native species found within the project corridor and on the temporary construction baseyard and staging area portion of the Honua`ula property are common throughout Maui and the other islands within the state. The lower species diversity found on the eastern side of the highway ROW may be attributed to recent brushfires in the area.

The biological report prepared by SWCA Environmental Consultants recommended the following mitigation measures for the project:

(a) Non-native tree tobacco (Nicotiana glauca) trees found within the project corridor are host plants for the listed endangered Blackburn sphinx moth (Manduca blackburni). Although evidence of the Blackburn's sphinx moth were not found on the tree tobacco plants during the botanical survey, they have been found elsewhere in Kihei and within the adjacent Honua`ula project site. To help insure against the accidental take of individual sphinx moths, each tree tobacco plant should first be screened by a qualified wildlife biologist prior

to any land clearing. If sphinx moths or signs of sphinx moths (frass, cut stems or leaves, caterpillars, pupae, or adults) are found on any tree, that tree should be marked and protected against disturbance for the duration of the breeding season.

(b) Landscaping following realignment construction should focus on the use of native plant species normally found in coastal dry shrubland habitats. Suitable species may include: *`ilima* (Sida fallax) *`aki`aki* (Sporobolus virginicus), *pohinahina* (Vitex rotundifolia), *`akia* (Wikstroemia uva-ursi), and *mau`u `aki`aki* (Fimbristylus cymosa). Seeds or seedlings for these native plants may be obtained from various native plant nurseries on Maui such as Ho`olawa Farms or Native Nursery LLC.

(c) The use of plants within the *Solenaceae* (nightshade family) for ROW landscaping should be forbidden so as not to attract endangered Blackburn sphinx moths to the highway where they are at higher risk for injury or death. Refer to **Appendix "C"**.

**(2) <u>Fauna</u>**

The U.S. Department of the Interior, Fish and Wildlife Service (USFWS), by letter dated March 9, 2009, commented that the threatened *Newell's shearwater* (Puffinus auricularis newelli) and endangered *Hawaiian petrel* (Pterodroma phaeopygia sandwichensis) are known to traverse the area. Both the *Blackburn's sphinx moth* (Manduca blackburni) and the endangered Hawaiian hoary bat (Lasiurus cinereus semotus) are known to occur near the project corridor. The USFWS indicated the following:

(a) Seabirds may traverse the project corridor at night during the breeding season (February 1 through December 15). Any outdoor lighting, particularly when used during each year's peak fledgling period (September 15 through December 15), could result in seabird disorientation, fallout, and injury or mortality.

(b) Adult Blackburn's sphinx moth feed on nectar from native plants including *beach morning glory* (Ipomoea pees-caprae), *iliee* (Plumbago zeylanica), *maiapilo* (Capparis sandwichiana), and the larvae feed upon non-native tree



tobacco (Nicotiana glauca) and the native (Nothocestrum latifolium). All of these species may occur on the project corridor. It was recommended that a survey of the site for the presence of the moth host plants be undertaken and if found, to contact the USFWS for further assistance. The Botanical Survey completed for the project corridor identified only the non-native tree tobacco. Refer to **Appendix "C"**.

The USFWS cautioned the proposed project is located in a dry area of Maui where wildland fires interdependent with the proposed project, may affect listed upland species. To minimize risks from wildland fires, USFWS recommended coordination with the Maui County Department of Fire and Public Safety Wildland Fire Management specialists.

During construction, every effort will be made to reduce night lighting as much as possible, such as limiting night time construction. During highway operations, lighting shall be installed in accordance with highway standards. Lighting for the project is limited to relocating existing fixtures. No new lights are planned. Every effort shall be made to shield light fixtures as much as practicable.

Prior to construction, if sphinx moths or signs of sphinx moths (frass, cut stems or leaves, caterpillars, pupae, or adults) are found on any tree, that tree shall be marked and as much as practicable protected against disturbance for the duration of the breeding season. Refer to **Appendix "D"**.

Although no endangered animal species were found along the Pi`ilani Highway corridor, evidence of the endangered Blackburn's sphinx moth was found on the Honua`ula property. Evidence included fras cut stems and leaves, and live caterpillars. No adult Blackburn's sphinx moths were observed on the property. To avoid the habitat for the Blackburn's sphinx moth the temporary construction baseyard and staging area are proposed in an area consisting of *kiawe*-buffelgrass grasslands, which are not habitat for the moth.

The Hawaiian hoary bats may infrequently roost in the *kiawe* trees along the highway corridor and within the Honua`ula property.

Although no seabirds nest, feed, or loaf within the highway corridor, they may over fly the area at night. The following mitigation measures will be implemented during construction:

- A qualified wildlife biologist will conduct a survey of the site for bats and other endangered species immediately before construction is scheduled to begin. To minimize impacts to the endangered Hawaiian hoary bat, if it is found that woody plants are being used for bat roosting they shall not be removed or trimmed during the bat birthing and pup rearing season (April to August). After construction, and if landscaping is required, native tree species should be propagated to provide suitable roosting habitat for the Hawaiian hoary bat. This will mitigate for the loss of possible roosting trees during construction.

- Potential impacts to Newell's Shearwater and Hawaiian petrel species will be minimized by avoiding night-time construction during the seabird fledgling season which occurs between September 15 and December 15. This will prevent disorientation, fallout, injury and mortality to seabird fledglings that may be attracted to the lights used during construction at night. All project staff will be provided with information regarding seabird fallout.

- All street lights installed for the project will be shielded so the bulb can only be seen from below. This is a common and successful mitigation measure employed throughout the Hawaiian Islands.

## 6. Air Quality

### a. Existing Conditions

An Air Quality Study dated April 2009 was completed by B. D. Neal & Associates. See **Appendix "E"**. The largest sources of air pollution in the immediate project corridor are most likely agricultural operations and automobile traffic using local roadways. There are no point sources of



airborne emissions in the immediate vicinity of the project corridor. The air quality in the Kihei area is considered good and prevailing tradewinds quickly disperse particulates which are generated from these sources.

### b. Potential Impacts and Mitigation Measures

The proposed improvements to the Pi'ilani Highway will accommodate existing traffic volumes of traffic and anticipated growth in the Kihei-Wailea-Makena area. According to the Air Quality Study, emissions from vehicular traffic would begin to decrease with the proposed improvements. This is due to the reduction in emission factors with time. Refer to **Appendix "E"**.

Short-term impacts on air quality could potentially occur during project construction from fugitive dust resulting from vehicle movement and soil excavation and exhaust emissions from onsite construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project corridor and from the disruption of traffic due to road construction. These emissions are expected to have a negligible impact on regional air quality as the emissions would be relatively small, readily dissipated and temporary.

Adequate fugitive dust control can usually be accomplished through Best Management Practices (BMPs), such as establishment of a frequent watering program, limiting the area disturbed, applying soil stabilizers, mulching, and wind screens. With careful planning and attention to dust control, most potential short-term air quality impacts from project construction can be mitigated.

A dust control plan will be implemented during all construction phases. All construction activities will comply with the provisions of Chapter 11-60.1-33, Hawaii Administrative Rules (HAR) on fugitive dust. Measures to control dust during construction may include:

- Planning phases of construction to minimize the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of least impact;

- Watering active work areas and any temporary unpaved work roads daily;
- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Minimizing dust from shoulders and access roads;
- Providing adequate dust control measures during weekends, after hours and before daily start-up of construction activities;
- Controlling dust from debris being hauled away;
- Using wind screens and/or limiting the area of disturbance at any given time;
- Covering dirt-hauling trucks traveling on roadways;
- Preventing trucks from tracking dirt onto paved roadway by routine road cleaning and/or tire washing;
- Establishing landscaping early in the construction schedule; and
- Monitoring dust at the property boundary during the construction period as a means to evaluate the effectiveness of the dust control program, and adjusting the program if necessary.

During construction all dust control will use non-potable water or effluent, which may be obtained from the Kihei Wastewater Reclamation Facility (WWRF) when available.

Long-term air quality impacts after construction are related to emissions from vehicular traffic. A qualitative assessment of the potential impacts from mobile source air toxics (MSATs) indicated that the project would not result in higher MSAT emissions based on the project itself not affecting the volume of traffic using the project roadway. The improved traffic flow due to the project may actually help to reduce MSAT emissions. With Pi'ilani Highway widened to four (4) lanes in the year 2016, the air quality study indicates that overall emissions from vehicular traffic will decrease with the improvements. According to the Air Quality Study, the project is expected to provide a positive impact on air quality, and mitigation for long-term impacts is not warranted based on the analysis of the project. Refer to **Appendix "E"**.



7. **Noise Characteristics**

a. **Existing Conditions**

An Accoustic Study was completed by Y. Ebisu & Associates on July 2010 and revised on April 2011. See **Appendix "F"**. Existing traffic noise levels along the project corridor currently exceed the U.S. Federal Highway Administration (FHWA) and Hawaii Department of Transportation, Highways Division (HDOT) noise abatement criteria at two (2) residences located north of the Pi`ilani Highway/Okolani Drive/Mikioi Place intersection. The portion of the project corridor most sensitive to noise impacts are existing residences located near the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection. Refer to **Appendix "F"**.

Some existing residences presently benefit from the noise shielding effects of walls which have been constructed along the lot boundary lines, and other residences in the Maui Meadows subdivision on the mauka (east) side of the highway benefit from the noise shielding effect of the large highway cuts. In general, if the visual lines of sight between the residences are blocked by the walls or the highway cuts, the residences will experience lower traffic noise levels due to the sound attenuation effects of the obstructions. Refer to **Appendix "F"**.

b. **Potential Impacts and Mitigation Measures**

Potential short term construction noise impacts are possible during the project construction period along the entire project corridor due to the short distances between the existing dwellings from the anticipated construction corridor. However, minimizing these types of noise impacts is possible using standard curfew periods, properly muffled equipment, administrative controls, and construction barriers as required. Refer to **Appendix "F"**.

During construction, noise impacts will be associated with the operation of heavy construction machinery, paving equipment, material transport vehicles and possible blasting to break or dislodge rock. Proper mitigating measures will be employed to minimize construction-related noise impacts and comply with all Federal and State noise control regulations. Increased noise activity

due to construction will be limited to daytime hours and persist only during the construction period. Noise from construction activities will be short-term and will comply with State Department of Health (DOH) noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit must be obtained from the DOH. Specific permit restrictions for construction activities are:

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

Construction activity is proposed to be limited to week days, Monday through Friday, between the hours of 7:00 a.m. to 3:30 p.m. in compliance with DOH permitting requirements. If off peak, weekend or night work is required by the County of Maui for necessary utility work, measures shall be taken to reduce noise from construction equipment, generators and light spillage onto neighboring properties.

The acoustic study concludes that adverse impacts from construction noise are not expected to affect public health and welfare due to the temporary nature of the work and the administrative controls regulating noise impacts.

The existing geologic conditions may allow the contractor to utilize construction equipment to remove rock. As an alternative to blasting, the use of chemical expansion to break or dislodge rock will be considered. Chemical demolition agents are non-toxic and provide environmentally-friendly, safe, controlled demolition. Expansive powders are mixed with water and poured into pre-drilled holes in the rock. The non-explosive demolition agent swells and exerts significant expansive thrust on the hole-wall. After a certain period, the pressure induced by the chemical non-



explosive demolition agent fractures the wall and splits the rock across the line of the drill holes. These chemicals easily split and fracture mass rock without producing any noise or vibration.

However, blasting may be necessary to fragment and/or dislodge rock during construction. If blasting becomes necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time that blasting will occur. Potential impacts from blasting include airborne noise and ground vibrations. The levels of noise and ground vibrations will be minimized by limiting blasting to five (5) blasts per week and adjusting the charge weights per bore hole (or delays) to relatively small values. These mitigation measures will eliminate any risk of damage to nearby structures. The noise level is expected to be very low, with less than 1.0 percent of the population exposed to this level are expected to be highly annoyed.

Air blasts associated with blasting are concussion type, low frequency vibrations which are of relatively short duration. The low frequency characteristics of air blasts noise tends to induce vibrations in structures and subsequent complaint reactions due to the low resonant frequency of buildings. Although the human ear is less sensitive to low frequency sounds, structures which vibrate can produce secondary audible effects such as rattling sounds and effects which are sensitive to touch. Sound levels at which these secondary effects occur vary with the weight or stiffness of the structure. In general, the beginning point of sound induced vibration may occur at levels as low as 80 linear weighted decibels (dBL). These levels are significantly below the peak levels of 120 to 136 dBL which have been associated with low risk of damage to structures.

The levels of air blasts are anticipated to be well below the structural damage criteria for buildings, so risks of window glass breakage from blasting at the proposed project are considered to be very low. Although the anticipated blasts are estimated to be well below peak levels, complaints resulting from air blasts may occur. The acoustic study conducted additional analyses to estimate the percent of the blast noise levels of 120 dBL, and with no more than five (5) blasts per week, the average noise exposure levels from blasting operations are predicted to be very low, and less than 1.0 percent of the population exposed to this level are expected to be highly annoyed. Risk of

adverse noise impacts from blasting operations of up to five (5) blasts per week which are also controlled to avoid risks of damage to structures are considered to be very low.

Ground vibrations or seismic waves are also generated during blasting operations. Most of the seismic energy remains trapped in the ground, but some energy is released as an over pressure pulse into the air. Limiting the charge weights of the blasts is expected to minimize the energy released into the air and adverse human responses to vibrations. It was concluded that risks of adverse impacts from ground vibrations can be very low, provided sizes of the charge weights per delay are kept at relatively small values in order to minimize risks of damage to nearby structures.

The following mitigation measures from blasting are recommended:

- Regularly monitor air blast and ground vibration levels simultaneously at the closest noise sensitive residence(s) or structure(s) during the blasting operations to develop the data base for the surrounding area.

- For initial blasts, prior to establishment of a data base of ground vibration and air blast levels vs. scaled distance, use the minimum practical charge weight (in equivalent pounds of TNT) per delay, as well as the minimum practical number of bore holes (or delays).

- If practical, reduce maximum air blast levels to less than 110 dBL at the nearest noise sensitive residences in response to air blast complaints. Possible methods of accomplishing this are: reducing charge sizes; increasing bore hole intervals; increasing hole depth; orienting bore holes to direct the gas ejecting the fill (stemming) material from the hole bored for the explosive charge (Stemming Release Pulse) away from noise sensitive properties; trucking in high quality fill material to minimize fill blowouts; and filling (sandbagging) over the area to be blasted and the detonating chord.

- Schedule actual blasting during the warm periods of the day to minimize the possibility of thermal ducting and focusing of air blast noise at large distances from the blast. If possible, also schedule blasting during fixed time periods, so that the members of the community can also schedule their activities accordingly.



- The most conservative vibration criteria for damage to "Ruins and Ancient Monuments" is 0.15 inch per second. Initial test shots should be structured so as to not exceed this limit at the closest structures, with subsequent shots adjusted to reflect the results of the blast monitoring data.

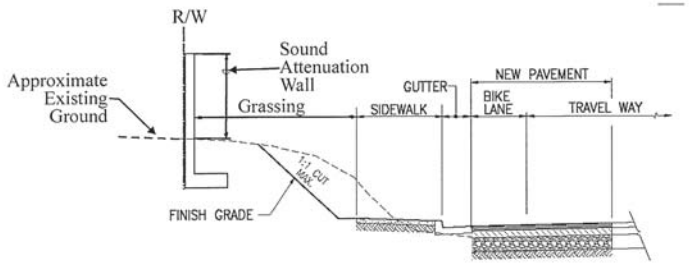
Without the project, the noise abatement criteria will exceed at 13 existing noise sensitive dwelling units which do not benefit from the noise shielding effects of walls or terrain features. Once construction is completed and the highway is in operation, the noise abatement criteria will exceed at 16 residential structures. At the two (2) commercial buildings at the Wailea Gateway Shopping Center, future traffic noise levels will not exceed the noise abatement criteria for commercial structures. There are no public use structures or park lands affected by the proposed project. Traffic mitigation measures in the form of sound walls at affected residences meeting the HDOT traffic noise abatement policy will be constructed. Walls fronting lots at TMK 2-1-015:015, TMK 2-1-015:013, and TMK 2-1-008:112 have a possibility of being considered as reasonable and feasible under the current HDOT traffic noise abatement policy. See **Figure 9**. See **Appendix "F"** and **Appendix "F-1"**.

Due to the potential visual impacts of the noise barriers and the potential for graffiti, design measures will be considered on the roadway side of the barrier, to reduce the visual impact and discourage graffiti. Desired landscaping is not possible due to lack of a nonpotable water source for irrigation. Refer to **Appendix "F"**. In those areas where the walls may exceed six (6) feet in height visible from the adjacent properties additional coordination with the neighboring property owners will be necessary to mitigate visual impacts from the walls.

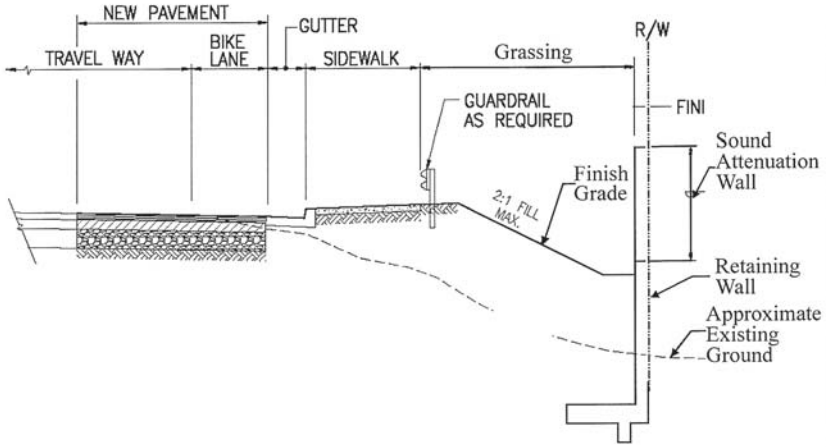
## 8. Scenic and Open Space Resource

### a. Existing Conditions

In proximity to the project corridor, the lands makai (west) of the Pi`ilani Highway are predominantly developed with residential, commercial/retail and public facility uses, and defined by the built up urban landscape of Wailea.




**Cut Section with Sound Attenuation Wall**




**Fill Section with Sound Attenuation Wall**

Source: Austin, Tsutsumi & Associates, Inc.

Figure 9 Pi`ilani Highway Widening Project
Sound Attenuation Wall Sections

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\PilaniWidening\FEA\SoundWalls

The lands mauka (east) of the project and in the northern portion of the project corridor are characterized by the residential single-family subdivision of Maui Meadows. Further south along the project corridor mauka of the Pi`ilani Highway, the adjacent landscape is characterized by the vacant urban lands of Honua`ula, which is at the southern terminus of the proposed highway improvements.

While the project corridor is bordered by residential, commercial and public/quasi-public uses to the west, the Pacific Ocean and the island of Kahoolawe to the south and West Maui coastline may be visible from selected points along the roadway near its southern terminus. In addition, Haleakala, Upcountry, and the West Maui Mountains comprise the other scenic vistas from the project corridor.

**b. Potential Impacts and Mitigation Measures**

The proposed improvements within the project corridor will not impinge upon any significant scenic view corridors or open space resources. Retaining and sound walls associated with the proposed project will be confined within the existing highway ROW.

Sound walls on the makai (west) side of Pi`ilani Highway are limited to the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection and retaining walls due to the higher grades along the makai boundary of the highway corridor. Due to the higher grades on portions of the makai properties, views along the project corridor are limited until the southern terminus at Wailea Ike Drive. Portions of these views will be obstructed with development currently under construction and future development of the vacant parcels.

Along the project corridor, except for the mauka (east) area north of Kilohana Drive, the adjoining properties are located within the Rural and Urban districts and are either developed or planned for future development. Except for Wailea Resort and Honua`ula which includes landscape buffers along the project corridor and existing drainage ways, there are no designated open space resources in the area.

No impacts to scenic and open space resources are anticipated. The proposed project will not create a visual character inconsistent with its present use, nor

with surrounding uses. Where possible, consideration will be given to, (a) aesthetic treatment, such as rock facade consistent with local stone, and (b) breakup long stretches with mass plantings that completely screen wall on the roadway side of walls. Due to visual concerns that adjoining property owners may have, every effort will be made to consult with these property owners prior to the initiation of construction.

## 9. Archaeological Resources

### a. Existing Conditions

The land underlying the project corridor was previously disturbed during the construction of the Pi'ilani Highway. Since work is primarily within the existing right-of-way or previously disturbed lands, an archaeological resources inventory has not been required, by the Department of Land and Natural Resources, State Historic Preservation Division (SHPD). SHPD has concurred that an archaeological monitoring plan will be sufficient. An Archaeological Monitoring Plan will be prepared by Aki Sinoto Consulting for the project. See **Appendix "G"**.

The 5-acre temporary construction baseyard and staging area will be located in the northern quadrant of Honua`ula at the intersection of Pi`ilani Highway and Wailea Ike Drive. The Cultural Resources Preservation Plan for Honua`ula (Aki Sinoto Consulting) indicated the northern quadrant of Honua`ula contained a scarcity of cultural and historic sites while 97.5 percent of the sites were found in the southern one third of Honua`ula. Only one (1) Site 29 (5109) was recorded in the northern two-thirds of Honua`ula. Site 29 (5109) is a small overhang shelter which is recommended for preservation in Honua`ula, and is not close to or adjacent to the temporary construction baseyard and staging area (Aki Sinoto Consulting, March 2010).

### b. Potential Impacts and Mitigation Measures

The proposed action will not create any new disturbances outside the area which has already been cleared and developed. Based on early consultation with the SHPD, an archaeological monitoring plan will be submitted to SHPD for review and approval prior to any ground altering activities. These measures will ensure that proper mitigation and consultation will occur to



protect any undiscovered archaeological and cultural resources which may be encountered during project development.

The temporary construction baseyard and staging area will be located approximately 600 feet north-west of Site 29 (5109) and will not impact any cultural or historic sites in Honua`ula.

## 10. Historic and Cultural Resources

### a. Existing Conditions

A Cultural Impact Assessment was completed by Hana Pono, LLC on April 2009. See **Appendix "H"**. The project corridor is located at the tip of the traditional district of Honua`ula and Southwest district called Kula. For many years, the only way to get to Wailea `Ike and Makena from Kihei was by an ancient walkway starting at the ocean side of Kalama Park. As South Maui continually expanded, the residents found it necessary to find other methods and roadways to reach Makena. Ancient methods of canoeing and coming down from Ulupalakua upon the footpaths continued but walking along the sea coast eventually gave way to horses and ox drawn carts. The path along the shoreline eventually became a dirt road for Model-T cars. The road was covered with sand and oil, as Kupuna Clark cited in his cultural interview, as more developments took place beyond the park.

As Kihei kept growing, it was deemed necessary to build Pi`ilani Highway. With Honua`ula and Makena Resort receiving recent land entitlements, widening this corridor will accommodate projected increases in traffic flow to and from South Maui. Refer to **Appendix "H"**.

### b. Cultural Perspectives

As part of the cultural assessment, three (3) informant (kama`aina) interviews were conducted to gain an understanding of likely cultural practices which occurred in the vicinity of the project corridor. Refer to **Appendix "H"**.

#### (1) Jenavive Monika Kaleilehua Clubb

Jenavive Monika Kaleilehua Clubb was born on Laie, Oahu. Her

maiden name is Ke`aulana. Her ties to Maui is through her mother who was a Mahi and her grandmother Annie Wilcox who was a daughter of William Wilcox who married Princess Maholeokalani. Annie Wilcox owned 80 acres of land in Honu`aula as you come down from Ulupalakua. Ms. Clubb, who has lived in the Maui Meadows area since 1976, recalled that she rode on horseback with Mr. Purdy from Ulupalakua who showed her where the land was located. The land was later sold by her uncle. At the time that she visited the land Kihei, "was nothing, just bald".

Culturally, there were thousands of people living in the area from Pu`u Ōla`i all the way up. According to her grandmother, there were villages from the mountains to the ocean but people had to eventually leave because of the volcano when the lava came down.

According to Ms. Clubb, the word "Makena" has no Hawaiian meaning because Makena was the name of an Irish Captain that owned a ship and the Hawaiian people liked him. She noted that she is not a historian and the Hawaiians related their history by word of mouth and there is nothing on palapala (paper).

Her mother and grandmother talked about Ulupalakua and how they were the gardeners or the ones that had the fruit. They would trade with the fishermen in Makena because Makena was a very progressive fishery. Trade was from the taro patch, the loi's in those days.

Ms Clubb voiced concern that people have developed the area and you cannot travel along the coastline in Makena. There are no public access walkways along the coastline like in the Wailea Resort area. The residential property owners in the area are prohibiting people from crossing the shoreline. Also, culturally, Ms. Clubb felt that the kupuna need to teach the children about their Hawaiian heritage.

**(2) Johanna Kuuleilokelani Shin-Amorin**

Johanna Kuuleilokelani Shin-Amorin was born on Oahu. Her mother



was pure Hawaiian and her father was pure Korean. Her mother's name was Hannah Kahanahaipule Moses. The family's Hawaiian name was changed into an English name for biblical reasons. She has lived on Maui since 1972 when she married a Maui boy, Howard Amorin. Ms. Shin-Amorin has lived in the Maui Meadows area since December 1973. Her children were raised in the area.

Her memories of the area are linked to the use of the beaches. She remembers riding to Makena Point and checking the scenery at La Perouse Bay and walking among the lava fields. She got to enjoy the beautiful scenery of the area.

Ms. Amorin's concern is that there are problems with inadequate infrastructure. Culturally, the public needs access to the beach.

**(3) Eugene C. "Herman" Clark, Sr.**

Eugene C. "Herman" Clark, Sr.'s mother was born on Kaua`i and was of Chinese-Hawaiian ancestry and his father was Sergeant Clark who was part of the Hawaiian National Guards back in 1935. Mr. Clark has lived on Maui since 1935 when his family moved here. He went to school at St. Anthony and Maui Vocational School. He married Margaret Mahi from Iao Valley. He is seventy-seven years old and practices reflexology (healing with your hands) through the Chinese-Hawaiian way.

Mr. Clark has lived in the Kihei region when Kenolio Road was the main road in Kihei. The area was all kiawe and boulders at that time. He remembers when Makena was along the beach side and you traveled along a sand and dirt road to La Perouse Bay. Also, the Kula people would come down the Old Ulupalakua Road near the Chang's house.

Mr. Clark's concern is that there is too much development in the Kihei area.

**c. Potential Impacts and Mitigation Measures**

The proposed highway widening improvements to the Pi`ilani Highway will

occur within the existing right-of-way that traverses lands, which in the prehistoric period were used for trails between the mauka and makai settlements and in the period after 1850 was mainly used for cattle ranching. There are no known archaeological resources which will be adversely impacted by the proposed project.

Based on informant information and the existing land use context, there is no evidence of current or recently occurring cultural practices along the project corridor. The cultural assessment undertaken in conjunction with the proposed Pi`ilani Highway widening resulted in finding no significant cultural concerns or impacts associated with the proposed project.

The Office of Hawaiian Affairs (OHA) commented that they are aware that there are native Hawaiian cultural practitioners requesting protections for access to and identification of cultural, historical and spiritual sites in Honua`ula. OHA recommended consultation with these stakeholders for purposes of clarifying cultural impacts along the project corridor that were potentially overlooked inadvertently.

The Cultural Impact Assessment (CIA) for Honua`ula (Hana Pono LLC), interviewed nine (9) individuals familiar with the Honua`ula District and surrounding areas. These individuals did not raise any concerns specific to Honua`ula or the project corridor. In addition, the CIA made the recommendations that representative existing cultural sites be incorporated into Honua`ula and native plants be kept intact as much as possible to retain the unique identity of the area. The CIA report also recommended that the *ala i ke kai* (pathway to the ocean) and the *ala i ke kula* (pathway to the uplands) be recognized as part of the law decreeing that one should respect Hawaii's gathering rights (passage to fishing at the ocean and streams or gathering native plants in the mountain). However, based on consultation with interviewees, the CIA report concludes that there are no known gathering practices or access concerns within the Honua`ula property (Hana Pono, October 2009).



## B. SOCIO-ECONOMIC ENVIRONMENT

### 1. Regional Land Use and Community Character

From a regional standpoint, the project corridor is in the Kihei-Makena Community Plan region which encompasses the area from Ma`alaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline resources, the visitor-based economy has grown steadily over the past few years. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

It is noted in the updated Kihei-Makena Community Plan (1998) that the community is generally characterized by its friendly, capable and caring residents and is an ethnically diverse community with a strong interest in events or actions which affect the region.

### 2. Population

#### a. Existing Conditions

The population of the County of Maui has exhibited a relatively strong growth in recent years. The resident population increased approximately 20.9 percent in the ten-year span from 2000 to 2010, from 128,094 to 154,834 (2010 Census Data). Growth in the County is expected to continue with the baseline resident population projected to 162,600 by 2015, 174,450 by 2020, and 199,550 by 2030 (Maui County Planning Department, 2006).

The population of the Kihei-Makena region has increased at greater rates than the County as a whole. In the 10-year span from 1990 to 2000, the population of the Kihei-Makena region grew by 49 percent, from 15,365 to 22,870 people and increased approximately 19 percent in the ten-year span from 2000 to 2010 to 27,227 (2010 Census Data). The regional population is projected to grow to 30,597 in 2015, 33,227 in 2020 and 38,757 in 2030 (Maui County Planning Department, 2006).

b. **Potential Impacts and Mitigation Measures**

The proposed action is not anticipated to have significant adverse impacts on population. As an improvement to an existing roadway system there will be no increase in dwelling units that would generate population growth.

Public comments received after the December 1, 2010 community meeting raised concerns that the highway would generate additional population by encouraging development of Honua'ula and Makena Resort. The Pi'ilani Highway widening project will remove an impediment to future developments in the area by providing additional highway capacity. However, the added highway capacity itself does not generate new population centers. New population centers such as Honua'ula are the result of land use decisions of the State Land Use Commission and County of Maui which urbanized the area. To manage population growth the County of Maui is currently reviewing the Draft Maui Island Plan which proposes to establish urban and rural growth boundaries. HDOT's responsibility is to ensure State transportation systems keep pace with growth resulting from these land use decisions.

3. **Economy**

a. **Existing Conditions**

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major resort destination areas. The foundation for the region's visitor strength lies in world-class resorts and recreational facilities located in Wailea and Makena. Support for the visitor industry is found in Kihei, where numerous retail commercial centers are found.

According to data from the State Department of Labor and Industrial Relations, of the 72,700 civilian labor force, 67,400 individuals were employed in Maui County in December 2011. Approximately 5,350 individuals, comprising of 7.3 percent of the labor force, were unemployed in December 2011. Maui island had a civilian labor force of 68,900 individuals of which approximately 4,950 individuals comprising 7.2 percent of the labor force were unemployed in December 2011. The unemployment



rate in December 2011 was 7.3 percent for Maui County and 7.2 percent for Maui island, a decrease in unemployment figures from December 2010 of 0.1 percent, respectively (Department of Labor and Industrial Relations, February 2011).

b. **Potential Impacts and Mitigation Measures**

On a short-term basis, the proposed action will support construction and construction-related employment. Over the long term, the proposed project will provide for the more efficient movement of people and goods throughout the Kihei-Wailea-Makena area and thereby improve business production and operation levels. Equally important, the improvements to the Pi'ilani Highway will provide a key component to the orderly development of the regional transportation network in South Maui.

There were several comments received from the public after the December 1, 2010 community meeting voicing concerns regarding lost rental income and property values. Records of the County of Maui identified a total of six (6) permitted bed and breakfast homes within the Maui Meadows area and one (1) permitted transient vacation rental. There are no other home occupations permitted in Maui Meadows-Wailea Resort. The commercial uses are allowed through a permit with no guarantees that these uses will continue beyond the expiration date set by the County of Maui. During construction there will be temporary nuisances that may affect these home occupations. Appropriate coordination with homeowners and construction mitigation for dust and noise will be implemented to minimize such impacts.

According to the Realtors Association of Maui, within the Maui Meadows area an average of two (2) homes were sold each month in 2011 while in the Wailea/Makena area an average of two (2) to three (3) homes were sold each month during the same period. The average sales prices of these homes were $900,000.00 in Maui Meadows and $4.5 million in Wailea Resort. In response to public concerns regarding property values, a project construction coordinator will be available to respond to questions from residents and realtors representing sellers and buyers. If there are concerns expressed, the project coordinator will communicate those concerns to the construction management team who will be able to provide information as to construction segment duration, as well as mitigation measures proposed for each

construction segment. With proper noticing, communication and a sound program of Best Management Practices, there should not be significant adverse impacts to property sites resulting from the project.

Pi`ilani Highway is an urban principal arterial roadway master planned as an eventual four-lane roadway within the existing right-of-way. The proposed improvement between Kilohana Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui transportation studies conducted over the years and policy statements within the Kihei-Makena Community Plan call for this widening project. During the formulation of the studies and the community plan, the public, which included various homeowners associations and property owners in the area, were kept informed of the proposed widening through public meetings conducted. Further, the community associations and Maui Meadows Neighborhood Association supported the proposed widening. Implementation of these studies and the community plan is not expected to create any long-term impacts on property values. The desirability of the Wailea-Makena area is expected to continue due to the desirable environment and recreational opportunities of the area, such as the golf courses and sandy beaches.

## C. PUBLIC SERVICES

### 1. Police and Fire Protection

#### a. Existing Conditions

The County of Maui's Police Department is headquartered in Wailuku at its Mahalani Street facility. The Maui Police Department (MPD) consists of several patrol, investigative and administrative divisions. The MPD's Kihei Patrol covers the Kihei-Makena region. The department's Kihei Substation is located at the Kihei Town Center northwest of the project corridor. A new Kihei Police Station is proposed mauka of Pi'ilani Highway near Kanani Road.

Fire prevention, suppression and protection services are offered by the County's Department of Fire Control. The department's Kihei Station, which services the Kihei-Makena region is located on South Kihei Road near



Kalama Park, while the Wailea Fire Station is located off of Kilohana Drive, just makai (west) of its intersection with Pi'ilani Highway.

#### b. Potential Impacts and Mitigation Measures

The widening of Pi`ilani Highway to provide an additional travel lane in each direction will be a positive benefit to the service capabilities of police, fire and emergency medical operations by reducing emergency response time in the area.

During project construction, appropriate coordination will be undertaken with emergency services to ensure that response requirements for such services are not adversely impacted due to delays which may be attributed to construction work.

### 2. Medical, Recreational, and Educational Facilities

#### a. Existing Conditions

Maui Memorial Medical Center, the only major medical facility on the island, services the Kihei-Makena region. Acute, general and emergency care services are provided by this facility, which is licensed for 201 beds and is situated in Wailuku, in the vicinity of Mahalani Street and Maui Lani Parkway (Maui Memorial Medical Center, 2010). Privately operated medical/dental offices are located in the Kihei area to serve the region's residents and visitors. There are ambulance stations located in north Kihei, at the former Kihei Elementary School, as well as a temporary station in the Maui Meadows subdivision. In addition, a new ambulance station is proposed adjacent to the Wailea Fire Station site.

Diverse recreational opportunities are available in the Kihei-Makena region. Recreational facilities near the project corridor include Kilohana Park, the Wailea Blue, Gold and Emerald Golf Courses and various beach parks in Wailea Resort. Shoreline recreation includes swimming, fishing, picnicking, snorkeling, and windsurfing.

The 12.9-acre Kilohana Park is located at the corner of Kilohana Drive and Kapili Street west of the project corridor. This park has an athletic field for

soccer, picnic areas, and restrooms.

The Makena resort area to the south offers additional opportunities for golf, tennis and ocean-related activities.

In addition, the County's Kihei Community Center complex located near Lipoa Street, provides a community center, swimming pool, and athletic playfields. There are various other athletic fields and shoreline parks in the Kihei-Makena region. The South Maui Community Park is proposed to be built off of Liloa Drive south of Lokelani Intermediate School.

The State Department of Education (DOE) operates three (3) schools in the Kihei area. Kihei Elementary School and Kamali`i Elementary School cover grades K to 5, with 2010-2011 enrollments of approximately 868 and 634 students, respectively. Lokelani Intermediate School includes grades 6 to 8, with a 2010-2011 enrollment of approximately 565 students. Public school students in grades 9 through 12 attend Maui High School in Kahului with a 2010-2011 enrollment of 1,771. The Kihei Charter School also services the Kihei-Makena region with a 2010-2011 enrollment of 507 (Department of Education, 2010-2011 school year).

**b. Potential Impacts and Mitigation Measures**

The proposed action is not considered a direct population generator, but rather infrastructure services which will provide for an improved regional transportation network. As such, the proposed improvements will not place any new demand on medical, recreational, and educational facilities.

**3. Solid Waste**

**a. Existing Conditions**

Single-family residential solid waste collection service is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews are disposed at the County's Central Maui Landfill located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies. Privately owned facilities, such as the Maui



Demolition and Construction Landfill and the Pohakulepo Concrete Recycling Facility accept solid waste and concrete from demolition and construction activities. These facilities are located about 9 miles to the northwest of the project corridor, near Honoapi`ilani Highway's junctions with North Kihei Road and Kuihelani Highway. A privately operated green waste recycling facility, Maui Earth Compost Company, is situated at Pulehu and Hansen Road, while Eko Compost is operated at the Central Maui Landfill.

**b. Potential Impacts and Mitigation Measures**

Construction waste will not be transported to the County landfill. Instead, alternative sites, such as the Maui Demolition and Construction Landfill and Pohakulepo Concrete Recycling Facility, will be utilized. The proposed action is not anticipated to adversely impact the County's solid waste disposal facilities.

## D. INFRASTRUCTURE

**1. Roadway System**

**a. Existing Conditions**

A Traffic Impact Analysis Report (TIAR) prepared by Austin, Tsutsumi & Associates was completed on July 21, 2009 and revised October 29, 2009. See **Appendix "I"**.

**Pi`ilani Highway (between Mokulele Highway and Kilohana Drive)** - is a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. The highway begins at Mokulele Highway and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway to the south. Pi`ilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Left-turn storage lanes are generally provided at major intersections on Pi`ilani Highway. The posted speed limit on Pi`ilani Highway is generally 40 miles per hour (mph). The speed limit on Pi`ilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment

decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

Pi`ilani Highway is currently classified as an Urban Principal Arterial. The segment of highway under this project scope is currently an existing two-lane asphalt concrete paved roadway with one (1) lane of traffic in each direction.

**Kilohana Drive** - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Pi`ilani Highway, intersecting Pi`ilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. Kilohana Drive is currently a private roadway owned by A&B Wailea LLC from South Kihei Road to Kapili Street and a State roadway from Kapili Street to Pi`ilani Highway. The posted speed limit on Kilohana Drive is 25 mph.

**Mapu Place** - is a two-lane, undivided, east/west County roadway that provides one (1) of two (2) access points from Pi`ilani Highway, across Kilohana Drive, to the Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

**Okolani Drive** - is a four-lane, divided, east/west County collector roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided roadway east of Wailea Alanui Drive to its intersection with Pi`ilani Highway directly across of Mikioi Street. The posted speed limit on Okolani Drive is 30 mph.

**Mikioi Place** - is a two-lane, undivided, east/west roadway owned by the County of Maui that provides one (1) of two (2) access points from Pi`ilani Highway, across Okolani Drive, to the Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

**Wailea Ike Drive** - is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Pi`ilani Highway at its eastern terminus. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Pi`ilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph. Refer to **Appendix "I"**.



**b. Potential Impacts and Mitigation Measures**

The Pi`ilani Highway Widening project is recommended in the long range transportation plans of the HDOT and County of Maui as identified in the following studies:

- County of Maui Long-Range Land Transportation Plan, February 1997;
- Kihei Traffic Master Plan, October 1996;
- Kihei-Makena Community Plan (1998); and
- Kihei Traffic Master Plan Study, September 2003.

To analyze the traffic impacts in the area, a traffic growth rate (percentage by which traffic will grow over a period of time) was determined utilizing the Maui Travel Demand Forecasting Model (Model). Since Honua`ula, Wailea Resort and Makena Resort are the main projects proposed in the Wailea-Makena area, data from the Model was adjusted to project growth excluding these projects. The result from the Model was a defacto traffic growth rate of 0.5 percent per year which is consistent with the annual rate of change used in the 2030 Maui County General Plan Update. A defacto traffic growth rate of 4.0 percent for Year 2016 (completion year of Honua`ula Phase I) and 7.2 percent for Year 2022 (full build out year for Honua`ula) were applied to existing traffic volumes.

Traffic projections were formulated by applying the defacto growth rate and trips generated by known developments distributed to the roadway network based on distribution obtained from the Model. Without the Honua`ula project, the TIAR determined that by Year 2016 the study intersections, with the exception of Pi`ilani Highway/Wailea Ike Drive, will operate at Level of Service (LOS) F and over capacity conditions as a result of growth and known developments and that the Pi`ilani Highway Widening is required.

The proposed widening of Pi`ilani Highway north of Kilohana Drive to its terminus at Wailea Ike Drive, is required as a condition in the change in zoning approval for both Honua`ula and Makena Resort. The design and construction of the highway widening will be shared by Honua`ula Partners,

LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC. The proposed road improvements will widen Pi`ilani Highway from approximately 45 feet to 80 feet by adding 12-foot wide travel lanes, 4-foot wide bike lanes, concrete curb, gutter and 6-foot wide sidewalk to both sides of the highway. An 8-foot wide striped median is also proposed. Refer to **Figure 5**.

During the Draft EA consultation period several public comments received requested deletion of the sidewalks and median strip from the highway improvements. However, to meet Federal Highway Administration (FHWA) and HDOT standards for urban principal arterial roadways, sidewalks, medians and bikeways are required to be incorporated into the plans.

The early consultation comments of the Police Department, HDOT, and Maui Meadows Neighborhood Association expressed concerns regarding construction impacts to traffic circulation in the project corridor and adjoining streets. Concerns include detouring of traffic and/or temporary closure of Pi`ilani Highway and potential impacts on neighboring residential streets, especially in the Maui Meadows and Wailea Resort neighborhoods, due to detours and road closures. Similar concerns were also expressed by the public during the comment period on the Draft EA. In response, during construction, at least two (2) lanes will remain open in the highway corridor. In the event there is a temporary closure due to an emergency, traffic detours will be coordinated with the Police Department.

To minimize impacts from construction traffic, the contractor proposes to establish a five (5) acre construction baseyard and staging area in Honua`ula near the southern terminus of the highway at its intersection with Wailea Ike Drive. The baseyard and staging area will be used for construction activities including offices and meeting space, the storage of construction materials, equipment, vehicles and a rock processing and crushing facility. Further, waste material consisting of rocks and soil will be disposed of at this 5-acre site eliminating the transportation of waste material to a disposal site outside of the Kihei-Wailea region.

A construction Transportation Management Plan will be implemented to reduce construction employee traffic traveling to and from the job site.



Parking for construction employees will also be made available at the construction baseyard eliminating employees parking along the residential streets in the area. A transportation coordinator will be hired to address any problems associated with construction and employee traffic. More details of the Transportation Management Plan are available in the following Section C.

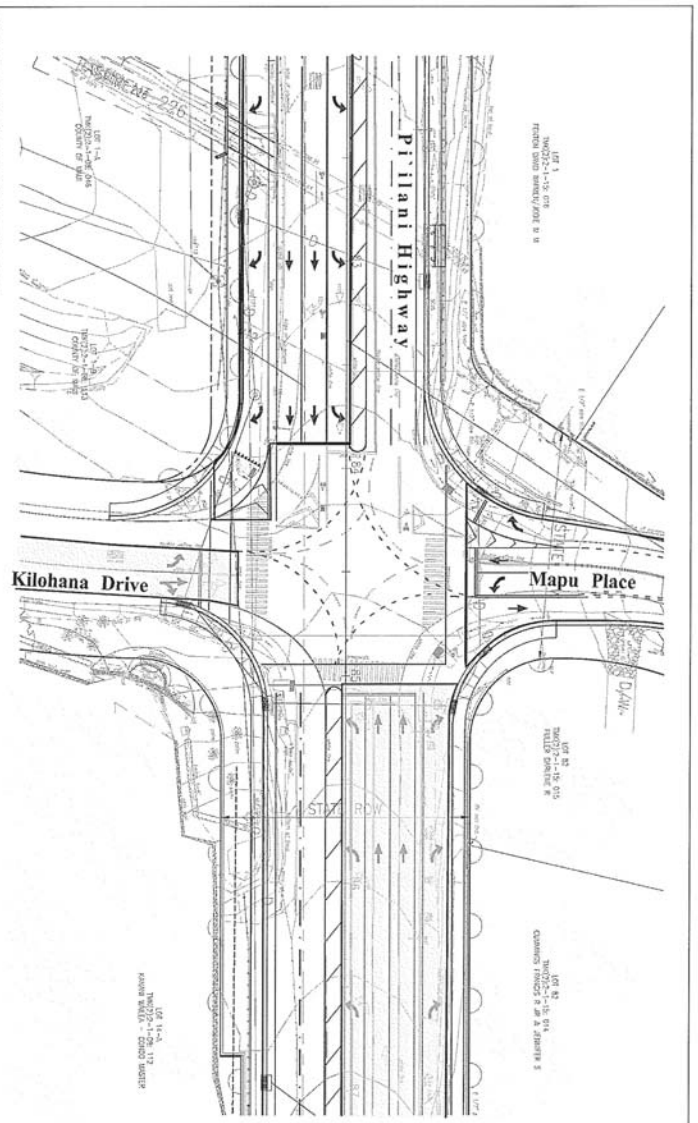
The TIAR evaluated the potential projects to be developed at Honua`ula, Wailea Resort and Makena Resort within the year 2022 timeframe. The TIAR recommended the following lane configurations with the widening of Pi`ilani Highway at the study intersections:

**Pi`ilani Highway/Kilohana Drive/Mapu Place**

- Northbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two (2) exclusive through lanes, and an exclusive right-turn lane. See **Figure 10**.
- Southbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two (2) exclusive through lanes, and an exclusive right-turn lane. Refer to **Figure 10**.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase). Refer to **Figure 10**.
- Westbound Approach: Provide a shared left-turn/through lane and an exclusive right-turn lane (with a permissive signal phase). Refer to **Figure 10**.

**Pi`ilani Highway/Okolani Drive/Mikioi Place**

The Pi`ilani Highway/Okolani Drive/Mikioi Street intersection will be signalized consistent with the Special Management Area (SMA) condition of the Kai Malu project in the Wailea Resort. The following improvements are proposed in conjunction with the installation of the traffic signal by Year 2016:




Source: Austin, Tsutsumi & Associates, Inc.

Figure 10 Pi`ilani Highway Widening Project

Pi`ilani Highway/Kilohana Drive/Mapu Place Intersection

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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WCPT\Pi'ilani\Widening\FEA\KilohanaMapuPi'ilani

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and a shared through/right-turn lane. See **Figure 11**.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase). Refer to **Figure 11**.
- Westbound Approach: Remain as a shared left turn/through/right-turn lane (with a permissive signal phase). Refer to **Figure 11**.

**Pi`ilani Highway/Wailea Ike Drive**

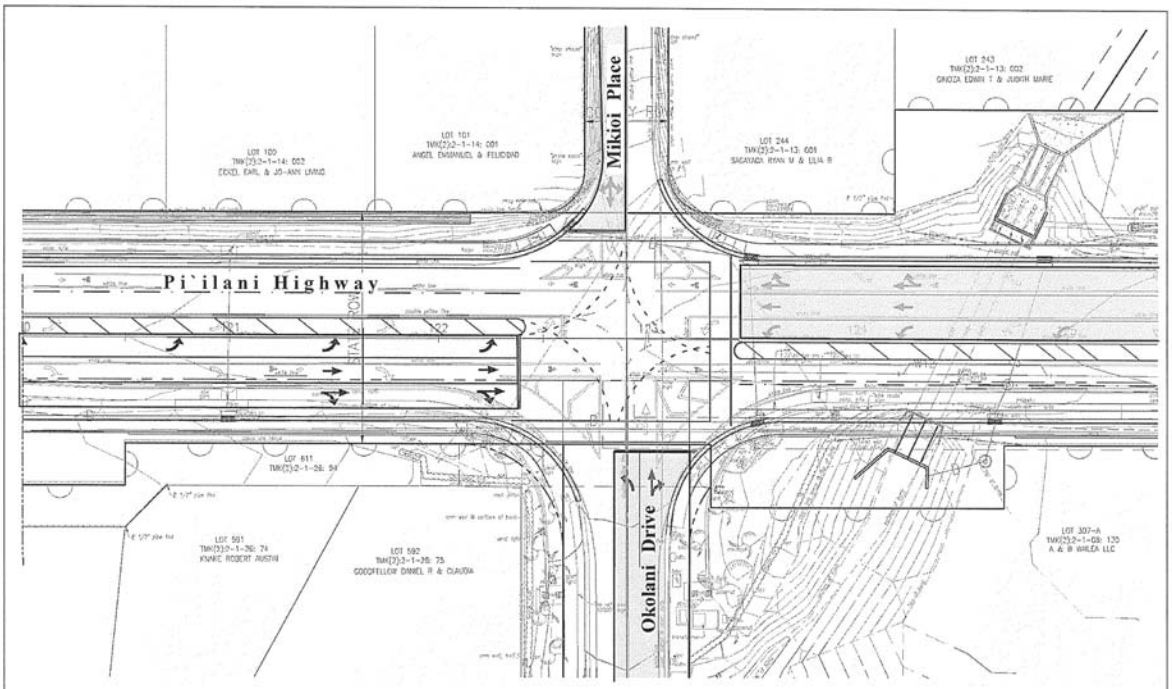
Without implementation of Honua`ula, intersection controls will not be required and the following lane configuration is recommended:

- Southbound Approach: Provide an exclusive free right-turn lane. See **Figure 12**.
- Eastbound Approach: Provide an exclusive free left-turn lane. Refer to **Figure 12**.

Should Honua`ula be constructed, the following improvements by Honua`ula will become necessary:

By Year 2016 or when access to Phase I of Honua`ula is constructed:

- With projected traffic volumes, the intersection will warrant a traffic signal.
- Southbound Approach: Provide an exclusive left-turn lane and an exclusive right-turn lane. Provide the Pi'ilani Highway southbound right-turn as a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive. See **Figure 13**.
- Eastbound Approach: Provide two (2) exclusive left-turn lanes (with a protected left-turn signal phase) and an exclusive through lane. Refer to **Figure 13**.
- Westbound Approach: Provide an exclusive through lane, and an exclusive right-turn lane. Refer to **Figure 13**.




Source: Austin, Tsutsumi & Associates, Inc.

Figure 11 — Pi`ilani Highway Widening Project — NOT TO SCALE

Pi`ilani Highway/Okolani Drive/Mikioi Place Intersection

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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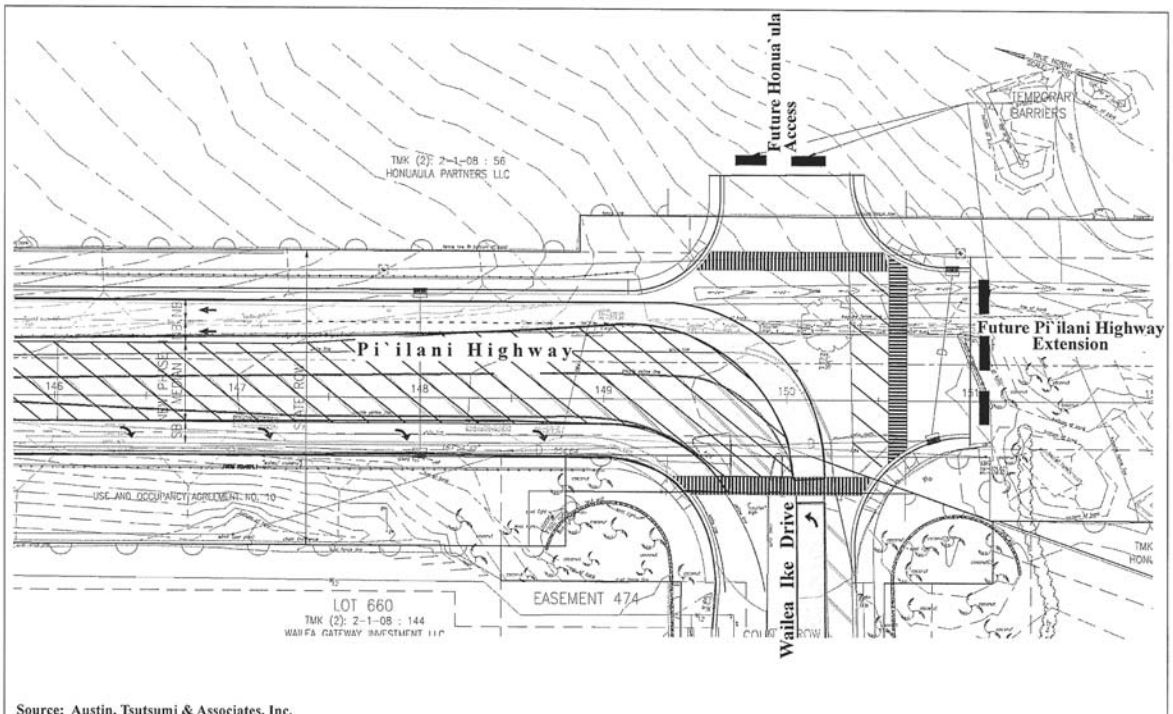


Source: Austin, Tsutsumi & Associates, Inc.

Figure 12 — Pi`ilani Highway Widening Project — NOT TO SCALE

Pi`ilani Highway/Wailea Ike Drive Intersection - Phase 1

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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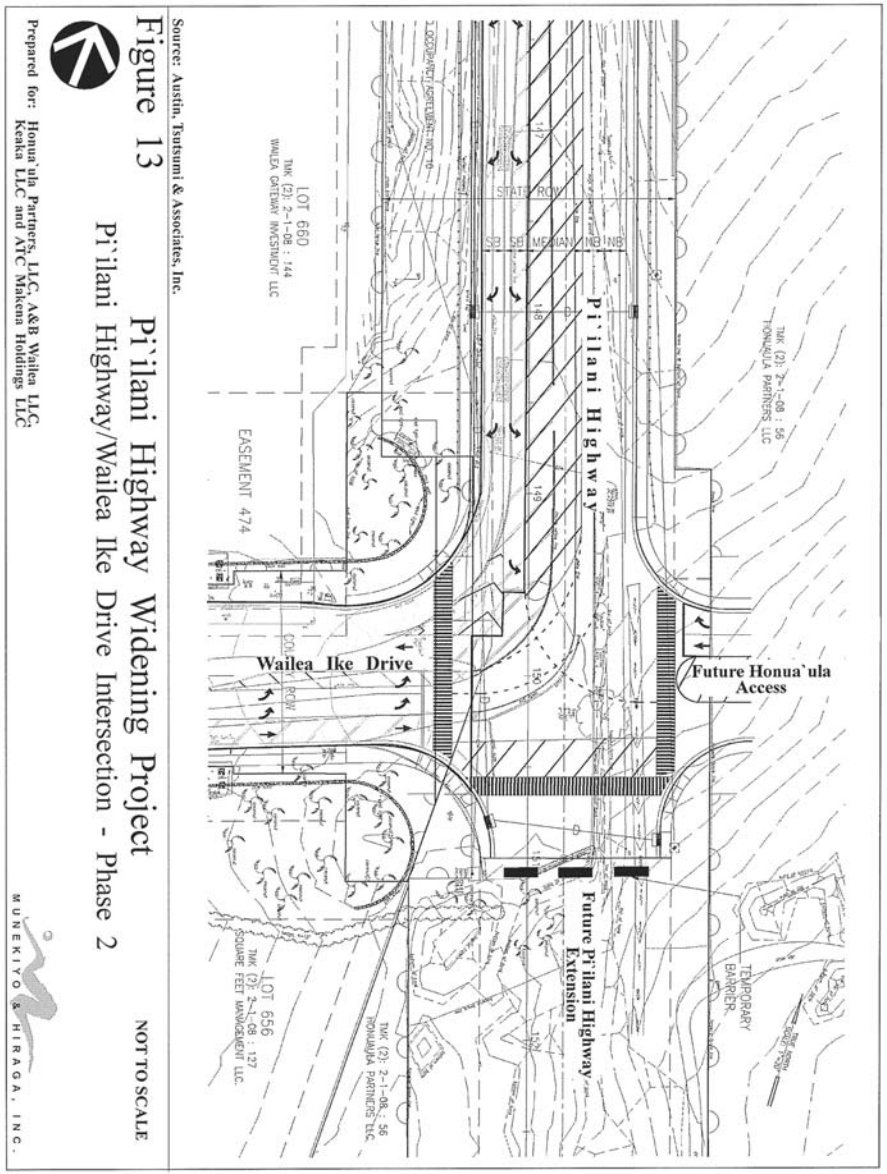
By Year 2022 or when Pi`ilani Highway is extended into Honua`ula:

- Northbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two (2) exclusive through lanes, and an exclusive right-turn lane. See **Figure 14**.
- Southbound Approaches: Provide two (2) exclusive left-turn lanes (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane. Also, it is recommended that the Pi`ilani Highway southbound right-turn be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive. Refer to **Figure 14**.
- Eastbound Approach: Provide two (2) exclusive left-turn lanes (with a protected left-turn signal phase) and a shared through/right-turn lane. Refer to **Figure 14**.
- Westbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane. Refer to **Figure 14**.

Public comments received after the December 1, 2010 community meeting stated the Pi`ilani Highway Widening project should be reviewed in context with the proposed extension of Pi`ilani Highway into Honua`ula. Although the land for the future extension of Pi`ilani Highway is owned by the State of Hawaii, said extension is not being actively pursued by HDOT.

Originally, the extension of Pi`ilani Highway was proposed as a future connection to Upcountry Maui . However since this proposal, the Kihei-Upcountry Connector Road has been re-evaluated in the Maui Long Range Land Transportation Plan. The connection to Upcountry Maui is now being proposed between Kaonoulu Street and Haleakala Highway. This connector roadway is also identified in the draft Maui Island Plan under review by the County of Maui while the previous extension of Pi`ilani Highway has been deleted from the proposed transportation plan. In 2006 design work on the Kihei-Upcountry Road was initiated (Maui News, December 22, 2006).






Source: Austin, Tsutsumi & Associates, Inc.

Figure 13 Pi`ilani Highway Widening Project

Pi`ilani Highway/Wailea Ike Drive Intersection - Phase 2

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

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c. **Construction Transportation Management Plan**

The construction Transportation Management Plan (TMP) was approved by HDOT for Honua`ula. In order to mitigate construction-related traffic impacts, the recommendations on construction traffic of the approved TMP will be implemented during the construction of the Pi`ilani Highway widening project .

Specific transportation management strategies to reduce construction worker-related traffic include:

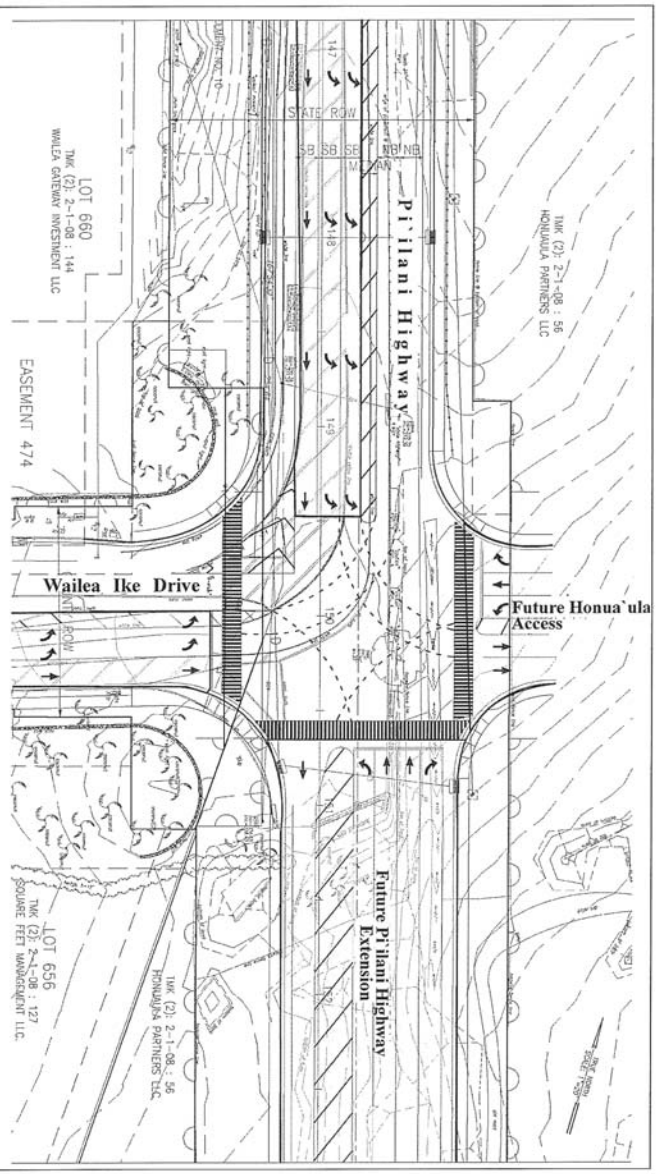
- **Transportation Coordinator** – The transportation coordinator will: (1) coordinate with contractors, administrators, employees, officials and the general public to implement transportation management initiatives and programs; (2) coordinate with construction managers and workers to ensure employee work shifts occur during off-peak hours to reduce the impacts to the AM and PM peak traffic hours; and (3) monitor surrounding residential areas to ensure construction workers are not parking in these areas;

- **Off-Peak Arrivals/Departures** – Work days are recommended to be scheduled so workers avoid traveling during peak hours of the day;

- **Ridesharing/Carpooling/Vanpooling Programs** – Ridesharing, carpooling and vanpooling will be encouraged through incentives such as reimbursements of costs for those who provide a rideshare vehicle, preferential parking in the designated employee parking lot for those who provide a rideshare vehicle, and other incentives;

- **Park-and-Ride Facilities** – To facilitate ridesharing/carpooling/vanpooling, park-and-ride facilities will be located outside of the construction work zone. Currently, there are existing park-and-ride facilities in Kahului along Pu'unene Avenue near Kuihelani Highway and in the Ma'alaea area along North Kihei Road near Honoapi`ilani Highway. Construction workers will be encouraged to park their personal vehicles at the park-and-ride lots and either carpool, vanpool or use a shuttle to enter the project site;






Source: Austin, Tsutsumi & Associates, Inc.

Figure 14 Pi`ilani Highway Widening Project

Pi`ilani Highway/Wailea Ike Drive Intersection - Phase 3

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Kcaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPTP\PilaniWidening\FinalEA\Phase3

- **Guaranteed Ride Home Program** – A guaranteed ride home program will be established to ensure that workers who do not drive to work have a way to get home in case of emergency, an unexpected situation, personal sickness, sickness of a family member, or if the worker must stay late to work unscheduled overtime;

- **Employee Parking** – The designated construction worker parking area will be managed and regulated to promote ridesharing by limiting the number of employee parking spaces and requiring parking passes to regulate vehicles permitted to park in the parking lot; and

- **Emergency Evacuation Plan** – Develop a plan to be implemented during regional emergencies requiring mass evacuations such as a fire or tsunami evacuation.

Specific transportation management strategies to reduce traffic congestion caused by delivery trucks arriving and leaving the construction site and construction improvements include:

- **Consolidating Deliveries** – Whenever possible, construction materials, fuel, supplies and equipment will be consolidated and delivered to the site during off-peak hours. Deliveries required during peak hours will be arranged and monitored by the transportation coordinator, so that proper coordination, planning and regulation of truck flows can be made prior to the delivery;

- **Reduce Traffic Delays and Reduction in Flow** – Lane or road closures will occur during off-peak hours, unless closures during peak hours are necessary for public safety reasons. All lane or road closures will be conducted in accordance with HDOT regulations;

- **Public Information and Outreach** – The transportation coordinator will implement a public information and outreach program that will include:

  - Publicizing construction schedules, roadway use, alternative routes, and alternative modes of transportation via a website or written notices;
  - Notifying motorists of lane or road closures to give them time to plan ahead and use different routes;
  - Establishing a "hotline" for inquiries, construction activities, and complaints;
  - Conducting regular information meetings with surrounding neighborhoods;
  - Coordinating delivery schedules and roadway construction schedules with other projects in the area;
  - Coordinating with unions and construction companies;
  - Consider a quarterly newsletter for the public during the construction period.



**2. Bike Route System**

**a. Existing Condition**

The existing ten (10) foot shoulder along the outer edges of the existing Pi`ilani Highway roadway provides for a bicycle route from North Kihei Road to Wailea Ike Drive in the south, a distance of approximately seven (7) miles. This route is part of a Kihei-Wailea bike route system initiative started by the County in 1991 and designed to circumscribe Kihei by connecting with South Kihei Road and to provide cyclists safe access to Honoapi`ilani Highway via North Kihei Road. This bike route is also part of the HDOT's Bike Plan Master Plan.

**b. Potential Impacts and Mitigation Measures**

The widening of the Pi`ilani Highway to create two (2) additional lanes will include construction of a dedicated bike lane on the makai (west) side of the right-of-way and a shared shoulder/bike lane on the mauka (east) side which will provide safe access for bicyclists.

3. **Water System**

a. **Existing Conditions**

A Preliminary Engineering Report (PER) was completed by Austin, Tsutsumi Associates on June 1, 2009. The Kihei-Makena region is served by the Central Maui Water System. The Central Maui Water System is served by the Iao Aquifer which includes the Mokuhau wells located in Wailuku. See **Appendix "J"**.

Two (2) segments of waterlines are located within the project corridor. The first segment is an existing 12-inch cast iron waterline which crosses Pi`ilani Highway north of Kilohana Drive/Mapu Place intersection. The second 12-inch waterline crosses Pi`ilani Highway south of Okolani Drive/Mikioi Place and branches off in the southerly direction within Wailea Resort. Refer to **Appendix "J"**.

b. **Potential Impacts and Mitigation Measures**

Two (2) segments of existing waterlines within the project corridor will need to be relocated as part of the widening work. A portion of the existing 12-inch cast iron waterline north of Kilohana Drive, which provides service to the Maui Meadows Subdivision, will need to be relocated to allow installation of the proposed drain lines. A portion of the existing 12-inch waterline south of Okolani Drive will also need to be relocated to allow installation of the proposed drainline and drain manholes. Refer to **Appendix "J"**.

4. **Wastewater System**

a. **Existing Conditions**

The service area for the County's Kihei Wastewater Reclamation System extends from North Kihei to Wailea. The system consists of a number of pump stations and force mains which convey wastewater through the County's transmission lines. The combined flows are transported to the Kihei Wastewater Reclamation Facility, which is located adjacent to the Elleair Golf Course. The existing design capacity of the Kihei Wastewater Reclamation Facility is 8.0 million gallons per day (MGD). Refer to



**Appendix "J"**.

b. **Potential Impacts and Mitigation Measures**

The proposed improvements are not expected to adversely impact the wastewater collection system and associated infrastructure.

If necessary, relocation or adjustment to wastewater system improvements will be coordinated with the Department of Environmental Management. Refer to **Appendix "J"**.

5. **Drainage**

a. **Existing Conditions**

A revised Preliminary Engineering Report (PER) evaluated the existing and future drainage for the project. Refer to **Appendix "J"**. According to the PER, the Kihei watershed is on the western slope of Mount Haleakala on a curved band that extends from North Kihei to approximately eight (8) miles to the south in Wailea. The mountain slopes in this watershed are drained by 32 gulches, ravines, and gullies. There are well defined watercourses which flow in a westerly direction traversing Pi`ilani Highway at various points.

There are nine (9) existing culvert crossings spanning the section of Pi`ilani Highway within the project corridor. The culverts were designed based on a 50-year, 1-hour storm recurrence interval in accordance with HDOT Design Criteria for Highway Drainage dated May 15, 2006. Existing culvert capacity and drainage calculations for the existing Pi`ilani Highway are based on a drainage report titled "Hydrology Report for Pi`ilani Highway" (1977), prepared by Trans-Meridian Engineers & Surveyors, Inc. for the HDOT Highways Division. Currently, the roadway drainage systems consist of concrete swales, curb/gutter, catch basins/grated drain inlets and 24-inch diameter drain pipes at certain segments of the highway, primarily in the vicinity of the three (3) affected intersections. These systems drain to the existing culverts and then to the gulches. No retention systems currently exist within the project corridor. Offsite flows are currently intercepted by a concrete drainage ditch located along the eastern boundary of the project corridor and are conveyed to the existing culverts. New hydrologic

calculations of existing flows within the project limits were calculated to be approximately 65.2 cubic feet per second (cfs) based on a 25-year, 1-hour storm recurrence interval in accordance with HDOT Design Criteria for Highway Drainage (2006). Refer to **Appendix "J"**.

A PER was prepared by ATA for the proposed temporary construction baseyard and staging area dated July 13, 2011. See **Appendix "J-1"**. According to the PER, existing runoff for the five (5) acre construction baseyard and staging area is calculated to be approximately 4.5 cfs based on a 50-year recurrence interval.

The 100-year headwater at the existing culvert on the mauka side of Pi`ilani Highway is calculated to pond to an elevation of 301.7 feet and below the roadway flood elevation of 307 feet.

**b. Potential Impacts and Mitigation Measures**

The project will require excavation and embankment in order to widen the existing highway. These areas will be graded to maintain the existing highway grades and south to north drainage pattern. Retaining walls will be required in order to attain the proposed roadway grades.

Offsite runoff mauka of the project corridor will be intercepted by concrete trapezoidal ditches located within the mauka boundary of the project corridor, in the same manner as the existing concrete interceptor ditches. The offsite runoff will be conveyed into the existing culverts using the same drainage routing concept as existing conditions.

The proposed widening improvements will increase the impervious surfaces by approximately 5.8 acres, thus increasing the post-development runoff rates from approximately 65.2 cfs (existing) to approximately 76.8 cfs (proposed), a difference of 11.6 cfs.

Proposed onsite drainage system improvements will include grated drain inlets, catch basins, manholes, underground drainlines, surface retention basins and subsurface retention systems, and extension of existing culverts and construction of new inlet and outlet structures to accommodate the widened road section. To retain increased runoff from the project, four (4)



retention basins are proposed on the makai side of Pi`ilani Highway. The first retention basin is located north of Kilohana Drive (near station 77); the second retention basin is located south of Kilohana Drive (near station 94); the third retention basin is located south of Kupulau Drive (near station 114) and a fourth retention basin located north of Okolani Drive (near station 117). The revised PER eliminated a mauka retention basin located within Honua`ula. Near the southern terminus, a fifth retention basin is proposed at station 143 within the ROW on the mauka side of the highway. The five (5) retention basins will be located entirely within the existing ROW and no drainage improvements for the roadway widening are proposed within Honua`ula.

The 11.6 cfs increase in runoff will be retained via the surface retention systems in accordance with HDOT Storm Water Permanent Best Management Practices Manual (2007). Coordination with the U.S. Army Corp of Engineers, Department of Health and Department of Land and Natural Resources will be undertaken during the planning and design of the project to address applicable additional permitting requirements for the culvert modification work.

The PER for the temporary construction baseyard and staging area calculated post-development runoff from the site as approximately 20.5 cfs based on a 50-year recurrence interval, an increase of 16 cfs over existing conditions. The increase in runoff is due to hardening of the site surface areas with gravel roads, gravel parking, rock crushing operations, office trailers, and equipment storage. Refer to **Appendix "J-1"**.

The increase in runoff at the construction baseyard and staging area will be mitigated by storage of stormwater in a temporary on-site retention basin that will be sized to handle existing and post-development stormwater flows from the site. The flow in the gulch will be temporarily slightly reduced due to the proposed net reduction in on-site runoff, however, the flow will be negligible in relation to the existing flow in the gulch.

To accommodate the 100-year storm in which stormwater is calculated to pond to an elevation of 301.7 feet, a freeboard level of 1-foot will be provided above this level and thus no site improvements will be installed

below 302.7 feet. Site work at the construction baseyard and staging area will not contain any disturbance within the 100-year flood limits for the upper gulch drainageway.

In addition to controlling peak flow rates, the temporary stormwater retention basin will capture pollutants, such as sediments, and allow the water to infiltrate over time.

In addition to reducing peak flow rates, the proposed stormwater system will reduce the discharge of pollutants to the maximum extent practicable in accordance with the HDOT Storm Water Permanent Best Management Practices Manual (2007).

HDOT Design Criteria for Highway Drainage (2006) and HDOT Storm Water Permanent Best Management Practices Manual (2007) requires retention of the increase in storm water runoff between the post-development flows and pre-development flows and retention of the water quality design volume. The project storm water management plan and drainage system will be designed to meet these standards. As noted in the PER water quality treatment will be provided via mechanical filtration systems in accordance with the HDOT Storm Water Permanent Best Management Practices (BMPs) Manual (2007). Structural BMPs may include catch basin inserts, water quality inserts, oil/grit separators and hydrodynamic devices.

A National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activities will be obtained and the requirements of the approved NPDES permit and BMPs plan will be adhered to during construction. In addition to silt fences, diversion berms, gravel egress, truck wash down areas and dust screens, the construction BMPs will include recommendations of the HDOT Storm Water Permanent Best Management Practices Manual (2007), such as providing soil stabilization, as follows:



a. Preservation of Existing Vegetation – identification of existing vegetation to remain which can provide erosion and sedimentation control.

b. Permanent Seed and Planting of ground cover.

c. Mulching – application of loose bulk material to stabilize disturbed soil by protecting bare soil, increasing infiltration, and reducing runoff.

d. Geotextiles, Mats and Erosion Control Blankets – natural or synthetic mats may be used for temporary or permanent stabilization.

e. Vegetated Buffer Strips and Channels – protect soil from erosion, increase infiltration and remove sediment from surface runoff.

Monitoring of the BMPs during construction will be by the contractor with oversight by HDOT or their designated representative. Also, a grading permit which includes requirements for BMPs will be obtained for the project. Periodic inspections from the County of Maui will ensure compliance with the BMPs of the grading permit. Refer to **Appendix "J"**.

## 6. Electrical, Telephone and Cable Television Systems

### a. Existing Conditions

Electrical, telephone, and cable television (CATV) services in the Kihei-Wailea-Makena area are provided by Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable, respectively. Refer to **Appendix "J"**.

### b. Potential Impacts and Mitigation Measures

Relocation of poles, utility boxes and transmission lines will be a necessary component of the project. This work will be coordinated with Maui Electric Company, Hawaiian Telcom and Oceanic Time Warner Cable, as necessary. The proposed project is not anticipated to adversely impact electric, telephone, and CATV services. Refer to **Appendix "J"**.

## E. CUMULATIVE AND SECONDARY IMPACTS

### 1. Cumulative Impacts

Pursuant to Section 11-200-2 of the HAR, Chapter 200, entitled Environmental Impact Statement Rules, a cumulative impact means:

> *The impact on the environment which results from the incremental impact of the 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 key element in understanding the requirement for assessing cumulative impacts, therefore, is the need to recognize what constitutes "reasonable foreseeable actions." Projects having relevance in this regard are future roadway improvements in the Kihei-Makena Community Plan region proposed in the next five (5) years by the State of Hawaii and County of Maui that may increase regional roadway capacity in order for government to plan for necessary infrastructure in pace with anticipated growth. The State of Hawaii Transportation Improvement Program (STIP) programs state-wide roadway improvements. In the current 2011-2014 Fiscal Years the STIP does not identify any roadway improvements within the Kihei-Makena region. The County of Maui in its Six-Year Capital Improvement Program (FY 2012-2016) for the Kihei region identified two (2) roadway improvements; (1) North-South Collector Road and (2) South Kihei Road Improvement.

The North-South Collector Road (aka Liloa Drive) was intended to provide a parallel alternate route between Pi`ilani Highway and South Kihei Road. A portion of this roadway has been constructed between Waipuilani and Halekuai Streets with a portion of the roadway under construction south of Halekuai Street toward Welakahao Street in conjunction with the construction of the South Maui Community Park. Although the North-South Collector Road has provided limited local roadway capacity in its present form, it does not provide the regional roadway capacity as an alternative to Pi`ilani Highway and South Kihei Road. Also, the South Kihei Road improvements have been revised by the County of Maui to maintain the existing two-lanes of traffic and will not increase roadway capacity. As such, collectively with foreseeable roadway improvements the proposed Pi`ilani Highway widening will not incrementally create impacts that will have significant cumulative impacts.



It is noted that although the State of Hawaii owns a portion of the ROW originally planned as a future extension of Pi`ilani Highway to the Upcountry area of Maui Island, this extension is no longer part of the HDOT's future plans for expansion of its highway system. The new Upcountry roadway is proposed between Haleakala Highway and Kaonoulu Street as identified in the Regional Transportation Network Map of the Draft Maui Island Plan (MIP). In this regard, the Pi`ilani Highway extension has been deleted from the Regional Transportation Network Map of the draft MIP. See **Appendix "M"**. As such, the extension of Pi`ilani Highway was not included as a "reasonable foreseeable action" in the evaluation of cumulative impacts.

The draft MIP currently under review by the Maui County Council proposes a new mauka highway and transit corridor from North Kihei Road near Kealia Pond to Kilohana Drive to increase roadway capacity as well as provide an alternative mode of transportation for the Kihei-Makena region in order to accommodate the future traffic needs of the region to year 2030. Refer to **Appendix "M"**. Implementation of these transportation recommendations is in the distant future and cannot be evaluated as a reasonable foreseeable future action.

### 2. Secondary Impacts

Secondary impacts are those which have the potential to occur later in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of the project. The secondary impacts associated with the proposed action relate to the removal of an impediment to the future implementation of land uses for Honua`ula, Makena Resort, and Wailea Resort. Such impacts relate to infrastructure requirements, as well as public service and environmental elements which may be affected by new development in these areas. The traffic study for the Pi`ilani Highway Widening accommodated the potential traffic from future development within Honua`ula, Makena Resort and Wailea Resort for the years 2016 and 2022. In 2016 access to Phase 1 of Honua`ula is anticipated to be constructed while by year 2022 extension of Pi`ilani Highway into Honua`ula is projected.

The removal of the transportation impediment to development will allow approximately 50 percent of Honua`ula or 575 onsite units at a rate of 100 market units per year to be developed before additional traffic improvements are required in accordance with the conditional change in zoning adopted by Ordinance No. 3554.

See **Appendix "N"**. For Makena Resort the widening of Pi`ilani Highway affects the portion of the resort subject to the conditional change in zoning adopted by Ordinance No. 3613 which allows for 800 dwelling units. See **Appendix "N-1"**.

Although Wailea Resort does not have a zoning condition requiring participation in the Pi`ilani Highway widening it is required to participate in its pro-rata share of regional transportation improvements such as the widening project due to conditions imposed on Special Management Area (SMA) permits granted to developments within the resort. Development within the Wailea Resort will continue at the pace set by the developer and potential impacts of future developments will be reviewed on a case by case basis in the context of SMA permit applications.

The construction of the highway improvements will allow partial development of Honua`ula and Makena Resort, which may be viewed as a secondary impact consideration. Although environmental impacts associated with the total development of Honua`ula and Makena Resort were evaluated through a comprehensive review by the Maui County Council (Council), Honua`ula is undergoing a detailed review of environmental impacts through the ongoing Environmental Impact Statement (EIS) process. The Draft EIS for Honua`ula was published in the Environmental Notice on April 23, 2010. Makena Resort currently does not trigger compliance requirements with Hawaii Revised Statutes (HRS) Chapter 343. Regardless, the conditions imposed by the Council via Ordinance No. 3554 (refer to **Appendix "N")** and Ordinance No. 3613 (refer to **Appendix "N-1"**) are designed to mitigate environmental impacts associated with these developments, as follows:



**Table 1**. Environmental Impacts Associated with Honua`ula and Makena Resort

| Impacts | Honua`ula Mitigation (Ordinance No. 3554) | Makena Resort Mitigation (Ordinance No. 3613) |
|---|---|---|
| Environment | Conditions 18, 20 (water quality) and 30 | Conditions 19 and 20 (water quality) |
| Archaeology/ Cultural | Condition 13 and 26 (preservation/mitigation plan) | Conditions 17 and 18 (preservation/mitigation plan) |
| Flora | Condition 27 (Native Plant Preservation Area) | Condition 38 |
| Fauna | Conditions 7, 9 and 21 | Condition 7 (lighting) |
| Infrastructure | Conditions 4 and 19 | ---- |
| Water | Conditions 1, 14, and 15 | Conditions 26 and 27 |
| Sewer | Conditions 16 and 17 | ---- |
| Roadways | Conditions 2, 3, and 28 | Conditions 10,11, 12, 13, 14, and 15 |
| Drainage | Condition 6 | ---- |
| Public Services | Condition 19 | ---- |
| Schools | Condition 22 | Condition 9 |
| Fire/Police | Condition 24 | Condition 43 |
| Parks/Golf Course | Conditions 10, 11, and 12 | Conditions 31, 32, 33, 34, 35, and 36 |
| Civil Defense | Condition 23 | Condition 16 |

To ensure compliance with the conditions of zoning, the owners of Honua`ula and Makena Resort are required to file annual compliance reports with the Maui County Council (Council). Since the adoption of Ordinances No. 3554 and 3613, the owners have filed annual compliance reports which have been accepted by the Council. The 2011 compliance reports for Makena Resort were filed with the Council on January 21, 2011 and accepted by the Council on March 4, 2011. The 2011compliance report for Honua`ula was filed with the Council on May 10, 2011, and accepted by the Council on July 1, 2011.

Each project, Honua`ula, Makena Resort, and Wailea Resort, however, is master planned and will be implemented in a phased and orderly fashion which ensures concurrent development of infrastructure and service systems, including the proposed Pi`ilani Highway widening project. Conditions of zoning, as well as conditions of

Special Management Area (SMA) Permit approvals for those actions falling within the SMA, support the notion that applicable mitigation measures must be addressed prior to or concurrent with each phase of project development. In this regard, there are no secondary, unmitigated impacts anticipated with the Pi`ilani Highway Widening project which are considered adverse in the context of regulatory and statutory requirements, and common practice mitigation measures.



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

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

## A. STATE LAND USE DISTRICTS

Chapter 205, Revised Statutes, relating to the Land Use Commission, establishes the four (4) major Land Use Districts in which all lands in the State are placed. The Districts are classified "Urban", "Rural", "Agricultural", and "Conservation". The project corridor traverses lands located along the "Urban", "Agricultural" and "Rural" districts. The construction baseyard and staging area is a temporary use to be located in Honua`ula which is in the State Urban District. See **Figure 15**. Public roadways are permissible within these districts.

## B. STATE PLAN

Chapter 226, HRS, also known as the 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 objectives and policies which contribute to the implementation rationale for the proposed project include the following:

**Sec. 226-14 Objective and policies for facility systems - in general.**

Objective (a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

Policy (b) (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

**Sec. 226-17 Objectives and policies for facility systems - transportation.**

Policy (b) (2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives.



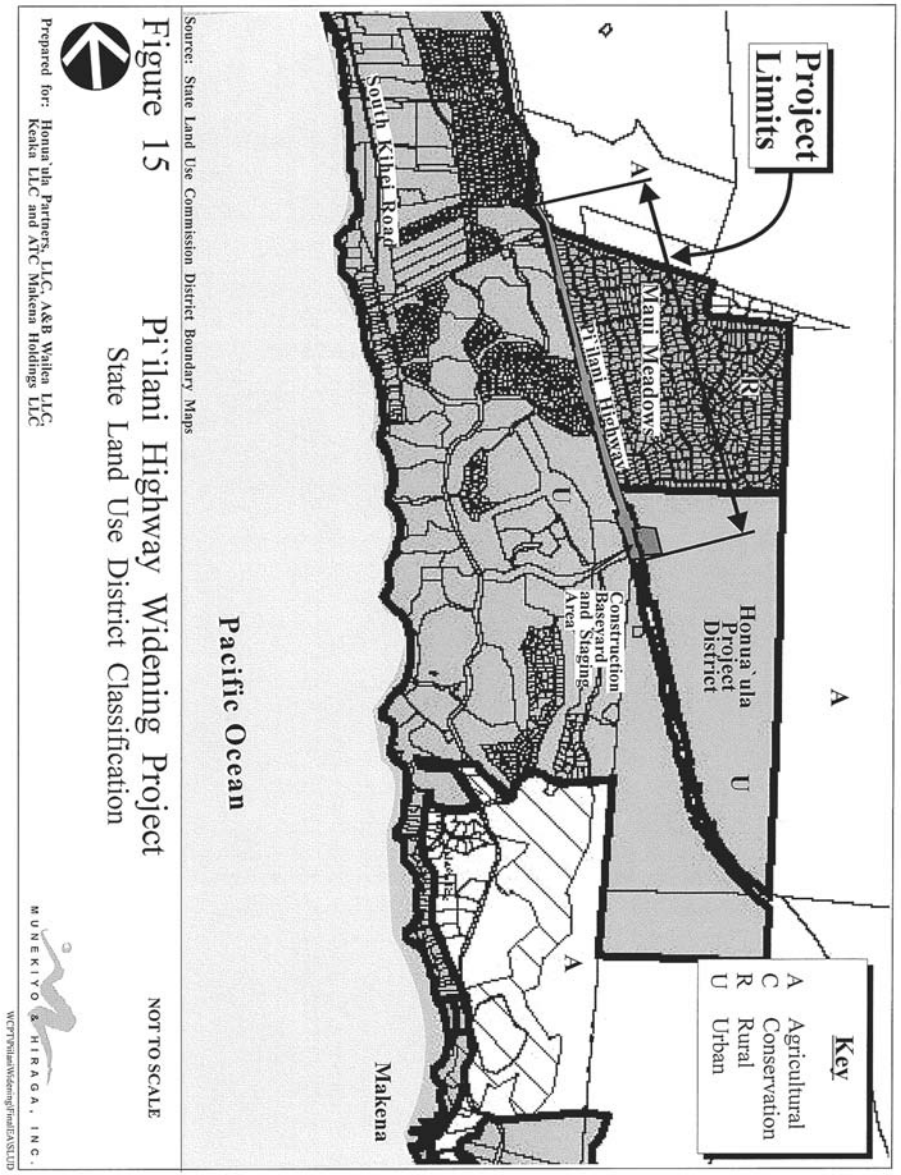



Figure 15 Pi`ilani Highway Widening Project
State Land Use District Classification

Source: State Land Use Commission District Boundary Maps

NOT TO SCALE

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Policy (b) (6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

Policy (b) (10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

The proposed project will promote the public health and safety by providing roadway sections which accommodate vehicles and pedestrians in keeping with current design and safety standards.

## C. TRANSPORTATION STUDIES

The widening of Pi`ilani Highway will meet the transportation objectives of HDOT identified in the Hawaii Statewide Transportation Plan, 2002; the Hawaii Statewide Land Transportation Plan (currently under review); and the Strategic Highway Safety Plan 2007 through 2012.

Further, proposed project supports the long range traffic implementation plan for HDOT identified in the Kihei Traffic Master Plan, October 1996 and the County of Maui Long-Range Land Transportation Plan, Final Report, February 1997, both published in cooperation with County of Maui, Department of Public Works and Waste Management (DPWWM) and County of Maui, Planning Department. In these reports, implementation of a plan to widen the Pi`ilani Highway from two (2) to four (4) lanes in Kihei from Mokulele Highway to Wailea was identified. The Kihei Traffic Master Plan Study, September 2003, prepared for the County of Maui, DPWWM also identifies widening of Pi`ilani Highway from two (2) to four (4) lanes.

## D. MAUI COUNTY GENERAL PLAN

As stated in the County of Maui 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 the 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. The Maui Island Plan is currently in the process of review and formulation by the Maui County Council.

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 for 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 Pi`ilani Highway Widening Project, the following goals, objectives, policies and implementing actions are illustrative of the project's compliance with the Countywide Policy Plan.

**DIVERSIFY TRANSPORTATION OPTIONS**

**Goal:** Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.

**Objective:**

Provide an effective, affordable, and convenient ground-transportation system that



is environmentally sustainable.

**Policies:**

Execute planning strategies to reduce traffic congestion.

Ensure that roadway systems are safe, efficient, and maintained in good condition.

Preserve roadway corridors that have historic, scenic, or unique physical attributes that enhance the character and scenic resources of communities.

Design new roads and roadway improvements to retain and enhance the existing character and scenic resources of the communities through which they pass.

**Objective:**

Improve and expand the planning and management of transportation systems.

**Policies:**

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

In summary, the Pi`ilani Highway Widening Project is consistent with the themes and principles of the Countywide Policy Plan.

## E. KIHEI-MAKENA COMMUNITY PLAN (1998)

The project corridor is located in the Kihei-Makena Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are 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 Kihei-Makena Community Plan also identifies major problems and opportunities of the region. Transportation is identified as a major problem in the area due to inadequate traffic

circulation and lack of public transportation. In addition to the need for alternative travel routes and more parking, the community plan recognizes the need to lessen the dependence on automobiles. Bicycle and pedestrian paths separate from automobile traffic is recommended as an effective alternative to the automobile. Mass transit and public transportation is recommended as well as the need to provide more mobility to our youth and elderly.

The lands adjoining the project corridor include the following uses identified by the Community Plan land use map: Single Family and Multi-Family Residential (SF, MF), Project District 9 (PD 9), Business (B), Public (P), Agriculture (AG), Rural (R), and Open Space (OS). The temporary construction baseyard and staging area will be located in Honua`ula which is designated Project District 9 (PD 9). See **Figure 16**.

1. **Community Plan Theme**

In 1998, the County of Maui completed its comprehensive update of the Kihei-Makena Community Plan. One of the underlying themes which provides the basis or rationale affecting a broad spectrum of functional areas is the "provision of needed public facilities and infrastructure". The plan states:

> *"The County of Maui in general, and Kihei-Makena in particular, witnessed significant growth in the 1980s and early 1990s. In many instances, however, public facility and infrastructure improvements lagged behind development in the region. As such, a significant upgrade and expansion of existing public facilities and infrastructure is necessary."*

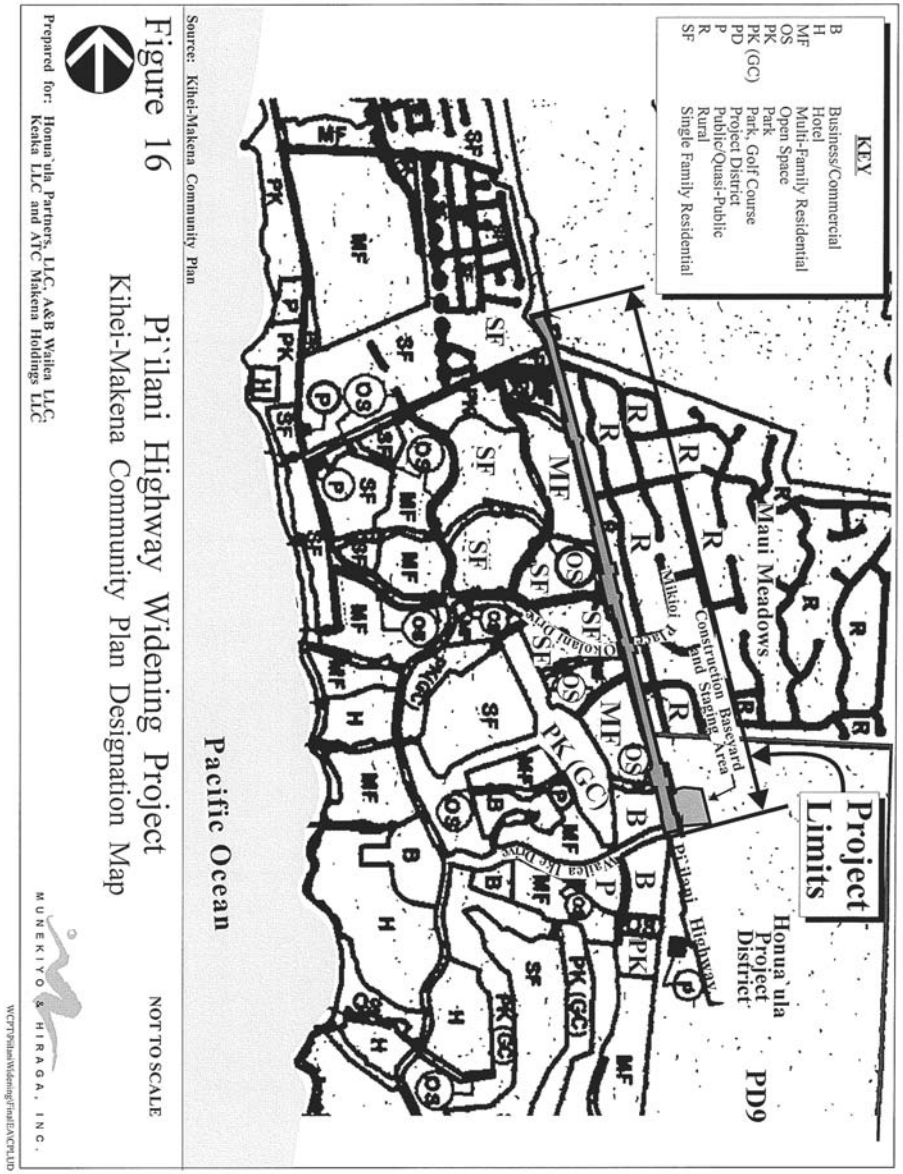
The proposed improvements to the Pi`ilani Highway is supportive of this basic theme and will help upgrade the transportation infrastructure in the Kihei-Makena area prior to development of Honua`ula and ongoing development in Wailea Resort and Makena Resort.

2. **Community Plan Land Use Goal**

A goal in the Community Plan related to land use states:

> *"A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructure and community needs while preserving and enhancing*






Source: Kihei-Makena Community Plan

Figure 16 Pi`ilani Highway Widening Project
Kihei-Makena Community Plan Designation Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea, LLC, Keaka LLC and ATC Makena Holdings LLC

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*the unique character of Ma`alaea, Kihei, Wailea and Makena as well as the region's natural environment, marine resources and traditional shoreline uses."*

The Pi`ilani Highway widening project is considered a response to this goal by providing timely transportation infrastructure to address community needs.

**3. Transportation Objectives and Policies**

Further, the transportation objectives and policies of the community plan, include the following:

- Undertake transportation system improvements concurrently with planned growth of the Kihei-Makena region. Require adequate interregional highway capacity, including the widening of Pi`ilani and Mokulele Highways to four (4) lanes, prior to the construction of major projects south of Kilohana Road or mauka of Pi`ilani Highway.

- Encourage joint public/private participation in the planning, design and construction of roadway improvements, especially those identified in this plan.

- Support ridesharing, bicycle and pedestrian use, alternative schedules, traffic signal synchronization, and/or other transportation demand management strategies.

The proposed project implements the transportation objectives and policies by widening the last segment of Pi`ilani Highway to four (4) lanes, including bike lanes and sidewalks, prior to planned development of Honua`ula, as well as future developments in Wailea and Makena Resorts. Further, the planning, design and construction of the roadway is a joint public/private effort in which Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC in coordination with HDOT and will plan, design and construct the Pi`ilani Highway widening improvements as recommended in the community plan.

**4. Community Plan Implementing Actions**

Three (3) transportation implementing actions set out in the Kihei-Makena Community Plan are:



1. Widen Pi`ilani Highway, between Mokulele Highway and Wailea Ike Drive, to four (4) lanes;

2. Provide clear signage with adequate lighting along Pi`ilani Highway to indicate Kihei access points; and

3. Provide left turn storage lanes and acceleration/deceleration lanes on Pi`ilani Highway, and traffic signals at important intersections along South Kihei Road.

The proposed project supports these implementing actions.

## F. COUNTY ZONING

Both Kihei Land Zoning Map No. 5 and Wailea Land Zoning Map No. 511 delineates Pi`ilani Highway from Kilohana Drive to Wailea Ike Drive as a parallel roadway to South Kihei Road. Pursuant to Chapter 19, Maui County Code, 1980 as amended, roadways are permitted in all zoning districts.

The five (5) acre temporary construction baseyard and staging area will be used for construction activities including offices and meeting space, the storage of construction materials, equipment and vehicles, and a rock processing and crushing facility. The construction baseyard and staging area are temporary in nature, located adjacent to the highway widening project and are ancillary to the construction activity. Location of the baseyard and staging area in close proximity of the construction activity will minimize impacts from construction traffic resulting from daily transport of equipment to the job site and vehicles to haul construction materials. Construction baseyards are permitted in all zoning districts through an administrative review by the Department of Planning. Prior to initiation of construction, approval from the Department of Planning will be obtained. Further, the rock processing and crushing facility is limited to construction of the highway improvement and is ancillary to the construction activity and also allowed administratively by the Department of Planning.

## G. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

According to the County of Maui, Department of Planning, the boundary of the Special Management Area (SMA) is the makai boundary of the highway right-of-way. Improvements within the Pi`ilani Highway ROW is outside of the SMA. Incidental work

makai of the highway ROW is located within the SMA. This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission. SMA clearance will be obtained prior to initiation of construction.

**(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 uses 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, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

**Response:** The proposed action is not anticipated to affect existing coastal recreational resources. Access to the shoreline areas will remain unaffected by the proposed roadway improvements.

**(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:** Roadway work will be confined to the existing highway ROW within the project corridor and adjacent previously disturbed lands. An archaeological monitoring plan will be submitted to SHPD and an archaeological monitor will be present during ground altering activities. The 5-acre temporary construction baseyard and staging area in Honua`ula is to be located in the northern quadrant of the property where there is a lack of historic sites. One (1) historic site located in the northern quadrant will be retained as part of the Honua`ula development action and this site

is well outside of the limits of the temporary construction baseyard and staging area. As a result, the proposed project will not affect historic resources.

**(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 that are not coastal dependent to locate in inland areas.

**Response:** The proposed project is not expected to impact coastal and scenic open space resources. Sound walls on the makai (west) side of Pi`ilani Highway are limited to the Kilohana Drive/Mapu Place/Pi`ilani Highway intersection and retaining walls due to the higher grades along the makai boundary of the highway corridor. Due to the higher grades of the makai properties views along the project corridor are limited until Pi`ilani Highway's southern terminus at Wailea Ike Drive. The project corridor in the southern terminus is higher than the makai properties. Vertical development in this area is limited to retaining walls below the highway grade and guard rails. Views at the southern terminus will not be affected by the road widening project.

**(4) Coastal Ecosystems**

**Objective:**

Protect valuable coastal ecosystems, including reefs, from disruption and minimize



adverse impacts on all coastal ecosystems.

**Policies:**

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

(B) Improve the technical basis for natural resource management;

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

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

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

**Response:** Increased runoff from the additional hardscape will be retained in four (4) proposed retention basins to be located on the makai side of the existing right-of-way (ROW) and a fifth retention basin on the mauka side of the existing ROW. Also, mechanical filtration systems will be installed to remove sediments and oil pollutants from storm runoff from the highway. Runoff from the temporary construction baseyard and staging area will be retained in a temporary retention basin that will capture pollutants and allow water to infiltrate overtime. As such, the proposed drainage improvements will not degrade existing water quality and the Pi`ilani Highway Widening and temporary construction baseyard and staging area are not expected to adversely impact coastal ecosystems.

**(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 use of private resources to meet common goals will enable the HDOT to construct highway infrastructure improvements needed by the year 2016 in a timely manner and eliminates the competition for public funds. Further, the project will support short-term construction and construction-related jobs. The project corridor does not affect coastal development necessary to the State's economy.

**(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; and

(D) Prevent coastal flooding from inland projects.

**Response:** The project corridor and temporary construction baseyard and staging area are located within Zone "X", areas determined to be outside the 0.2 percent annual chance floodplain of minimal flooding. It is noted that changes in drainage patterns are not anticipated with the construction of the proposed improvements and no adverse drainage impacts to surrounding properties are anticipated.

**(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 proposed project shall be reviewed and processed pursuant to Chapter 343, Revised Statutes (HRS). Public review will be coordinated through this process. A public informational meeting was held at the Kihei Community Center on April 16, 2009. Although the Wailea Community Association, Kihei Community Association, and Maui Meadows Homeowners Association were invited, no one attended the community informational meeting. See **Appendix "K"**. During review of the Draft EA a community meeting was held on December 1, 2010 to inform the public of the project and to solicit comments. See **Appendix "K-1"**. Although the Office of Environmental Quality Control (OEQC) deadline for public

comments was on November 22, 2010, public comments were accepted after the deadline. Copies of the written comments and responses are included in Section X.

**(8) Public Participation**

**Objective:**

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

**Policies:**

(A) Promote public involvement in coastal zone management processes;

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

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

**Response:** As noted above, opportunity for public awareness, education and participation pertaining to significant resource attributes of the coastal zone is provided through Chapter 343, HRS procedures.

As mentioned previously, a community meeting was held on December 1, 2010. Refer to **Appendix "K-1"**. The public comments were accepted after the November 22, 2010 comment deadline, giving the public additional time to participate in the Chapter 343 review process.

**(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, minimize interference with natural shoreline processes, and 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 will not impact shoreline activities. No adverse impact to beach processes is anticipated.

**(10) Marine Resources**

**Objective:**

Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

**Policies:**

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

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

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

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

**Response:** Mechanical filtration systems and a system of retention basins will remove sediments and oil pollutants from storm water runoff to ensure water quality is not degraded by the proposed Pi`ilani Highway Widening. Runoff from the temporary construction baseyard and staging area will be retained in a temporary retention basin that will capture pollutants. Further, during construction, appropriate BMPs will be implemented to mitigate impacts on water quality from construction activities. The permanent and temporary drainage improvements and construction mitigation for the Pi`ilani Highway Widening project will ensure that ocean resources are not adversely impacted.

In addition to the foregoing objectives and policies, HRS Section 205A-30.5 Prohibitions, provides specifications for the limitation of lighting in coastal shoreline areas in relation to the granting of SMA permits:

*(a) 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.*

*(b) Subsection (a) shall not apply to special management area use permits for structures with:*

*(2) Artificial lighting provided by a government agency or its authorized users for government operations, security, public safety, or navigational needs; provided that a government agency or its authorized users shall make reasonable efforts to properly position or shield lights to minimize adverse impacts.*

The prohibition does not apply to artificial lighting provided by a government agency or its authorized users for government operations, security, public safety, or navigational needs, provided that a government agency or its authorized users shall make reasonable efforts to properly position or shield lights to minimize adverse impacts.



**Response:** The proposed project is not located on or near the shoreline. The preliminary plans for the project will be designed to ensure that any relocated light fixtures are not directed across property boundaries towards the shoreline. To the extent practicable, efforts will be made to shield any relocated light fixtures.

# IV. ALTERNATIVES TO THE PROPOSED ACTION

## IV. ALTERNATIVES TO THE PROPOSED ACTION

**ALTERNATIVES CONSIDERED**

Ten (10) alternatives were evaluated as part of project planning, as follows:

### A. PREFERRED ALTERNATIVE - PI`ILANI HIGHWAY WIDENING

The proposed project represents the preferred alternative. The widening and related improvements to intersections will improve vehicular traffic flow along the 1.44-mile segment of Pi`ilani Highway north of Kilohana Drive to Wailea Ike Drive in Kihei. The proposed improvements will accommodate present and future traffic flows along the project corridor.

### B. CONTRAFLOW ALTERNATIVE

A "contraflow" alternative would include restriping the highway to three (3) lanes and reversing the flow in the third lane during the peak period. This alternative would require that the added lane be provided northbound in the AM peak period and southbound in the PM peak period. Widening to provide two (2) through lanes across each signalized intersection would still be required and merging areas would be needed. Adequate traffic control through merging areas during contraflow operations would be difficult to achieve.

### C. IMPROVING ALTERNATE ROADWAYS

The Pi`ilani Highway in the project corridor is a two-lane arterial roadway that provides regional mobility to the Kihei-Wailea-Makena areas. Another north-south access in the area is provided by South Kihei Road. This road is largely a two-lane collector road providing north-south mobility and property access within the Kihei community. Regionally, the North-South Collector Road (aka Liloa Drive) has been an integral part of Kihei planning, however, it has been implemented incrementally as development warrants and is not yet completed.

Widening South Kihei Road to accommodate more traffic to lessen the volume on Pi`ilani Highway is an alternative that would have considerably greater impacts and costs due to the urban and commercial build up along this roadway. Additionally, as a collector facility, improvements to South Kihei Road would not replace or improve Pi`ilani Highway's arterial function to Wailea Ike Drive.

## D. NEW HIGHWAY ALIGNMENT ALTERNATIVE

This alternative would involve a new highway alignment mauka of the existing Pi`ilani Highway. The transportation planning process includes many tiers of evaluation, including regional plans (Maui Long Range Transportation Plan, 1997), sub-regional plans (Kihei Traffic Master Plan, 1996) and project plans, such as the current effort for Pi`ilani Highway. Each tier narrows the scope and each subsequent tier builds upon information from the studies of the broader area. The timeframe associated with a new highway alignment is beyond the regional and sub-regional plans which identified projects for implementation to the year 2022. From a planning and evaluation process perspective, consideration of a new highway alignment is not deemed a prudent alternative in light of the current capacity constraints which require a timely response as provided by the proposed action.

## E. NO ACTION ALTERNATIVE

In light of the established need for the proposed improvements, the "no action alternative" does not represent a responsible option toward improving traffic circulation for the Kihei-Wailea-Makena area since traffic flow and circulation requirements will persist. It is noted that the public/private partnership opportunity for planning, design and construction would be removed under this alternative.

## F. DEFERRED ACTION ALTERNATIVE

A "deferred action" alternative will have similar consequences as a "no action" alternative as problems relating to traffic congestion will continue to persist and potentially increase. Deferring the development of the proposed improvements may also result in higher implementation costs in the future due to inflation.



## G. MAKAI ALIGNMENT ALTERNATIVE

Vacant properties adjacent to the right-of-way (ROW) are not consistently on the same side of the highway. This creates a situation in which the highway, if realigned, would transition from one side of the ROW to the other. To meet FHWA and HDOT design standards including transition taper requirements, moving the improved section of the highway in a makai direction is not possible due to the irregular and inconsistent spacing of vacant land areas.

## H. RIGHT-OF-WAY ACQUISITION ALTERNATIVE

Similar to the Makai Alignment Alternative, portions of the adjacent lands along the existing Pi`ilani Highway ROW have been developed with residential developments consisting of the Maui Meadows subdivision on the mauka side of the highway, and Kanani Wailea and Wailea Pualani Estates on the makai side of the highway. Also, the Wailea Gateway Center is located at the southern terminus on the makai side of the highway. Acquisition of additional ROW from existing developed properties would affect building setbacks from property lines and place structures closer to the highway ROW. The loss of private property will not be offset by the landscape buffer created with the loss of building setbacks. This alternative was not chosen since it will have the greatest impact on adjacent developed properties.

## I. MASS TRANSIT CORRIDOR ALTERNATIVE

The draft Maui Island Plan identifies a future mass transit corridor mauka of Pi`ilani Highway. The mass transit corridor begins from a future transit station at the intersection of Honoap`ilani Highway and North Kihei Road and continues south around Kealia Pond toward Kihei and across Mokulele Highway mauka of Pi`ilani Highway, to a proposed southern terminus at Ke Alii Alanui Drive north of Wailea Resort. The existing Pi`ilani Highway is also proposed to be incorporated into this future mass transit system with a transit station proposed at its intersection with Kaonoulu Street. However, this is a long term recommendation of the draft Maui Island Plan which has yet to be adopted by the County of Maui. The traffic study prepared for the project identified the need for additional capacity in the near future, Year 2016. As a long-term alternative, mass transit may be feasible to mitigate future increases in traffic and further improve the LOS of Pi`ilani Highway.

## J. STAGGERED HOTEL SHIFTS ALTERNATIVE

Public comments requested that the HDOT explore staggered hotel shifts to reduce traffic so the road widening would not be necessary. The staggering of hotel shifts would require a significant amount of coordination with the visitor industry including labor contracts, hotel services and the other hotels on Maui, as well as airline arrival/departures times and other visitor industries for which HDOT does not have jurisdiction or the authority to either influence or control. As such, this alternative was not considered.

### ASSESSMENT OF ALTERNATIVES

The ten (10) identified alternatives were considered and evaluated with standard criteria, as identified in the following **Table 2**.

**Table 2**. Evaluation of Alternatives

| Criteria | Alternatives | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J |
| Identified in Long Range Transportation Plan | x | | x | x | | | | | | |
| Funding Available | x | | | | | | | | | |
| Construction Within 5 years | x | | | | | | | | | |
| Increases Roadway Capacity | x | x | x | x | | | x | x | | |
| Minimal Land Acquisition | x | x | | | x | x | | | | x |

The Pi'ilani Highway Widening (Preferred Alternative "A") to four (4) lanes met all criteria in that the improvements are: (1) identified in the County of Maui Long Range Transportation Plan, February 1997 and Kihei Traffic Master Plan Study, September 2003; (2) private funding is available for design and construction; (3) construction of the improvement can be completed within the next five (5) years; (4) the additional two (2) lanes of traffic will add roadway capacity; and (5) the major improvements can be constructed within the existing highway right-of-way with minimal land acquisition required at the connecting intersections with Pi'ilani Highway for sidewalk, curb and guardrail installation.

Impediment to favorable consideration of the other alternatives related to the following:

1. Lack of available funding to enable construction within the next five (5) years

2. Increasing roadway capacity will require major land acquisition.



3. The mass transit corridor alternative is still in draft form in the Maui Island Plan and requires the approval of the Maui County Council. It will take a number of years to initiate beyond the five (5) year construction period.

Based on the above criteria Alternative "A", Pi'ilani Highway Widening, has been determined to be the preferred alternative for the project.

# V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

# V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project will result in impacts as described in Chapter III, Potential Impacts and Mitigation Measures.

Potential effects include noise-generated impacts occurring from construction activities. In addition, impacts will result in increased traffic congestion during construction. These impacts will be temporary and not expected to create long-term adverse environmental effects.

In the long term, traffic noise levels will increase as a result of increased traffic along the project corridor. This increase in traffic is expected to occur with or without the project. With the project, predicted increases in future traffic noise levels between 2016 and 2022 can be mitigated through the construction of sound walls, in accordance with HDOT's June 1997 Noise Analysis and Abatement Policy.

Further, with Pi'ilani Highway widened to four (4) lanes in the year 2016, the air quality study indicates that overall emissions from vehicular traffic will decrease with the improvements due to improved traffic flow. The project is expected to provide a positive impact on air quality through reduction of idling vehicles.

The proposed project is intended to increase highway capacity and improve roadway operating conditions along Pi'ilani Highway with improved traffic flow from the intersection at Kilohana Drive to Wailea Ike Drive. From a long-term perspective, there are no significant adverse environmental effects anticipated which cannot be mitigated as a result of the proposed highway improvements.

# VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

## VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The design and implementation of the proposed Pi`ilani Highway Widening Project will involve the commitment of certain material and fiscal resources required to maintain the improvements. The future commitment of resources for the project is consistent with the need to provide an appropriate level of transportation service for the region. Impacts relating to the use of these resources should be weighed against the expected positive benefits to be derived from the project versus the consequences of taking no action.

# VII. SIGNIFICANCE CRITERIA EVALUATION

## VII. SIGNIFICANCE CRITERIA EVALUATION

The portion of Pi`ilani Highway in the project corridor is currently a two-lane urban arterial roadway under the jurisdiction of the State of Hawaii . The proposed project will involve the construction of two (2) additional travel lanes and related improvements to an approximately 1.44 mile segment of Pi`ilani Highway that extends from Kilohana Drive in the north to Wailea Ike Drive in the south. The proposed project will enhance accessibility and traffic circulation in the area which will be necessary by Year 2016. The proposed improvements will be conducted within the roadway's existing ROW.

Since the proposed action is on State and County lands, an Environmental Assessment (EA) has been prepared pursuant to Chapter 343, Revised Statutes (HRS), and Chapter 200 of Title 11, Administrative Rules of the State Department of Health.

Every phase of the proposed action, expected consequences, both primary and secondary, 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. Based on the analysis, the proposed project is not anticipated to result in any significant adverse impacts. Discussion of project conformance to the criteria is noted as follows:

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

   Flora occupying undeveloped parcels bordering the project corridor generally consists of kiawe, koa haole, buffelgrass and scrub vegetation, while developed properties are vegetated with landscaping typical of single-family and multi-family residential developments and ornamental landscaping, such as hibiscus and palms. No wetlands will be impacted by the proposed action. No threatened or endangered species are located within the project corridor or at the temporary construction baseyard and staging area proposed to be located in Honua`ula. Recommendations of the biological studies prepared by SWCA and USFWS will be implemented to mitigate any impacts on the tree tobacco which is a known habitat of the Blackburn's Sphinx moth.

   From an archaeological standpoint, the lands underlying and immediately surrounding the project corridor have been previously altered by existing

development of the highway. The proposed work will be carried out within the existing ROW. An archaeological monitoring plan will be submitted to SHPD for review and approval prior to construction. The temporary construction baseyard and staging area proposed to be located in Honua'ula are approximately 600 feet northwest of the nearest historic site. An onsite archaeologist will monitor construction activity to ensure the proposed project will not adversely impact archaeological resources.

The area in the vicinity of the project corridor and proposed temporary construction baseyard and staging area have not been used for cultural gatherings, nor has it been cultivated using traditional Hawaiian practices. The proposed project is not anticipated to adversely impact cultural resources.

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

The roadway segment encompassed by the proposed project traverses lands which are designated for urban and rural uses. As an existing urban arterial roadway the proposed widening will provide improved traffic circulation in the area to keep pace with growth in the Kihei-Makena region and is necessary by the year 2016. The proposed action is not anticipated to have a significant effect on beneficial uses 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 Environmental Policy and Guidelines are set forth in Chapter 344, HRS. The proposed action is in consonance with the following policies and guidelines:

**Environmental Policy:**

Enhance the quality of life by:

(A) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian.



**Guidelines:**

**Transportation**:

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

The project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS. The widening of Pi`ilani Highway implements HDOT's and the County of Maui's long range transportation plans. The improvement is necessary by year 2016 in order to keep pace with growth in the Kihei-Makena region.

The Pi`ilani Highway Widening does not involve any executive orders or applicable court decisions. The applicability of supreme court decisions are elaborated in significance Criteria No. 8 addressing cumulative impacts.

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. The proposed project will also have a beneficial effect upon the socio-economic fabric of the community by providing for the safe, convenient and efficient movement of traffic in the Kihei-Wailea-Makena area in a timely manner. By improving roadway conditions, the proposed project will promote the public welfare by providing vehicular facilities which meet current design and safety standards in pace with anticipated growth.

The area in the vicinity of the project corridor and proposed temporary construction baseyard and staging area have not been used for cultural gatherings, nor has it been cultivated using traditional Hawaiian practices. The proposed project is not anticipated to adversely impact cultural resources.

5. **Substantially affects public health.**

No adverse impacts to the public's health and welfare are anticipated. Suitable mitigation measures will be implemented to address anticipated air and noise impacts in the area, resulting from the proposed improvements. Further, it is anticipated that

the proposed improvements will enhance traffic flow through the corridor which should reduce fumes from idling vehicles. The improvements are expected to have a positive long-term impact on air quality.

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

The project involves the provision of additional travel lanes and related intersection modifications to improve the level of service along the 1.44 mile section of the Pi`ilani Highway from Kilohana Drive in the north to Wailea Ike Drive in the south. The roadway widening improvement is the implementation of the last segment of Pi`ilani Highway recommended in the long range transportation plans of the HDOT and the County of Maui that provides the basis for project need. These improvements are needed by Year 2016 to keep pace with growth in the Kihei-Makena region.

There were public comments made during review of the Draft EA that, due to the conditions of zoning for Honua`ula and Makena Resort, thousands of units and increased population would result from the widening of Pi`ilani Highway. Population increases and construction of these units are due to the land use decisions made by the State Land Use Commission and County of Maui which established these projects as urban growth areas. The completion of the Pi`ilani Highway widening serves as a mitigation measure for these developments by removing a potential impediment to development which may create potential secondary impacts. Potential secondary impacts from development within Honua`ula and Makena Resort are addressed in the conditions of zoning imposed by the County of Maui. During the change in zoning review, the increase in growth due to these projects was evaluated. The impacts on the environment, infrastructure and public services were determined which resulted in imposition of mitigation conditions. As such, the roadway widening will not involve substantial secondary impacts.

As necessary, coordination of the relocation of improvements (e.g., waterlines, utility poles) with the appropriate agencies and utility companies will be implemented to ensure that the proposed road widening activities do not impact their facilities.

The improvements would increase the handling capacity of Pi`ilani Highway and provide the necessary transportation infrastructure for the orderly accommodation of near-term traffic projections for the Kihei-Makena area.



Stormwater drainage patterns will not be affected by the proposed project and there will be no impact to the drainage system that currently serves the project corridor. In addition, the proposed project is not anticipated to have any adverse impacts upon public services and facilities.

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 noted, noise mitigation measures have also been incorporated into the project scope.

Public comments received during review of the Draft EA raised concerns that increased runoff from the project would increase degradation of water quality. The drainage improvements for the project and temporary construction baseyard and staging area include a system of retention basins and mechanical filtration systems to retain project-related increases in runoff within the project corridor and to minimize additional sediments and pollutants from discharging into the existing drainageways thus preventing degradation of water quality.

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

The proposed action is part of the HDOT's ongoing effort to upgrade roadways to accommodate current and future vehicular traffic requirements through its long range transportation plans. Said improvments will be required by the year 2016 in order to keep pace with population growth in the Kihei-Makena region.

Projects having relevance from a cumulative impact analysis perspective are future roadway improvements in the Kihei-Makena Community Plan region proposed in the next five (5) years by the State of Hawaii and County of Maui that may increase regional roadway capacity. In the current 2011-2014 Fiscal Years the STIP does not identify any State roadway improvements within the Kihei-Makena region. The County of Maui in its Six-Year Capital Improvement Program for the Kihei region identified two roadway improvements, (1) North-South Collector Road and (2) South Kihei Road improvements.

The North-South Collector Road (aka Liloa Drive) is intended to provide a parallel alternate route between Pi`ilani Highway and South Kihei Road. A portion of this roadway has been constructed between Waipuilani and Halekuai Streets with a portion of the roadway under construction south of Halekuai Street to Welakahao Street in conjunction with the construction of the South Maui Community Park. Although the North-South Collector Road has provided limited local roadway capacity in its present form, it does not provide the regional roadway capacity as an alternative to Pi`ilani Highway and South Kihei Road. Also, the South Kihei Road improvements have been revised by the County of Maui to maintain the existing two-lanes of traffic and will not increase roadway capacity. As such, collectively with foreseeable roadway improvements the proposed Pi`ilani Highway widening will not create incremental impacts that will create significant cumulative impacts or involve a commitment for larger actions.

It is noted that voluntary funding participants for the proposed action include private landowners with plans for future development in the Wailea-Makena subregion. The landowners, Honua`ula Partners, LLC, A&B Wailea LLC (owner of the Wailea Resort lands), Keaka LLC, and ATC Makena Holdings LLC (owner of Makena Resort lands), have plans which have development schedules spanning a number of years. Traffic volumes generated by new developments within these project areas will be accommodated by the proposed Pi`ilani Highway improvements.

During review of the Draft EA, there were also comments received from the public that the Pi`ilani Highway improvements are part of the larger Honua`ula and Makena Resort projects due to the zoning conditions that required widening of the highway in conjunction with these developments. The fundamental premise for HDOT, in undertaking all of its regional highway improvements projects, is that HDOT facilities improvements shall be based on sound planning and programming which considers opportunities, where available, for private-public partnerships. It is important to recognize that the Pi`ilani Highway Widening project is part of HDOT's long range transportation plans, and not a component of any private development project which may contribute traffic. As such, the Pi`ilani Highway widening is a HDOT project separate from Honua`ula, Wailea Resort and Makena Resort.

The connection noted by the public comments between the Pi`ilani Highway Widening and Honua`ula and Makena Resort are the conditions requiring private entities to participate in cost sharing for the project. The conditions imposed were beneficial in establishing an alternative funding source to the STIP through a private-



public partnership, as the developers' contributions will help to mitigate impacts of not only their projects but anticipated growth within the Kihei-Makena region.

Irrespective of the zoning conditions, based on anticipated highway capacity constraints calculated, the highway widening project will be necessary by 2016. As a HDOT project implementing its long range transportation plans, mitigative conditions imposed through the County land entitlement process is not a basis to conclude that cumulative impacts must be analyzed with Honua`ula and Makena Resort.

**9. <u>Substantially affects a rare, threatened, or endangered species, or its habitat.</u>**

Rare, threatened or endangered species of flora, fauna, avifauna or their habitats are not expected to be impacted by the proposed project as work will be conducted within existing roadway rights-of-way and appropriate mitigation measures will be incorporated into the project. Further, based on the biological studies prepared for Honua`ula, the proposed five-acre temporary construction baseyard and staging area will be located in an area consisting of *kiawe*-bufflegrass grasslands with no significant habitat for endangered species.

In the event the Blackburn's sphinx moth is encountered during construction the USFWS Blackburn's Sphnix Moth Protocol will be implemented. To minimize impacts to the endangered Hawaiian hoary bat, if there is evidence that woody plants are being used for bat roosting they will not be removed or trimmed during the bat birthing and pup rearing season. Regarding protection of avifauna, unless required by the County of Maui there will be no night time construction and street lights will be appropriately shielded.

**10. <u>Detrimentally affects air or water quality or ambient noise levels.</u>**

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize wind-blown emissions. Due to the existing geological conditions, the major rock removal will utilize construction equipment as much as possible. As an alternative to blasting, chemical demolition to break or dislodge rocks will also be considered. The chemicals used do not produce any noise or vibration. 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, are anticipated to mitigate noise from construction activities.

Noise from construction activities will be short-term and will comply with State DOH noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit will be obtained from the DOH.

In the long term, traffic noise levels will increase as a result of increased traffic along the project corridor. This increase in traffic is expected to occur with or without the project. With the project the predicted increases in future traffic noise levels between 2016 and 2022 can be mitigated through the construction of sound walls in accordance with HDOT's criteria.

The increase in runoff will be managed through mechanical filtration systems and retention basins that will retain project-related increases in drainage within the project corridor and will minimize sediments and pollutants into existing drainageways, thus, preventing degradation of water quality. Detrimental impacts on air, noise and water quality is not expected.

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 project corridor and construction baseyard and staging area proposed to be located at Honua`ula are not located in an environmentally sensitive area. Existing drainage patterns will be maintained. Proposed drainage improvements associated with the project will accommodate the small increase in storm water runoff resulting from the reduction in permeable surfaces. No adverse impacts to environmentally sensitive areas nor to fresh or coastal waters are anticipated.

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

The proposed project and temporary construction baseyard and staging area proposed to be located at Honua`ula will not affect coastal scenic and open space resources and will not affect scenic view corridors.



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.

Based on the foregoing findings, it is concluded that the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, this Final Environmental Assessment is being processed with a Finding of No Significant Impact (FONSI) determination by the HDOT.

# VIII. LIST OF PERMITS AND APPROVALS

## VIII. LIST OF PERMITS AND APPROVALS

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

**Federal**

1. Department of the Army Permit, if applicable.
2. Coastal Zone Management Consistency Determination, if applicable.
3. Section 401, Water Quality Certification.

**State of Hawaii**

1. National Pollutant Discharge Elimination System (NPDES) Permit.
2. Work to Perform Within State Highway Right-of-Way.
3. Disability and Communication Access Board (DCAB) Certification

**County of Maui**

1. Special Management Area (SMA) Assessment and Determination.
2. Construction Permits, as applicable.

**Others**

1. Applicable Approvals/Authorizations from Utility Companies.

# IX. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED; AND RESPONSES TO SUBSTANTIVE COMMENTS

# IX. PARTIES 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 included herein.

**FEDERAL AGENCIES**

1. Ranae Ganske-Cerizo,
   Soil Conservationist
   **Natural Resources Conservation Service**
   **U.S. Department of Agriculture**
   70 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. Carol Borgstrom, Director
   **U.S. Department of Energy**
   Office of NEPA Policy & Compliance
   1000 Independence Avenue, S.W.
   Washington, D.C. 20585

4. Wayne Nastri, Regional Administrator
   **U. S. Environmental Protection Agency**
   Region 9
   75 Hawthorne Street
   San Francisco, California 94105

5. Dave Wesley, Deputy Regional Director
   **U. S. Fish and Wildlife Service**
   Pacific Region
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   Portland, Oregon 97232

6. Patrick Leonard
   Field Supervisor
   **U. S. Fish and Wildlife Service**
   300 Ala Moana Blvd., Rm. 3-122
   Box 50088
   Honolulu, Hawaii 96813

7. Cynthia Burbank, Associate Administrator
   **U. S. Department of Transportation**
   Planning, Environment and Realty
   Federal Highway Administration
   400 7th Street, S.W.
   Washington, D.C. 20590-9898

**STATE AGENCIES**

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

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

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

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

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

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

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

15. 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

16. Hinano Rodrigues
**Maui/Lanai Islands Burial Council**
130 Mahalani Street
Wailuku, Hawaii 96793

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

cc: Fred Cajigal

18. Major General Robert G.S. Lee, Director
**State Civil Defense**
3949 Diamond Head Road
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19. Haunani Apoliona, Board of Trustee Chair
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20. Abbey Seth Mayer, Director
State of Hawaii
**Office of Planning**
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21. Orlando "Dan" Davidson,
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State of Hawaii
**State Land Use Commission**
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22. Katherine Kealoha, Director
**Office Of Environmental Quality Control**
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Honolulu, Hawaii 96813

**COUNTY AGENCIES**

23. Charmaine Tavares, Mayor
County of Maui
200 South High Street
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24. Deidre Tegarden, Director
County of Maui
**Office of Economic Development**
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25. Gen Iinuma, Administrator
**Maui Civil Defense Agency**
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26. Jeffrey A. Murray, Fire Chief
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27. Lori Tsuhako, Director
County of Maui
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28. Tamara Horcajo, Director
County of Maui
**Department of Parks and Recreation**
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29. Jeffrey Hunt, Director
County of Maui
**Department of Planning**
250 South High Street
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30. Thomas Phillips, Chief
County of Maui
**Police Department**
55 Mahalani Street
Wailuku, Hawaii 96793

31. Milton Arakawa, Director
County of Maui
**Department of Public Works**
200 South High Street
Wailuku, Hawaii 96793

32. Cheryl Okuma, Director
County of Maui
**Department of Environmental Management**
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33. Donald Medeiros, Director
County of Maui
**Department of Transportation**
200 South High Street
Wailuku, Hawaii 96793

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

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

**UTILITIES**

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

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

**COMMUNITY ORGANIZATIONS**

38. **Kihei Community Association**
P. O. Box 662
Kihei, Hawaii 96753

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

40. Sandy Baz, Executive Director
**Maui Economic Opportunity**
99 Mahalani Street
Wailuku, Hawaii 96793

41. Carol Reimann, Executive Director
**Maui Hotel Association**
1727 Wili Pa Loop, Suite B
Wailuku, Hawaii 96793

42. Bud Pikrone
**Wailea Community Association**
555 Kaukahi Street, Suite 214
Wailea, Hawaii 96753-8333

43. Madge Schaefer
**Maui Meadows Neighborhood Association**
P. O. Box 160
Kihei, Hawaii 96753

MAR 0 9 2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2009-TA-0121

MAR 0 6 2009

Mr. Mark Roy
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: Technical Assistance for the Proposed Piilani Highway Widening to Four Lanes, Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui

Dear Mr. Roy:

This letter acknowledges the U.S. Fish and Wildlife Service's February 6, 2009, receipt of your request for comments regarding the proposed lane widening, to four lanes, of Piilani Highway, between Kilohana Drive and Wailea Ike Drive, Wailea, Maui. Based on the project information you provided and pertinent information in our files, the threatened Newell's shearwater (*Puffinus auricularis newelli*) and the endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*) (collectively referred to as seabirds) are known to traverse the project area. The endangered Blackburn's sphinx moth (*Manduca blackburni*) and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) are also known to occur near the project site. In addition, the proposed project is located in a dry area of Maui where wildland fires interdependent with the proposed project may affect listed upland species. We recommend the following measures be incorporated into the draft environmental assessment to minimize potential project impacts to listed species:

- Seabirds may traverse the project area at night during the breeding season (February 1 through December 15). Any outdoor lighting, particularly when used during each year's peak fledging period (September 15 through December 15), could result in seabird disorientation, fallout, and injury or mortality. Potential impacts to seabirds can be minimized by shielding outdoor lights associated with the project, avoiding night-time construction, and providing all project staff with information regarding seabird fallout. All project lights should be shielded so the bulb can be seen only from below.

- Blackburn's sphinx moth may occur in the project area. The adult moth feeds on nectar from native plants including beach morning glory (*Ipomoea pes-caprae*), iliee (*Plumbago zeylanica*), maiapilo (*Capparis sandwichiana*), and the larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and the native (*Nothocestrum latifolium*). All of these species may occur on the project site. We recommend you survey the site for the

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presence of Blackburn's sphinx moth host plants and if host plants are found, contact our office for further assistance.

- To minimize impacts to the endangered Hawaiian hoary bat, woody plants suitable for bat roosting should not be removed or trimmed during the bat birthing and pup rearing season (April to August). If this avoidance measure can not be implemented, bat surveys should be conducted and, if this species is found, our office should be contacted for additional assistance.

- Measures to minimize fire risk should be incorporated into the project. The Maui Wildland Fire Coordinating Group is partnering with the Service to coordinate the development of fuelbreaks, water sources for firefighting, fire prevention projects, and an increased fire suppression response to minimize the impact of human-caused wildfires to listed species and critical habitat on Maui. We recommend you coordinate with Maui County Department of Fire and Public Safety wildland fire management specialists to ensure any wildland fire risk, interdependent with the proposed development, is minimized.

- We recommend the use of native plants for landscaping purposes in order to reduce the spread of non-native invasive species. If native plants do not meet your landscaping objectives, we recommend that you choose species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp) and Global Compendium of Weeds (www.hear.org/gcw).

Implementation of these recommendations does not alleviate your responsibilities pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA), if a listed species may be affected by the proposed action. If the proposed project may affect a listed species and the project is funded, authorized, or carried about by a Federal agency, you should request that the Federal agency consult with us under section 7(a)(2) of the ESA. If there is no Federal nexus for the proposed action you should obtain an incidental take permit pursuant to section 10(a)(2)(B) of the ESA if incidental take of a listed species cannot be avoided. If you have questions or would like additional information, please contact Consultation and Technical Assistance Program Fish and Wildlife Biologist, Dawn Greenlee (phone: 808-792-9400; fax: 808-792-9581).

Sincerely,

Chris Russell
for Patrick Leonard
Field Supervisor

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Patrick Leonard
Field Supervisor
**U. S. Department of the Interior**
Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawai`i 96850

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Leonard:

We acknowledge receipt of your letter dated March 6, 2009, and have included your comments and recommendation in the Draft Environmental Assessment (EA). The applicants will comply with the applicable provision of the Endangered Species Act of 1973, as amended.

Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be provided to your office for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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APR 2 2 2009

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

REPLY TO ATTENTION OF:

April 17, 2009

Regulatory Branch

Corps File No. POH-2009-075

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Roy:

This letter is in response to your request for the U.S. Army Corps of Engineers (Corps) to provide early input on the preparation of your Chapter 343, Hawaii Revised Statutes, draft Environmental Assessment (EA) for the **Pi`ilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive Project** located in Wailea, Maui, Hawaii. According to your letter dated February 4, 2009, as part of the review process for the re-zoning application for the Kihei-Makena Project District 9 (Honua`ula), the County of Maui requires Honua`ula Partners, LLC (the applicant) to improve Pi`ilani Highway to four lanes between Kilohana Drive and Wailea Ike Drive prior to the commencement of any construction work on the site. Our comments are provided pursuant to our authorities under Section 404 of the Clean Water Act (CWA) of 1972 (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

The Corps suggests the draft EA include site-specific information pertaining to the occurrence of water resources within the project area, such as perennial, intermittent and ephemeral streams and wetlands. For any non-tidal tributary waters occurring within the project area, the ordinary high water mark must be determined as described at 33 C.F.R. 328.3(e). Similarly, for coastal areas and tidally influenced waters that may occur within the project area, the draft EA (or its supporting technical studies) should clearly demarcate or otherwise identify the mean high water line and high tide line [as described at 33 C.F.R. 328.3(d)]. The boundaries of wetlands that may exist on-site or adjacent to the project site should be delineated by a qualified individual and based on the procedures set forth in the Corps' 1987 *Wetlands Delineation Manual*.

We recommend the draft EA contain or address the following additional information and analyses, as applicable:

- A clear and succinct written project purpose and need statement;
- A plan view drawing that provides a detailed illustration and description of the footprint of disturbance (including temporary and permanent impacts) relative to the boundaries of the Corps' jurisdiction in tidal and non-tidal waters of the U.S., including wetlands;
- Scaled engineering plans of the proposed structure(s) or facility(ies);
- The source and volume of fill material;

- The method and timing for any discharge (placement) of dredged or fill material;
- The location of ingress/egress points and associated features (e.g., access ramps); temporary access and/or haul roads; construction staging areas; disposal sites for any excess excavated materials and/or construction-related debris. If such disposal sites are other than existing landfill operations, the draft EA should also identify impacts associated with the disposal of such materials at those sites;
- An assessment of the functions, values and services of the waters of the U.S. occurring within the project area;
- An evaluation and quantification (area and volume) of the direct, indirect and cumulative effects on the aquatic ecosystem;
- A statement of how impacts to the aquatic ecosystem were avoided or minimized, and a draft conceptual mitigation plan for unavoidable impacts to waters of the U.S.;
- An estimate of the total construction period; and
- A detailed description of the short- and long-term maintenance activities associated with the highway improvements, if any.

In general, the Corps asserts jurisdiction over traditional navigable waters (e.g., Pacific Ocean), wetlands adjacent to traditional navigable waters, non-navigable tributaries that have perennial flow or continuous seasonal flow, and wetlands that directly abut such tributaries. For other types of waters, we must decide on a case-by-case basis using fact-specific analysis what our jurisdiction is, if any, under Section 404 of the CWA. These waters include any non-navigable tributaries that do not have relatively permanent flows and any wetlands adjacent to such tributaries, as well as wetlands that are adjacent to but do not directly abut a relatively permanent non-navigable tributary. In the latter set of circumstances, a "significant nexus evaluation" is required in order to render a final approved jurisdictional determination. We do not, however, generally assert jurisdiction over swales, erosional features or ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

As you prepare the draft EA, we suggest you consider the data needs and permitting requirements outlined above. If you need further assistance, please contact Ms. Susan A. Meyer, Project Manager, by phone at (808) 438-2137 or by electronic mail at susan.s.meyer@usace.army.mil. Please refer to **Corps File No. POH-2009-075** in future correspondence or communications related to this project. Thank you for your cooperation with our regulatory program. Please be advised you can provide comments on your experience with the Corps' Honolulu District Regulatory Branch by accessing our web-based customer survey form at http://www.poh.usace.army.mil/EC-R/forms/ecr-CustomerSurvey.pdf.

Sincerely,

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



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

George P. Young, Chief
Regulatory Branch
Department of the Army
**U. S. Army Corps of Engineers**
Honolulu District
Fort Shafter, Hawai`i 96858-5440

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Young:

Thank you for your letter dated April 17, 2009, providing early consultation comments on the subject project. Please be advised that the Draft Environmental Assessment (EA) will include site-specific information of the project including scaled preliminary engineering drawings of the roadway improvements. We are aware that a Department of Army permit may be required for the project prior to the initiation of construction.

Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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LINDA LINGLE
GOVERNOR OF HAWAII

FEB 2 0 2009

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

02062PDCL.09

February 17, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

**Subject: Early Consultation Comments for Environmental Assessment (EA) Preparation for Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive, Wailea, Island of Maui, Hawaii**

The Department of Health (Department), Clean Water Branch (CWB), acknowledges receipt of your memorandum, dated February 4, 2009, requesting early consultation comments for the EA preparation for the subject project. The CWB has reviewed the memorandum and offers these comments on your project. Please note that our review is based solely on the information provided in the memorandum 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 are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges 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 excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas 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.

   c. Dewatering 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 No. 2 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. Class 1 waters include, but is not limited to, all State waters in natural reserves, preserves, sanctuaries, and refuges established by the Department of Land and Natural Resources under chapter 195, Hawaii Revised Statutes (HRS), or similar reserves for the protection of aquatic life established under Chapter 195, HRS.

   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. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. The EA should specify all types of pollutant discharges to State waters from project construction.

6. All State waters that may be impacted by project construction should be identified in the EA.

7. The EA should also specify if any impacted State waters are listed in the Clean Water Act, Section 303(d) list of impaired water bodies in Chapter IV of the *2006 State of Hawaii Water Quality Monitoring and Assessment Report*.

   Any NPDES permit(s) for discharges into these water bodies will incorporate the requirement for the Permittee to develop and implement a facility/project-specific Waste Load Allocation (WLA) implementation and monitoring plan when a Total Maximum Daily Load (TMDL) which specifies WLAs applicable to the Permittee's project is approved by the U.S. Environmental Protection Agency (EPA). The Permittee shall incorporate and implement the facility/project-specific WLA implementation and monitoring plan as part of the project's Storm Water Pollution Control Plan or Site-Specific Best Management Practices (BMPs) Plan, as appropriate. The facility/project-specific WLA implementation and monitoring plan shall include Data Quality Objectives (DQO) and Quality Assurance (QA) and Quality Control (QC) methods. The purpose and goal of DQO process can be found at http://www.hanford.gov/dqo. Information on the DOH WLA Implementation and TMDLs are available on the DOH Environmental Planning Office website at http://hawaii.gov/health/environmental/env-planning/wqm/wqm.html (see *TMDL Technical Reports and Implementation Plans for approved TMDLs are available here for download in pdf format).*

8. In addition to construction BMPs, post construction BMPs need to be implemented to minimize storm water runoff, to reduce the risk of erosion, and to prevent water quality degradation of State waters downstream of the project site. The EA should include post construction BMPs and a plan to ensure adequate long-term operation and maintenance of the post construction BMPs.

9. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 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

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

DCL:cu

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Alec Wong, P.E., Chief
State of Hawai`i
Department of Health
**Clean Water Branch**
P. O. Box 3378
Honolulu, Hawai`i 96801-3379

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Wong:

Thank you for your letter of February 17, 2009, detailing the list of regulations that may be triggered by the proposed project. As the project continues to move forward through the various regulatory requirements we will ensure that compliance with applicable Department of Health regulations are met. We are aware that a National Pollutant Discharge Elimination System (NPDES) permit will be required for the project prior to the initiation of construction.

Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft Environmental Assessment will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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FEB 1 8 2009

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1054.9

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

FEB 1 7 2009

Mr. Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Subject: Early Consultation on the Piilani Highway Widening to Four Lanes
Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii

Thank you for the opportunity to provide early consultation comments on the project to widen Piilani Highway to four lanes between Kilohana Drive and Wailea Ike Drive. 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 your staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

RUSS K. SAITO
State Comptroller



FEB 2 3 2009

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

PHONE (808) 733-4300
FAX (808) 733-4287

**STATE OF HAWAII**
**DEPARTMENT OF DEFENSE**
**OFFICE OF THE DIRECTOR OF CIVIL DEFENSE**
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

February 20, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Early Consultation Request For Pi`ilani Highway Widening to Four Lanes
Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii

Thank you for the opportunity to comment on this development. After review of the letter and map you have sent for this project, we have no early consultation comments to make. The proposed area falls within coverage arcs of existing warning sirens. We will anticipate reviewing the Environmental Assessment when it is completed and make any appropriate comments at that time.

If you have any questions please call Ms. Havinne Okamura, Hazard Mitigation Planner, at 733-4300, extension 556.

Sincerely,

EDWARD T. TEIXEIRA
Vice Director of Civil Defense

MAR 0 4 2009

PHONE (808) 594-1888

FAX (808) 594-1865

**STATE OF HAWAI'I**
**OFFICE OF HAWAIIAN AFFAIRS**
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD09/4160

February 25, 2009

Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96813

**RE: Request for comments on upcoming Draft Environmental Assessment for the widening of Pi'ilani Highway to four lanes from Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai'i.**

Aloha e Mark Roy,

The Office of Hawaiian Affairs (OHA) received the above-mentioned letter dated February 4, 2009. Honua'ula Partners, LLC proposes widening improvements to the Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive to four lanes of traffic. The improvements will be completed prior to the start of construction on the site, with the exception of grading. Improvements will occur in the existing right-of-way, and use lands owned by the State of Hawai'i. OHA has reviewed the project and offers the following comments.

OHA has substantive obligations to protect the cultural and natural resources of Hawai'i for its beneficiaries, the people of this land. The Hawaii Revised Statutes mandate that OHA "[s]erve as the principal public agency in the State of Hawaii responsible for the performance, development, and coordination of programs and activities relating to native Hawaiians and Hawaiians; . . . and [t]o assess the policies and practices of other agencies impacting on native Hawaiians and Hawaiians, and conducting advocacy efforts for native Hawaiians and Hawaiians." (HRS § 10-3)

Chapter 343 of the Hawaii Revised Statues (HRS) requires that the Draft Environmental Assessment (EA) include a Cultural Impact Assessment (CIA). The CIA should include information relating to the traditional and customary practices and beliefs of the affected area's Native Hawaiians, and the community should be involved in this assessment. Consideration must also be afforded to any individuals accessing the project area for constitutionally protected





traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, Section 7.

OHA requests clarification whether an archaeological inventory survey for the project will be submitted to the State Historic Preservation Division for review and approval. If so, OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. We look forward to reviewing your Draft Environmental Assessment and providing additional comments at that time. If you have further questions, please contact Heidi Guth by phone at (808) 594-1962 or e-mail her at heidig@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA Maui CRC Office

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Clyde W. Nāmu`o, Administrator
State of Hawai`i
**Office of Hawaiian Affairs**
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai`i 96813

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Nāmu`o:

Thank you for your letter dated February 25, 2009. Please be advised that Hana Pono, LLC has prepared a Cultural Impact Assessment to be included in the Draft Environmental Assessment (EA). The Pi`ilani Highway road widening will be located within the existing right-of-way in areas involving fill material or in areas previously disturbed due to construction of the existing highway. Based on early consultation with the Department of Land and Natural Resources, State Historic Preservation Division (SHPD), it was determined that an archaeological inventory survey would not be required, provided an archaeological monitoring plan is submitted to SHPD for review and approval. Aki Sinoto Consulting and Cultural Resources Management has been retained to prepare the monitoring plan.

Further, should iwi kupuna or native hawaiian cultural or traditional deposits be found during the construction of the project, work will cease in the area of the find, and the appropriate agencies will be contacted. Recommended measures shall be followed prior to commencement of further construction work.

planning environment

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

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Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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MAR 0 5 2009

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

March 4, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Mr. Roy:

**Subject: Early Consultation on the Pi`ilani Highway Widening to Four Lanes between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawai`i**

Thank you for the opportunity to comment on this project. The following comments are offered:

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

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

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

1-1

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Patti Kitkowski
Acting District Environmental
Health Program Chief
State of Hawai`i
Department of Health
**Maui District Health Office**
54 High Street
Wailuku, Hawai`i 96793-2102

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Ms. Kitkowski:

Thank you for your letter dated March 4, 2009. We are aware of the regulatory requirements of the Department of Health and will ensure compliance prior to and during construction of the proposed highway widening improvements.

Should you require additional clarification please call me at 244-2015. A copy of the Draft Environmental Assessment will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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MAR 10 2009

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
ABBEY SETH MAYER
DIRECTOR
OFFICE OF PLANNING

**DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM**

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

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-12466

March 10, 2009

Mr. Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Subject: Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii
Early Consultation for Environmental Assessment

Thank you for your request for early consultation regarding the Environmental Assessment (EA) for the above referenced proposal within the existing right-of-way in Wailea, Maui. The four-lane widening project is the result of a State Land Use Commission (LUC) condition for Makena Resort Corp. (LUC Docket No. A97-721).

The Office of Planning requests that the Environmental Assessment consider the impacts of the proposed project on the following issues of State concern:

1. **Cultural, Archaeological, and Historic Resources** – Please include an inventory of archaeological and historic sites on the subject property. Please also identify the status of any monitoring and preservation plans being prepared for or approved by the State Historic Preservation Division. Please identify and describe any cultural resources and cultural practices, including visual landmarks, if applicable, on the subject property and within the ahupua`a in which the property is situated. Please discuss the impact of the proposed project on identified cultural resources and practices, alternatives considered, and proposed mitigation measures.

2. **Environmental, Recreational, and Scenic Resources** – Please include an inventory of flora and fauna, including invertebrates, found on or in proximity to the project site and in any lava tubes and caves on the property. Flora and fauna of concern should not be limited to listed threatened or endangered species or those under consideration for listing, and should include those species and ecosystems identified as "rare" by The Nature Conservancy of Hawai`i. The EA should discuss measures to be taken to protect rare, threatened or endangered







species or ecosystems of concern. You should consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. A description of scenic resources should also be included.

3. **Coastal Zone Management (CZM)** – The State oversees protection of natural, cultural, and economic resources within the coastal zone, which is defined as all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the United States territorial sea (§205A-1, Hawaii Revised Statutes). Please discuss how the proposed project will balance the competing values of economic development and preservation of coastal resources, including the following CZM objective areas.

   a. **Coastal and Ocean Resources** – The State has an affirmative duty to protect Hawaii's nearshore waters. Please discuss important coastal and marine resources and ecosystems that may be impacted by the proposed project. Please discuss how stormwater and wastewater generated by the project will be prevented from reducing the quality of nearshore waters.

      The EA should discuss the impact of the project on existing site and offsite hydrology and how the project will manage stormwater and runoff. OP recommends the use of best management practices (BMP) that promote onsite infiltration and minimize runoff from storm events. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

   b. **Coastal and Other Hazards** – Please describe any hazard conditions that are relevant to the site, such as potential risk or harm from flood, erosion, earthquake, landslide, and point and nonpoint source pollution. Please describe the measures that are proposed to mitigate any hazard impacts.

The Office of Planning looks forward to receiving the EA with the potential impacts and mitigation measures for the above issues addressed. If you have any questions, please call Lorene Maki in the Land Use Division at 587-2888.

Sincerely,

Abbey Seth Mayer
Director

c: Orlando Davidson, LUC
Brennon Morioka, DOT

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Abbey Seth Mayer, Director
Department of Business,
Economic Development & Tourism
**Office of Planning**
P. O. Box 2359
Honolulu, Hawai`i 96804

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Mayer:

Thank you for your letter dated March 10, 2009. In response to your comments the following are noted:

1. Pursuant to early consultation with the State Historic Preservation Division (SHPD) it was determined that an archaeological inventory survey would not be required, provided a monitoring plan is reviewed and approved by SHPD. Prior to and during construction a monitoring plan will be submitted to SHPD and implemented during construction.

2. Biological studies were conducted for the project site and have been included in the Draft Environmental Assessment (EA).

3. The majority of the work to be preformed is located outside the Special Management Area (SMA) for the island of Maui with minor appurtenant structures such as extending existing headwalls are located within the SMA. The project has been evaluated pursuant to Chapter 205-A, Hawai`i Revised Statutes.

planning environment

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com



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Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
F:\DATA\WCPT\Pilani\Widening\DBEDT OP.ecres.wpd

MAR 1 0 2009

LINDA LINGLE
GOVERNOR

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

STP 8.3152

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

March 5, 2009

Mr. Mark Roy
Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Subject: Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive – Early Consultation (EC)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project to widen Piilani Highway from two to four lanes between Kilohana Drive to Wailea Ike Drive. DOT welcomes this consultation process.

DOT understands your firm is working with the DOT Highways Division Planning Branch to arrange a meeting regarding the subject project and the cost-sharing agreement for highway improvements between developers of the three major projects in the Wailea-Makena area. Your firm should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office. All plans and designs for the construction of the project should be directed to these offices.

In response to the subject EC and in anticipation of the proposed meeting, the following comments by the DOT Highways Division are offered.

1. The environmental documents related to the proposed widening of Piilani Highway should be submitted to DOT for review and acceptance before being published.

2. The applicant must completely resurface any and all existing highway lanes damaged during the widening of the highway.

3. The design guidelines and/or the basis of design for all widening of Piilani Highway should be included in the Draft Environmental Assessment (DEA).

4. The undergrounding of the existing overhead electric transmission lines should be considered along Piilani Highway.





5. Detouring of traffic and/or a temporary closure of Piilani Highway will most likely be required as the excavation of 40 to 50-feet of the rock embankment is anticipated with this proposed widening project. The potential impacts of such detours and/or road closures on adjacent roadways should be considered and appropriately addressed.

6. A Traffic Impact Assessment Report (TIAR) should be prepared as a part of the DEA. This TIAR should be submitted for DOT's review and acceptance.

7. The DEA should address the acquisition of right-of-way (ROW) necessary to construct the proposed improvements.

8. County zoning requires the developer to extend Piilani Highway to Kaukahi Street along an alignment that includes unimproved State highway ROW. Any such proposed improvements on State highway ROW must be submitted for review and approval by DOT. If an extension is being proposed, then it should also be appropriately addressed in the DEA.

DOT appreciates the opportunity to provide comments and requests that four (4) copies of the project DEA, including the TIAR, be provided. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Brennon Morioka, Director
**Department of Transportation**
869 Punchbowl Street
Honolulu, Hawai`i 96813-5097

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Morioka:

Thank you for your letter dated March 5, 2009. In response to your comments, the following are noted:

1. We will submit the Draft Environmental Assessment (EA) to the Department of Transportation (DOT) for review and acceptance before being published.

2. During construction, any and all existing highway lanes damaged during the widening of the highway will be completely re-surfaced.

3. The engineering and traffic consultant, Austin, Tsutsumi & Associates, Inc. have been in discussion with DOT's Planning and Highway branches to ensure that the design for the highway is compliant with DOT's requirements. The basis of design for the highway is included in the Draft EA under Appendix "I-2".

4. Preliminary plans for the proposed highway widening includes relocation of existing above-ground utility poles. It does not currently include undergrounding the existing overhead electrical transmission lines. Further discussion of this matter will be held with the DOT.

5. Prior to initiation of construction consultation with the Police Department, SDOT and adjoining property owners will be conducted to develop measures to mitigate potential construction traffic impacts, especially from detours and road closures.

6. A Traffic Impact Assessment Report (TIAR) has been prepared by Austin, Tsutsumi & Associates, Inc. and is included in the Draft EA.

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7. As currently designed, the majority of the work will be located within the existing highway right-of-way. Minor appurtenant improvements outside of the right-of-way are limited to the extension of an existing drain culvert and headwall north of Kilohana Drive, sidewalks, Americans with Disabilities Act (ADA) curb ramps, installation of guard rails, underground utility lines, traffic signal installation, and lane re-striping.

   Coordination of the work outside of the right-of-way will be implemented with adjoining property owners regarding construction of the improvements and easements or land acquisition that may be necessary for improvements outside of the existing highway right-of-way.

8. We acknowledge that Honua`ula Partners, LLC is required to extend Pi`ilani Highway south of Wailea Ike Drive when fifty (50) percent of the Honua'ula project is developed. The extension of Pi`ilani Highway is not part of the scope of the work for the current Pi`ilani Highway Widening project. Prior to initiation of improvements south of Wailea Ike Drive coordination with SDOT will be initiated

Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
F:\DATA\WCPT\PiilaniWidening\SDOT ecres.wpd

MAR 1 0 2009

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

March 6, 2009

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

Attention: Mr. Mark Roy, Project Manager

Ladies and Gentlemen:

Subject: Early Consultation on the Pi'ilani Highway widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive

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

Sincerely,

Morris M. Atta
Administrator



LINDA LINGLE
GOVERNOR OF HAWAII

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

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NATURAL RESOURCES
STATE OF HAWAII

**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 7, 2009

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__Div. of ~~Boating~~ & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
__Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division –Maui District Office

FROM: for Morris M. Atta
SUBJECT: Early consultation on the Pi'ilani Highway Widening to four lanes between Kilohana Drive and Wailea Ike Drive
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 5, 2009.

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: 3/3/09

**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**ENGINEERING DIVISION**

**LD/MorrisAtta**
**Ref.: EarlyConsultPiilaniHWayWidening**
**Maui.448**

**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 C. The Flood Insurance Program does not have any regulations for developments within Flood Zone C.**

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

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

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

- ( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
- ( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- ( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- ( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

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

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

( ) Additional Comments: _____

( ) Other: _____

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

Signed: _____
ERIC T. HIRANO, CHIEF ENGINEER

Date: 3/3/09



LINDA LINGLE
GOVERNOR OF HAWAII

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

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MAUI DISTRICT
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**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 7, 2009

MEMORANDUM

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

RECEIVED
LAND DIVISION
2009 FEB 12 A 10:25
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

FROM: Morris M. Atta
SUBJECT: Early consultation on the Pi'ilani Highway Widening to four lanes between Kilohana Drive and Wailea Ike Drive
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 5, 2009.

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.
( ) Comments are attached.

Signed: _____
Date: 2/9/09

LINDA LINGLE
GOVERNOR OF HAWAII

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

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DEPT OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

AQUATIC RESOURCES: 2084

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| DIRECTOR | |
| COMM. FISH. | |
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**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**LAND DIVISION**
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 7, 2009

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
~~Div. of Boating & Ocean Recreation~~
x Engineering Division
Div. of Forestry & Wildlife
Div. of State Parks
Commission on Water Resource Management
Office of Conservation & Coastal Lands
x Land Division –Maui District Office

RECEIVED
FEB 9 2009
AQUATIC RESOURCES

FROM: Morris M. Atta
SUBJECT: Early consultation on the Pi'ilani Highway Widening to four lanes between Kilohana Drive and Wailea Ike Drive
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 5, 2009.

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

Signed:
Date: 2/18/09

3

LINDA LINGLE
GOVERNOR OF HAWAII

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

AQUATIC RESOURCES: 2084

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| DIRECTOR | |
| COMM. FISH. | |
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 7, 2009

MEMORANDUM

TO: DLNR Agencies:
x Div. of Aquatic Resources
Div. of Boating & Ocean Recreation
x Engineering Division
Div. of Forestry & Wildlife
Div. of State Parks
Commission on Water Resource Management
Office of Conservation & Coastal Lands
x Land Division –Maui District Office

RECEIVED
FEB 9 2009
AQUATIC RESOURCES

FROM: Morris M. Atta
SUBJECT: Early consultation on the Pi'ilani Highway Widening to four lanes between Kilohana Drive and Wailea Ike Drive
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 5, 2009.

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: Skippy Hau
Date: 2/18/09

RECEIVED
Maui
FEB 17 2009
Div. of Aquatic Resources

32

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Morris Atta, Administrator
**Department of land and**
**Natural Resources**
Land Division
P. O. Box 621
Honolulu, Hawai`i 96809

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Atta:

Thank you for your letter dated March 6, 2009. We acknowledge that the project site is located within Flood Zone C.

Should you require additional clarification please call me at (808) 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

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

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
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

July 16, 2009

Mr. Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793
planning@mhplanning.com

LOG NO: 2009.0148
DOC NO: 0907PC30
Archaeology

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Early Consultation on the Pi'ilani Highway Widening to Four Lanes between Kilohana and Wailea Ike Drive**
**Paeahu Ahupua'a, Makawao District, Island of Maui**
**TMKs: (2) 2-1-008:046; (2) 2-1-008:113; (2) (2) 2-1-008:130; 2-1-008:131;**
**(2) 2-1-008:999; (2) 2-1-014:999; (2) 2-1-015:999; (2) 2-1-026:094**

Thank you for the opportunity to comment on the aforementioned project, correspondence for which we received on February 6 of 2009. Please accept our apologies for the lengthy delay in responding.

Based on the submitted document, the project involves widening improvements to the Pi'ilani Highway between Kilohana Drive and Wailea Iki Drive, as requested by the County of Maui in association with the rezoning application made by Honua'ula Partners, LLC. The proposed areas of effect are all within or immediately alongside an existing County roadway/road right-of-way. The proposed project is also located in an area where numerous isolated and clustered pre-Contact period human burials and other culturally significant deposits have been found. Given the above information, the most reasonable form of mitigation appears to be precautionary archaeological monitoring during all project related ground altering disturbance.

Therefore, upon review of any permit application associated with the proposed project forwarded to us by the County of Maui, we will likely recommend the following:

A qualified archaeological monitor shall be present during *those portions of the project which involve ground altering disturbance* in order to document any historic properties which may be encountered and to provide mitigation measures as necessary. *Please note that ground altering disturbance includes previously disturbed stratigraphy, as culturally significant subsurface deposits are often found in these contexts.*

As per Hawai'i Administrative Rules (HAR) §13-279, this means that prior to the commencement of ground altering disturbance associated with the proposed project, the project developer or developer's agent must submit an appropriately prepared *monitoring plan* to this office for review and acceptance. The plan must contain the following provisions:

1) Specify the kinds of historically or culturally significant sites or remains of sites anticipated and where in the construction area they are likely to be found;
2) Specify how such sites or remains of sites will be documented;
3) Specify how such sites or remains of sites will be treated;
4) Specify that the archaeologist (s) conducting the monitoring has (have) the authority to halt construction in the immediate area of the find in order to carry out the plan;
5) Specify that coordination between the archaeologist and construction crew has been scheduled so that all involved parties are aware of the plan and what it means;
6) Specify what laboratory work will be performed on any cultural sites or remains of sites that might be found in the project area;
7) Specify details concerning the archiving of any collections that are made;
8) Specify a schedule of report preparation and that the report will be submitted within the required 180 days after completion of the proposed undertaking.

A list of those meeting the requirements to perform such work can be obtained on the SHPD's website at http://hawaii.gov/dlnr/hpd/pdfs/2009-Permittee.pdf or by contacting our main office at (808) 692-8015.

If you have any questions or comments regarding this letter, please contact the SHPD's Lead Maui Archaeologist, Ms. Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Sinoto Consulting, LLC: akihikosinoto@aol.com
Jeff Hunt, Director, Dept. of Planning, FAX (808) 270-7634



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Nancy McMahon, Deputy SHPD
State Archaeologist
**State Historic Preservation Division**
Department of Land and Natural Resources
601 Kamokila Boulevard, Room 555
Kapolei, Hawai`i 96707

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Ms. McMahon:

Thank you for your letter of July 16, 2009 and concurrence that due to the scope of the project an archaeological inventory survey is not required. However, an archaeological monitoring plan will be prepared and submitted to the State Historic Preservation Office (SHPO) for review and approval prior to the initiation of any ground altering disturbance.

Should you require additional clarification please contact me at (808) 244-2015 or email colleen@mhplanning.com. A copy of the Draft Environmental Assessment (EA) will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC and Keaka LLC
Aki Sinoto, Aki Sinoto Consulting and Cultural Resource Management
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FEB 1 3 2009

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

February 10, 2009

Mr. Mark Roy
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, hawaii 96793

**SUBJECT: Early Consultation on the Pi`ilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii**

Dear Mr. Roy:

We have reviewed the subject project and have no comments or objections to the proposed project.

Thank you for the opportunity to review and comment on this matter. Please feel free to contact me or Mr. Patrick Matsui, Chief of Parks Planning and Development at 270-7931 should you have any other questions.

Sincerely,

TAMARA HORCAJO
Director of Parks & Recreation

xc: Patrick Matsui, Chief of Parks Planning and Development

TH:PM:do



FEB 1 3 2009

CHARMAINE TAVARES
MAYOR

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

**COUNTY OF MAUI**
**DEPARTMENT OF FIRE AND PUBLIC SAFETY**
**FIRE PREVENTION BUREAU**

780 ALUA STREET
WAILUKU, HAWAII 96793
(808) 244-9161
FAX (808) 244-1363

February 10, 2009

Mr. Alexander Roy, Project Manager
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, HI 96793

**SUBJECT: EARLY CONSULTATION, Pi'ilani Highway Widening to four lanes from Kilohana Drive to Wailea Ike Drive.**

Dear Mr. Roy,

I have had an opportunity to review the early consultation request for the above subject. We do not have any specific concerns at this time. Please feel free to contact us if there are any questions or concerns.

Sincerely,

Valeriano F. Martin
Captain
Fire Prevention Bureau

CHARMAINE TAVARES
MAYOR

OUR REFERENCE
tj
YOUR REFERENCE

# POLICE DEPARTMENT
COUNTY OF MAUI

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

THOMAS M. PHILLIPS
CHIEF OF POLICE

GARY A. YABUTA
DEPUTY CHIEF OF POLICE

FEB 20 2009

February 17, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Roy:

SUBJECT: Early Consultation on the Pi'ilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive

Thank you for your letter of February 4, 2009, requesting comments on the above subject.

We have enclosed a copy of our comments and will defer any further comments and/or recommendations upon our review of the Environmental Assessment.

Very truly yours,

AC Wayne T. Ribao

Assistant Chief Wayne T. Ribao
for: Thomas M. Phillips
Chief of Police

c: Jeffrey Hunt, Planning Department



COPY

CONCUR W/ OFC. HICKLE
AC Wayne Ribao
02/17/09

**TO** : THOMAS PHILLIPS, CHIEF OF POLICE, COUNTY OF MAUI

**VIA** : CHANNELS 02/13/09

**FROM** : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHEI

**SUBJECT** : EARLY CONSULTATION ON THE PIILANI HIGHWAY WIDENING TO FOUR LANES BETWEEN KILOHANA DRIVE AND WAILEA IKE DRIVE, WAILEA, MAUI, HAWAII

**APPLICANT INFORMATION:**

The project manager, Mark ROY of Munekiyo & Hiraga, Inc. is requesting early input as part of the Environmental Assessment (EA) for the Piilani Widening to Four Lanes project.

The portion of Piilani Highway to be widened to four lanes is the area between Kilohana Drive to Wailea Ike Drive. The widening improvements are a portion of a condition in which Honua'lua Partners, LLC must complete prior to the commencement of any construction on the future job site.

**POLICE CONCERNS:**

The information received by our department didn't specify the time or anticipated length of the highway widening project. Furthermore, the information received did not specify if the highway will be completely closed between Kilohana Drive and Wailea Ike Drive or weather traffic will be diverted around the project during the demolition phase?

The answers to these questions may help to determine the impact to police services and the recommendations we make with regards to the future Environmental Assessment and roadway widening project.

At this time I have no further concerns or comments regarding the early consultation in preparation for the Environmental Assessment. I would however like to review and submit my comments regarding this project when the EA document is completed.

COMMENTS:
SPECIFIC RECOMMENDATIONS WILL BE ADDRESSED UPON ISSUANCE OF THE ENVIRONMENTAL ASSESSMENT.

Respectfully Submitted,
Officer B. HICKLE
02/12/09 16:30 hours

744
02/12/09

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Gary Yabuta, Chief of Police
County of Maui
**Police Department**
55 Mahalani Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Chief Yabuta:

Thank you for your department's letter dated February 17, 2009. Information on the project will be included in the Draft Environmental Assessment (EA).

Should you require additional clarification please call me at 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
F:\DATA\WCPT\PiilaniWidening\MPD.ecres.wpd

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MAR 0 5 2009

DEPARTMENT OF
**HOUSING AND HUMAN CONCERNS**
COUNTY OF MAUI

CHARMAINE TAVARES
Mayor

LORI TSUHAKO
Director

JO-ANN T. RIDAO
Deputy Director

2200 MAIN STREET • SUITE 546 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165
MAILING ADDRESS: 200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • EMAIL director.hhc@mauicounty.gov

March 3, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

**SUBJECT: Early Consultation Request on the Pi'ilani Highway Widening to Four Lanes between Kilohana Drive and Wailea Iki Drive, Wailea, Maui, Hawai'i**

We have reviewed the Early Consultation Request for the above subject project and would like to inform you that we do not have any comment to offer.

Please call Mr. Wayde Oshiro of our Housing Division at 270-7355 if you have any questions.

Sincerely,

LORI TSUHAKO
Director of Housing and Human Concerns

cc: Housing Division

CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

APR 17 2009

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

April 16, 2009

Mr. Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

**SUBJECT: EARLY CONSULTATION ON THE PI'ILANI HIGHWAY WIDENING TO FOUR LANES LOCATED IN THE RIGHT-OF-WAY BETWEEN KILOHANA DRIVE AND WAILEA IKE DRIVE, WAILEA, MAUI, HAWAII; (EAC 2009/0008)**

The Department of Planning (Department) is in receipt of the above-referenced letter, dated February 4, 2009, requesting comment on the above-proposed action. Only a site map was included to comment on. No project details were provided. The Department understands the proposed action includes the following:

- Honua'ula Partners, LLC, as the applicant, proposes to widen to four lanes and improve a portion of the Piilani Highway, between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii, from the current two lanes, as required by a condition of the re-zoning application for Kihei-Makena District 9 (Honua'ula).

Based on the foregoing, the Department provides the following comments in preparation of the Draft EA:

1. The Special Management Area (SMA) boundary in the vicinity of this project is determined as all lands makai of the Piilani Highway right-of-way easement. Thus, if the project is totally within the existing right-of-way, the project is located outside of the SMA. If any portion of the highway widening involves lands within the SMA, that is any lands makai of the right-of-way, the action will require a SMA Use Permit;

2. The Applicant must determine who the Accepting Agency will be for the Environmental Assessment;

3. Address social and physical impacts to surrounding neighborhoods, including noise and air pollution. Provide mitigation alternatives to any potential environmental impacts; and

250 SOUTH HIGH STREET, 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





4. Provide mitigation alternatives to ensure that best management practices shall be implemented to insure that water quality and marine resources are protected.

Thank you for the opportunity to comment. Please include the Department on the distribution list for the Draft EA. Should you require further clarification, please contact Staff Planner James Buika by email at james.buika@mauicounty.gov or by phone at (808) 270-6271.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

For: JEFFREY S. HUNT, AICP
Planning Director

xc: James A. Buika, Staff Planner
ZAED
Project File
General File

JSH:CIY:JAB:sg
K:\WP_DOCS\PLANNING\EAC\2009\0008_PiilaniHwyWidening\Comments.DOC

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Jeffrey S. Hunt, A.I.C.P
Planning Director
**Department of Planning**
250 South High Street
Wailuku, Hawai`i 96793-2102

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Hunt:

Thank you for your letter dated April 16, 2009, providing early consultation comments on the subject project. We acknowledge the Special Management Area (SMA) boundary in the vicinity of the project is makai of the Pi`ilani Highway right-of-way easement. Coordination will be undertaken with the department to confirm applicable permitting requirements for any work located within the SMA.

Pi`ilani Highway is a State of Hawai`i highway under the jurisdiction of the Department of Transportation and they will be the Accepting Agency for the Environmental Assessment (EA).

The Draft EA will address social and physical impacts to surrounding neighborhoods, including noise and air pollution. Noise and air quality reports will be included in the Draft EA. Appropriate mitigation Best Management Practices will be included in the Draft EA.

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Should you require additional clarification please call me at 244-2015. A copy of the Draft EA will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
F:\DATA\WCPT\PilaniWidening\PlanningDept.ecres.wpd

MAR 0 9 2009

**Maui Electric Company, Ltd.** • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

March 6, 2009

Mr. Mark Roy
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Subject: Early Consultation on the Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive, Wailea, Maui, Hawaii

Dear Mr. Roy:

This is in response to your letter dated February 4, 2009, seeking early input regarding the proposed action.

Maui Electric Company, Limited (MECO) is in receipt of a request to relocate the utility poles affected by this highway widening project. The preliminary plan is to relocate and replace the existing wood poles with steel poles and move them in the makai direction. The work to be performed by MECO is contingent upon various approvals, including but not limited to the Public Utilites Commission, State Department of Transportation and the County's Planning Department.

Should you have any questions, please contact me at 871-2337.

Sincerely,

Randall Nakama
Customer Designer



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Randall Nakama
**Maui Electric Company, Ltd.**
P. O. Box 398
Kahului, Hawai`i 96733-6898

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Mr. Nakama:

Thank you for your letter dated March 6, 2009. Please be advised that we will coordinate the proposed project with MECO to ensure that all necessary approvals are obtained prior to the relocation of utility poles affected by the highway widening project.

Should you require additional clarification please call me at 244-2015. A copy of the Draft Environmental Assessment will be forwarded to your agency for review and comment.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
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FEB 1 3 2009

**Maui Economic Opportunity, Inc.**

P.O. Box 2122
Kahului, HI 96733
808-249-2990
Fax: 808-249-2991
www.meoinc.org

February 11, 2009

Mr. Mark Roy
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy,

Maui Economic Opportunity, Inc. has no comment or concern to offer as early consultation regarding the Pi'ilani Highway Widening Project by Honua'ula Partners, LLC. Should you have any questions, please contact me at (808) 249-2990.

Sincerely,

Sandy Baz
Chief Executive Officer

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Community Action changes people's lives, embodies the spirit of hope, improves communities, and makes America a better place to live. We care about the entire community, and we are dedicated to helping people help themselves and each other.



FEB 1 9 2009

Madge Schaefer
Maui Meadows Neighborhood Association
520 Mikioi Place
Kihei, HI 96753

February 16, 2009

Mark Roy, Project Manager
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, HI 96793

RE: Early Consultation on the Pi'ilani Highway Widening to Four Lanes Between Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawaii

Dear Mr. Roy:

Maui Meadows subdivision is located adjacent to the proposed widening. On June 12, 2001 we sent a letter to Charles Jencks, owner's representative for the Wailea 670 project, outlining a number of concerns about the project, some relating to the widening of the Pi'ilani Highway. We have provided input to all issues related to this project for many years.

While we understand the need for the widening, we have an obligation to do everything possible to mitigate the impacts to the residents of Maui Meadows. We appreciate this opportunity for early consultation related to our concerns.

The essence of those concerns has not changed. They are reiterated below:

**Roadway Configuration**
Will the widening include a median or some type of division between north and south bound lanes?

**Noise and Traffic**

There are 47 Maui Meadows properties that back up directly to Piilani Highway. Highway and construction noise does travel up the hill and directly impacts no fewer than 150 properties located within 500 feet of Piilani Hwy. Most properties have both a main house and an ohana, so at least 250 families would be affected. They already experience the noise generated by traffic.
The last noise study was done in 1993 and appeared in the Proposed Project Application. That noise study was focused mainly on areas of Wailea rather than the closest inhabited area, Maui Meadows.
However, the 1993 study notes that there are four homes already exposed to greater than 65dba in Maui Meadows. Those measurements were taken 101 feet from the centerline. It is

obvious that more traffic, especially the noise of heavy construction equipment will create an unhealthy situation for residents along portions of Akala Drive and adjacent streets.
There must be a new noise study conducted with emphasis on measuring impacts to existing residences along the proposed widening route, along with mitigation measures which would lessen those impacts.

Please address the time of day the widening work would be done. Many times these projects are done at night because of less traffic. That would have tremendous impacts on adjacent homes. Imagine trying to sleep while listening to the incessant back up beeping of heavy equipment all night long for many months. Will construction noise be monitored? Where will the staging area be set up for construction equipment and employee parking?
If the project work is done at night, how will it be lit? What is the power source for those lights and if generators, how will they be muffled to reduce noise levels to adjacent homes?
What is the estimated time for project completion?

**Traffic Diversion Plan**

What traffic diversion plans will be in place during the entire construction period? We are concerned that the level of traffic would increase dramatically on Akala Drive by drivers wanting to avoid the construction. Where will all that traffic go that starts at 3:00 pm heading north when the workday shift ends in Wailea? We request that a diversion plan be included in the traffic study.

**Dust Control**

Fugitive dust is a major problem in Kihei. How will dust control be managed during grading and construction? Who will be responsible for seeing that the plan is carried out? Will the neighbors be given a hotline to call if there is a problem?
How will slopes along the route be stabilized?

**Landscaping**

Will landscaping of easements along the route be landscaped as part of the contract?
Will water be drawn from the recycled water line that is proposed to run under the route?

**Sidewalks and Bike paths**

Will sidewalks and bike paths be part of the project?

**Flood Control**

Does the design include flood control improvement? At times of large rains storms, Maui Meadows will get rivers flowing down from the ranch land above, bringing tons of water and debris? Are there design plans that take these storm flows into account?





**Street Lighting**

If street lighting is to be installed, we would like for it to be shielded so that it does not create a light pollution problem for viewing our beautiful starry sky.

**Crosswalks and Traffic Signals**

We are aware several pedestrian fatalities at the intersection of the Pi'ilani and Mikioi Place as well as numerous traffic accidents. Will a traffic signal be installed at this intersection? Will cross walks be painted? Will the intersection have street lights?

**Blasting**

Will blasting be done during construction? If yes, how will residents be notified of blast times? How will the possible collateral damage done to surrounding properties be remedied? Could the geology consultant discuss the effect of blasting on veins of blue rock to adjacent properties?

**Utility Lines**

Will utilities be undergrounded along the widened route?

**Public Meeting**

We would request that a public meeting be scheduled for Maui Meadows residents before plans are finalized so that there would be an opportunity for us to be educated as to what will be taking place, the ability to get questions answered and give further input.

**Draft EA**

We would appreciate receiving three copies of the draft EA on this project. We would also appreciate a copy of the draft also being placed in the Kihei Library.

Again, on behalf of the Board of Directors and the residents of Maui Meadows, we appreciate being included in this project at an early stage. Please contact me at 874-9293 if you have any questions.

Sincerely,

Madge Schaefer, President
Maui Meadows Neighborhood Association

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 28, 2009

Madge Schaefer
**Maui Meadows Neighborhood Association**
520 Mikioi Place
Kihei, Hawai`i 96753

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Pi`ilani Highway Widening to Four (4) Lanes North of Kilohana Drive to Wailea Ike Drive, Wailea, Maui, Hawai`i

Dear Ms. Schaefer:

Thank you for your letter dated February 16, 2009. In response to your comments, the following are noted:

1. The Pi`ilani Highway widening will include a median as separation between the travel lanes.

2. The Draft Environmental Assessment (EA) will address noise impacts of the project. A Noise Study specifically for the project was conducted and will be included in the Draft EA. Noise attenuation measures shall be incorporated into the project to mitigate both construction and post-construction noise impacts.

3. As the project continues through the review process more specific mitigative measures and Best Management Practices for construction impacts from noise, fugitive dust, and traffic will be incorporated into the project. Further consultation with the Police Department will be initiated to discuss traffic matters during the construction phase.

4. Prior to the initiation of construction, consultation with the adjacent property owners will be initiated to develop additional measures to reduce impacts from construction activities.

5. Landscaping for the project include measures for dust control and stabilization of soils. Also, where possible, landscaping will be planted on the roadway side of walls to reduce any visual impacts.

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6. Sidewalks are limited to the intersections connecting to Pi`ilani Highway between Kilohana Drive and Wailea Ike Drive in order to provide pedestrian crossings. A dedicated bike lane is provided on the makai (west) side of the highway with a shoulder/bike lane on the mauka (east) side of the highway.

7. The existing drainage patterns in the area will not be affected by the proposed project. Runoff from the additional lanes are calculated to be minimal and will be accommodated within proposed drainage improvements associated with the proposed project.

8. The project involves the relocation of existing street lights, as may be necessary. To the extent practicable, efforts will be made to shield any relocated light fixtures.

9. Crosswalks and traffic signals are proposed at the intersecting streets at Kilohana Drive/Mapu Place, Okolani Drive/Mikioi Place, and Wailea Ike Drive. Existing street lights at these intersections will be relocated, as may be necessary.

10. The work will be in the existing right-of-way with limited ground excavation that will require blasting. Based on a geotechnic analysis conducted for the project it is anticipated that pneumatic equipment will be used in ground excavation work.

11. Work is being coordinated with Maui Electric Company, Ltd. to relocate the existing above-ground utility poles.

12. A public community meeting was conducted on April 16, 2009 at the Kihei Community Center. The Maui Meadows Neighborhood Association, Wailea Community Association, and Kihei Community Association were invited to the public meeting which included the consultant team and a representative from the State Department of Transportation.

In accordance with the review process for EAs, a copy of the Draft EA will be forwarded to the Kihei Library. In accordance with your request, we will forward three (3) copies of the Draft EA to the Maui Meadows Neighborhood Association.

Should you require additional clarification please call me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Clyde Murashige, A&B Wailea LLC
Don Fujimoto, Honua LLC
F:\DATA\WCPT\PiilaniWidening\MSchaefer.ecres.wpd



KCA

Kihei Community Association

*"Working together to shape our Community's future."*

FEB 2 0 2009

February 18, 2009

Munekiyo & Hiraga
Attn: Mark Roy
305 High St.
Wailuku, HI. 96793

Re: Draft EA Pi'ilani Highway Widening Kilohana to Wailea Ike

Dear Mark,

We at the KCA have nothing to add in opposition to your Draft EA. We have spoken with the developers in the past and are aware of the proposed project and their intentions. We are confident the developer will do what is best for safe smooth traffic flow, the community and abide by the decision brought down by the County Council.

We thank you for keeping us informed at the community level. We look forward to working alongside you and your client now and in the future.

Regards,

Michael C. DiBella

KCA Planning Committee Chairman

cc: Charles Jencks, Honua'ula Partners LLC

P.O. Box 662 – Kihei, HI – 96753 – 808-879-5390 – info@KiheiCommunityAssociation.org

# X. PARTIES CONSULTED DURING REVIEW OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED; AND RESPONSE TO SUBSTANTIVE COMMENTS

# X. PARTIES CONSULTED DURING REVIEW OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSE TO SUBSTANTIVE COMMENTS

A Draft Environmental Assessment (EA) for the subject project was filed and published in the Office of the Environmental Quality Control's The Environmental Notice on November 22, 2010. Comments on the Draft EA were received during the 30-day public comment period.

Comments, as well as responses to substantive comments, are included in this chapter.

**FEDERAL AGENCIES**

1. Ranae Ganske-Cerizo, Soil Conservationist
   **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. Carol Borgstrom, Director
   **U.S. Department of Energy**
   Office of NEPA Policy & Compliance
   1000 Independence Avenue, S.W.
   Washington, D.C. 20585

4. Wayne Nastri, Regional Administrator
   **U.S. Environmental Protection Agency**
   Region 9
   75 Hawthorne Street
   San Francisco, California 94105

5. Dave Wesley, Deputy Regional Director
   **U. S. Fish and Wildlife Service**
   Pacific Region
   911 NE 11th Avenue
   Portland, Oregon 97232

6. Loyal Mehrhoff
   Field Supervisor
   **U.S. Fish and Wildlife Service**
   300 Ala Moana Blvd., Rm. 3-122
   Box 50088
   Honolulu, Hawaii 96813

7. Cynthia Burbank, Associate Adminstrator
   **U.S. Department of Transportation**
   Planning, Environment and Realty
   Federal Highway Administration
   400 7th Street, S.W.
   Washington, D.C. 20590-9898

**STATE AGENCIES**

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

9. Pearl Imada Iboshi, Director
   **Department of Labor & Industrial Relations**
   830 Punchbowl St.
   Honolulu, HI 96813

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

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

12. State of Hawaii
**Department of Business, Economic Development & Tourism**
**Energy Division**
P. O. Box 2359
Honolulu, Hawaii 96804

13. Kaulana Park, Chairman
**Department of Hawaiian Home Lands**
P. O. Box 1879
Honolulu, Hawaii 96805

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

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

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

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

18. 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

19. Morgan Davis
**Department of Land and Natural Resources**
**State Historic Preservation Division**
130 Mahalani Street
Wailuku, Hawaii 96793

20. Michael Formby, Interim Director
State of Hawaii
**Department of Transportation**
869 Punchbowl STreet
Honolulu, Hawaii 96813

cc: Fred Cajigal

21. Major General Robert G.S. Lee, Director
**Hawaii State Civil Defense**
3949 Diamond Head Road
Honolulu, Hawaii 96813-4495

22. Clyde Nāmu'o, Administrator
**Office of Hawaiian Affairs**
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

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

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

25. University of Hawaii at Manoa
**Environmental Center**
2550 Campus Road, Crawford 317
Honolulu, Hawaii 96822

26. Rosalyn H. Baker, Senator
**Hawaii State Senate**
Hawaii State Capitol, Room 210
415 S. Beretania Street
Honolulu, Hawaii 96813

27. Joe Bertram, III, Representative
**House of Representatives**
Hawaii State Capitol, Room 311
415 S. Beretania Street
Honolulu, Hawaii 96813



**COUNTY AGENCIES**

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

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

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

31. Jeffrey A. Murray, Fire Chief
County of Maui
**Department of Fire and Public Safety**
**Attention: Paul Haake**
200 Dairy Road
Kahului, Hawaii 96732

32. Kalbert Young, Director
County of Maui
**Director of Finance**
200 High Street
Wailuku, Hawaii 96793

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

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

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

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

37. Milton Arakawa, Director
County of Maui
**Department of Public Works**
200 South High Street
Wailuku, Hawaii 96793

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

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

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

41. Honorable Danny Mateo, Council Chair
**Maui County Council**
200 South High Street
Wailuku, Hawaii 96793

**UTILITIES**

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

43. Greg Kauhi, Manager – Customer Operations
**Maui Electric Company, Ltd.**
**Attention: Randall Nakama**
P. O. Box 398
Kahului, Hawaii 96733

**COMMUNITY ORGANIZATIONS**

44. Michael DeBella
**Kihei Community Association**
P. O. Box 662
Kihei, Hawaii 96753

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

46. Sandy Baz, Executive Director
**Maui Economic Opportunity**
99 Mahalani Street
Wailuku, Hawaii 96793

47. Carol Reimann, Executive Director
**Maui Hotel & Lodging Association**
1727 Wili Pa Loop, Suite B
Wailuku, Hawaii 96793

48. Madge Schaefer, President
**Maui Meadows Neighborhood Association**
P. O. Box 160
Kihei, Hawaii 96753

49. Madge Schaefer, President
**Maui Meadows Neighborhood Association**
520 Mikioi Place
Kihei, Hawaii 96753

**LIBRARIES AND MEDIA**

50. **Kihei Public Library**
35 Waimahaihai Street
Wailuku, Hawaii 96793

51. **Hawaii Documents Center**
Hawaii State Library
478 South King Street
Honolulu, Hawaii 96813

52. **City Editor, Honolulu Star Advertiser**
500 Ala Moana Boulevard, Suite 7-500
Honolulu, Hawai`i 96813

53. **Editor, Maui News**
P. O. Box 550
Wailuku, Hawai`i 96793



# I. State Agencies

LINDA LINGLE
GOVERNOR OF HAWAII

NOV 05 2010

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

11007PJF.10

November 3, 2010

Mr. Michael Formby
Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Formby:

**SUBJECT: Draft Environmental Assessment (DEA) for**
**Piilani Highway Widening Project**
**Kihei, Island of Maui, Hawaii**
**TMKs: (2) 2-1**

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project.

Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://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).





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

JF:ml

c: DOH-EPO #I-3401 [via email only]
Mr. Ronald Asakura, Maui, CWB District Health Office [via email only]
Mr. Gwen Ohashi Hiraga, Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1078

APR - 3 2012

TO: ALEC WONG, P.E.
CLEAN WATER BRANCH
DEPARTMENT OF HEALTH

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your department's letter dated November 3, 2010. We acknowledge receipt of the Department of Health's standard comments. The Hawaii Department of Transportation will coordinate the project with your agency to ensure compliance with Chapter 11-54 and 11-55, Hawaii Administrative Rules.

Your comments will be included in the Final Environmental Assessment . Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



NOV 05 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

(P) 1269.0

NOV - 4 2010

**MEMORANDUM**

TO: The Honorable Michael Formby, Interim Director
Department of Transportation

FROM: Russ K. Saito
State Comptroller

SUBJECT: Draft Environmental Assessment (EA) for the
Piilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at
Kihei, Maui, Hawai'i

Thank you for the opportunity to provide comments on the Piilani Highway Widening project. 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.

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

c: Ms Gwen Ohashi Hiraga, Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1075

APR - 3 2012

TO: THE HONORABLE DEAN SEKI
INTERIM COMPTROLLER
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your department's memorandum of November 4, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your department's review of the document and your conveying confirmation that the Department has no comments at this time.

Thank you again for your department's participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your department's letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



NOV 15 2010

LINDA LINGLE
GOVERNOR

PEARL IMADA ISOSHI
DIRECTOR

COLLEEN Y. LaCLAIR
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
830 PUNCHBOWL STREET, ROOM 321
HONOLULU, HAWAII 96813
www.hawaii.gov/labor
Phone: (808) 586-8844 / Fax: (808) 586-9099
Email: dlir.director@hawaii.gov

November 10, 2010

**TO:** The Honorable Michael Formby, Interim Director
Department of Transportation

**FROM:** Pearl Imada Isoshi, Director
Department of Labor and Industrial Relations

**SUBJECT:** Draft Environmental Assessment (EA) for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Dirve) at Kihei, Maui, Hawaii

This in response to your request for comments on the draft EA report for the proposed Pi'ilani Highway Widening project along Kilohana to Wailea Ike Drive in Kihei, Maui, Hawaii. The Department of Labor and Industrial Relations has no comments to offer, and we foresee no impacts on our existing or proposed projects and programs.

Should you have any questions, please call met at 586-8844, or you can contact Mr. Patrick Fukuki, our Business Management Officer, at 586-8888.

c: Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1076

APR - 3 2012

TO: THE HONORABLE DWIGHT TAKAMINE
DIRECTOR
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your department's memorandum of November 10, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your department's review of the document and your conveying confirmation that the Department has no comments at this time.

Thank you again for your department's participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your department's letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



LINDA LINGLE
GOVERNOR OF HAWAII

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

NOV 18 2010

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

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

November 17, 2010

The Honorable Michael Formby
Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Formby:

**Subject: Draft Environmental Assessment for the Pi`ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at Kihei, Hawaii**

Thank you for the opportunity to review 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 or E-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski
District Environmental Health Program Chief

c Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1079

APR - 3 2012

TO: PATTI KITKOWSKI
DISTRICT ENVIRONMENTAL HEALTH PROGRAM CHIEF
MAUI DISTRICT HEALTH OFFICE
DEPARTMENT OF HEALTH

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your department's letter of November 17, 2010. As applicable, a National Pollutant Discharge Elimination System permit and noise permit will be obtained prior to the initiation of construction.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



The Senate

STATE CAPITOL
HONOLULU, HAWAII 96813

November 18, 2010

Mr. Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Formby:

I am writing in support of the draft environmental assessment (EA) for the Pi`iliani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) in Kihei, Maui. This project is located in my state senatorial district and will address traffic mitigation in the Wailea-Makena region of South Maui. As outlined in the draft EA, the project seems consistent with the conditions imposed by Maui County.

Traffic congestion is among the top priorities of my constituents. Pi`ilani Highway is the main thoroughfare for South Maui. As new developments come on line, it is imperative that our roadways keep pace with demands to access these areas as well as provide for easy ingress and egress along this important roadway.

The need to upgrade Pi`ilani Highway has been identified in several traffic planning documents and studies and by the Kihei-Makena Community Plan, adopted in 1998, as well as by my constituents who live and work on the south side of Maui. Improvements to Pi`ilani Highway are consistent with the state Department of Transportation plans to upgrade roadways to accommodate current and future vehicular use. This project is also State budget friendly as it is a private-public collaborative effort.

Mahalo for the opportunity to offer these comments on the draft EA before you.

Very truly yours,

Rosalyn H. Baker
SENATOR
District 5 – South and West Maui

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1082

APR - 3 2012

The Honorable Rosalyn H. Baker
5th Senatorial District
Twenty-Sixth State Legislature
State Capitol, Room 230
Honolulu, Hawaii 96813

Dear Senator Baker:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter of support dated November 18, 2010. We anticipate the completion of the four (4) lanes on Pi'ilani Highway to its southern terminus on Wailea Ike Drive will improve the flow of traffic from north Kihei to Wailea and alleviate traffic congestion in South Maui.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated.

If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



COPY

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

November 19, 2010

HRD10/4160B

Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813

**Re: Pi'ilani Highway Widening Project**
**(Kilohana Drive to Wailea Ike Drive)**
**Kiher, Maui, Hawai'i**
**TMK: (2) 2-1**

Aloha e Director Formby:

Thank you for the opportunity to comment on the draft Environmental Assessment (EA) for the above-referenced project. It concludes anticipating a finding of no significant impact (FONSI). The Office of Hawaiian Affairs (OHA) concurs with recommendations.

OHA understands the proposed project implements the transportation objectives and policies by widening the last segment of Pi'ilani Highway from two (2) to four (4) lanes, prior to planned development of Honua'ula (fka "Wailea 670"), as well as future developments in the Wailea and Makena Resorts. Further, the planning, design and construction of the roadway is a joint public/private effort in which Honua'ula Partners, LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Holdings LLC (Applicants) in coordination with the State Department of Transportation (DOT) will plan, design and construct the Pi'ilani Highway widening improvements as recommended in the community plan.

The Applicants appear to have taken reasonable steps in preparing the draft EA addressing the necessary issues and significance criteria required under Chapter 343, HRS, and Chapter 200 of Title 11, HAR. In addition, the draft EA substantially covers the spirit of the Countywide Policy Plan's core principles, among which OHA takes special interest in the County's goal of honoring cultural traditions and histories.

We note the appended April 2009 Cultural Impact Assessment (CIA) by Hana Pono, LLC, which on its face elucidated many fine points of historical and anecdotal interest not readily accessible but pragmatic for our purposes nonetheless. Based on the CIA's scope in

assessing the potential cultural impacts within the proposed project's corridor, OHA concurs in part with its conclusion "...finding no significant cultural concerns or impacts within the area of potential impact."[1]

Since that publication, however, OHA and certain Applicants have been made aware of Native Hawaiian cultural practitioners requesting protections for, access to and identification of cultural, historical and spiritual sites at Honua'ula. In fact, Honua'ula Partners, LLC, has been actively engaged in accommodating cultural access for groups of cultural practitioners.

Therefore, based on these recent turn of events involving stakeholders not yet evident in the cultural assessment, OHA recommends further consultations with these Native Hawaiian organizations or individuals for purposes of clarifying cultural impacts along the project corridor that were potentially overlooked inadvertently. Should any new cultural knowledge be obtained then this effort would produce a rare opportunity for appropriate interpretations, should circumstances so warrant.

Moreover, there being no indication of endangered species of fauna or flora within the project corridor, and because the portions of Pi'ilani Highway being considered for new construction are previously disturbed grounds composed of the existing road and right-of-way (ROW), we further agree that archaeological monitoring should follow any ground-disturbing work that is approved to discern any culturally or historically significant finds.

Lastly, in accordance with § 6E-46.6, HRS, and Chapter 13-300, HAR, should any significant cultural deposits or human skeletal remains be encountered, we respectfully ask that work shall stop in the immediate vicinity and that the proper agencies and law enforcement be contacted. OHA would also like to be advised of any such findings.

Thank you again for this opportunity to comment. OHA looks forward to reviewing the final EA. Should you have any questions, please contact Compliance Specialist Jerome Yasuhara at (808) 594-0129 or by email at jeromey@oha.org.

'O wau iho nō, me ka ha'aha'a,

Clyde W. Nāmu'o
Chief Executive Officer

c: Munekiyo & Hiraga, Inc.
Attn: Gwen Ohashi Hiraga, Principal
305 High Street, Suite 104
Wailuku, Hawai'i 96793

[1] Cultural Impact Assessment for the Proposed Pi'ilani Highway Widening Project by Hana Pono, LLC/Kel'i Tau'a & Kimokeo Kapahulehua (April 2009), at p. 14.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1081

APR - 3 2012

TO: CLYDE W. NAMUO
CHIEF EXECUTIVE OFFICER
OFFICE OF HAWAIIAN AFFAIRS

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your letter dated November 19, 2010 concurring with the recommendations of the Draft Environmental Assessment (EA).

As requested, we will follow-up with Native Hawaiian cultural practitioners involved in the Honua`ula project. Further, in accordance with §6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, should any significant cultural deposits or human skeletal remains be encountered, work will stop in the immediate vicinity of the find and proper agencies and law enforcement will be contacted and appropriate measures taken.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

NOV 24 2010

LINDA LINGLE
GOVERNOR

THEODORE E. LIU
DIRECTOR

**DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM**

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawai'i 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawai'i 96804
Web site: www.Hawaii.gov/dbedt

Telephone: (808) 586-2355
Fax: (808) 586-2377

November 22, 2010

Mr. Michael Formby
Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813

**Re: Draft Environmental Assessment for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at Kihei, Maui, Hawaii**

Dear Mr. Formby:

In response to your October 21, 2010 notice, thank you for the opportunity to provide comments on the Draft Environmental Assessment (DEA) for the Pi'ilani Highway Widening Project. This project proposes the construction of two (2) additional lanes and related improvements to approximately 1,000 feet of Pi'ilani Highway. Chapter 343, Hawai'i Revised Statutes (HRS), environmental review is required because this project proposes the use of State of Hawai'i and County of Maui lands.

The project proposes the relocation of existing Maui Electric Company (MECO) transmission lines, electrical boxes, underground conduits, and street lights. Due to the mere relocation of existing infrastructure equipment, the Hawai'i State Energy Office within the Department of Business, Economic Development and Tourism (DBEDT) has no substantive comments at this time.

Our website (http://hawaii.gov/dbedt/info/energy) provides detailed information on energy related guidelines, directives, and statutes, as well as studies and reports on aspects of energy efficiency and renewable energy. Please do not hesitate to contact Carilyn Shon, Energy Conservation and Efficiency Branch Manager, at (808) 587-3810, for additional information on energy efficiency, and Maria Tome, Renewable Energy Branch Manager, at (808) 587-3809, for information on renewable energy resources.

Sincerely,

Theodore A. Peck
Administrator, Hawai'i State Energy Office

TAP/cbb

c: OEQC
Gwen Ohashi Hiraga - Principal, Munekiyo & Hiraga, Inc.
C. Shon, DBEDT-SID
M. Tome, DBEDT-SID



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1077

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

APR - 3 2012

TO: THEODORE A. PECK
ADMINISTRATOR
HAWAII STATE ENERGY OFFICE
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your letter of November 22, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your review of the document and your conveying confirmation that the Hawaii State Energy Office has no comments at this time.

Thank you again for your participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

NOV 8 0 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

November 29, 2010

Mr. Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Formby:

Subject: Draft Environmental Assessment for the Pi'ilani Highway Widening project (Kilohana Drive to Wailea Ike Drive)

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 Engineering Division, Office of Conservation & Coastal Lands, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Historic Preservation will be submitting comments through a separate letter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

cc: Munekiyo & Hiraga, Inc.



LINDA LINGLE
GOVERNOR OF HAWAII

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

**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 25, 2010

RECEIVED
LAND DIVISION
2010 NOV 10 A 8:39
DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

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

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Draft Environmental Assessment for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive)
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga, Inc. on behalf of Department of Transportation

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by November 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.
(✓) Comments are attached.

Signed:
Date: 11/9/10

**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**ENGINEERING DIVISION**

**LD/ Charlene Unoki**
**Ref.: DEAforthePiilaniHwyWideningProject(KilohanaDriveToWaileaIkeDrive)**
**Maui.011**

**COMMENTS**

(X) **We confirm that part of the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is also located in Zone ____.

( ) 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 site 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. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) 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 Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 11/9/10



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

October 25, 2010

RECEIVED
OFFICE OF CONSERVATION
& COASTAL LANDS
2010 OCT 25 P 3:33

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

MA-11-97
BARKER

RECEIVED
LAND DIVISION
2010 NOV 2 A 10:50
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

MEMORANDUM

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

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Draft Environmental Assessment for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive)
LOCATION: Island of Maui (2)
APPLICANT: Munekiyo & Hiraga, Inc. on behalf of Department of Transportation

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by November 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.
(X) We have no comments. Not conservation.
( ) Comments are attached.

Signed: _____
Date: _____

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1030

APR - 3 2012

TO: RUSSELL Y. TSUJI
ADMINISTRATOR
LAND DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: PI'ILANI HIGHWAY WIDENING PROJECT
(KILOHANA DRIVE TO WAILEA IKE DRIVE)
WAILEA, KIHEI, MAUI, HAWAII

Thank you for your letter dated November 29, 2010. We acknowledge your Engineering Division's confirmation that the project site is located in Flood Zone X which is an area of minimal flooding.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



# II. County Agencies

CHARMAINE TAVARES
Mayor

NOV 09 2010

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

November 1, 2010

Michael Formby, Interim Director
State of Hawaii, Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

**SUBJECT: Draft Environmental Assessment (EA) for the Piilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at Kihei, Maui, Hawaii, TMK: (2) 2-1**

Dear Mr. Formby:

Based on our review of the proposed subject project, the Parks Department does not have any comments at this time.

Thank you for the opportunity to review and comment on this matter. Please feel free to contact me or Mr. Baron Sumida, CIP Coordinator in the Parks Planning and Development Division at 270-6173 should you have any questions.

Sincerely,

TAMARA HORCAJO
Director

C: Gwen Ohashi Hiraga, Principal, Munekiyo & Hiraga, Inc.
Patrick Matsui, Chief of Parks Planning & Development

TH:PTM:bks



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1470

APR 13 2012

Mr. Glenn Correa
Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawaii 96793

Dear Mr. Correa:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your department's letter of November 1, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your department's review of the document and your conveying confirmation that your department has no comments at this time.

Thank you again for your department's participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your department's letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

CHARMAINE TAVARES
MAYOR

OUR REFERENCE
YOUR REFERENCE

# POLICE DEPARTMENT
COUNTY OF MAUI

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

NOV 12 2010

November 5, 2010

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Ohashi Hiraga:

SUBJECT: DEA for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive), Kihei, Hawaii

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,

AC D. Matsuura

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

Enclosure

c: Kathleen Ross Aoki, Planning Department
Michael Formby, State Department of Transportation



COPY

**TO** : GARY YABUTA, CHIEF OF POLICE, COUNTY OF MAUI
AC D. Matsuura 11/5/10

**VIA** : CHANNELS

**FROM** : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHEI

**SUBJECT** : DRAFT ENVIRONMENTAL ASSESSMENT/PIILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE)

**APPLICANT INFORMATION:**

The applicants, Honua'ula Partners LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC have submitted the Draft Environmental Assessment to the State of Hawaii, Department of Transportation for the Piilani Highway Widening Project which will affect the area of highway between Kilohana Drive and Wailea Ike Drive.

The above mentioned section of Piilani Highway will be widened as well as other improvements to connecting roadways and intersections.

**IMPACT ON POLICE:**

After reviewing the Draft Environmental Assessment I do not anticipate a measurable impact on Police services. If anything the roadway widening is greatly needed.

There are many reasons to support the roadway widening of Piilani Highway. The highway improvements will complete the north/south transportation corridor which is needed by the general public who live and work in south Maui.

Multi-media public service announcements should be sufficient to inform the general public as well as emergency service personnel of roadway closures during the roadway improvement period.

**RECOMMENDATIONS:**

I recommend this information be returned to Mr. Michael FORMBY, Interim Director of the Department of Transportation in Honolulu, Hawaii with our comments for review and final disposition regarding this matter.

Officer Brad Hickle BH
10/28/10 14:00 hours

COMMENTS:
CONCUR WITH OFFICER B. HICKLE.
THIS PROJECT IS IMPORTANT TO
AID IN THE CURRENT AND FUTURE
TRAFFIC NEEDS FOR SOUTH MAUI.
#740
A. Matsuura 10/29/10

Concur w/ Comments
Capt. 11/3/10 0833

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1086

APR - 3 2012

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

Dear Chief Yabuta:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated November 5, 2010. We appreciate your department's concurrence that the improvements will aid in addressing the current and future traffic needs of South Maui.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



CHARMAINE TAVARES
Mayor

CHERYL K. OKUMA, Esq.
Director

GREGG KRESGE
Deputy Director

NOV 15 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

November 10, 2010

Mr. Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: **PIILANI HIGHWAY WIDENING PROJECT**
**KILOHANA DRIVE TO WAILEA IKE DRIVE**
**KIHEI, MAUI, HAWAII**

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:
   a. Solid waste issues are addressed.
2. Wastewater Reclamation Division (WWRD) comments:
   a. None.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

CHERYL K. OKUMA
Director of Environmental Management

xc: Ms. Gwen Ohashi Hiraga
Munekiyo & Hiraga, Inc.

NEIL ABERCROMBIE
GOVERNOR

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

APR - 3 2012

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1088

Mr. Kyle Ginoza
Director
Department of Environmental Management
2200 Main Street
One Main Plaza Building, Suite 100
Wailuku, Hawaii 96793

Dear Mr. Ginoza:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your department's letter of November 10, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your department's review of the document and your conveying confirmation that your department has no comments at this time.

Thank you again for your department's participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your department's letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

NOV 23 2010

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

November 17, 2010

Mr. Michael Formby
Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Formby:

**Subject: Draft Environmental Assessment (EA) for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at Kihei, Maui, Hawaii.**
**TMK: (2) 2-1.**

The Housing Department has reviewed the Draft Environmental Assessment for the above subject project. Based on our review, we have determined that the project is not subject to Chapter 2.96, Maui County Code. The Department has no additional comments to offer at this time.

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

Sincerely,

WAYDE T. OSHIRO
Housing Administrator

cc: Director of Housing and Human Concerns
Gwen Ohashi Hiraga, Munekiyo & Hiraga, Inc. ✓

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1083

APR - 3 2012

Mr. Wayde T. Oshiro
Housing Administrator
County of Maui
Department of Housing and Human Concerns
Housing Administration
35 Lunalilo Street, Suite 102
Wailuku, Hawaii 96793

Dear Mr. Oshiro:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter of November 17, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your review of the document and your conveying confirmation that the project is not subject of Chapter 2.96, Maui County Code and that your department has no comments at this time.

Thank you again for your participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



CHARMAINE TAVARES
Mayor

KATHLEEN ROSS AOKI
Director

ANN T. CUA
Deputy Director

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

NOV 2 9 2010

November 22, 2010

Mr. Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Formby and Ms. Hiraga:

**SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE DRIVE), LOCATED AT KIHEI, MAUI, HAWAII; (EAC 2010/0016)**

The Department of Planning (Department) is in receipt of the above-referenced document for the proposed Pi'ilani Highway widening project between Kilohana Drive and Wailea Ike Drive. The Department understands the proposed action includes the following:

- The Applicants are: Honua'ula Partners LLC; A&B Wailea LLC; Keaka LLC; and ATC Makena Holdings LLC. These companies are collaborating with the State of Hawaii Department of Transportation to design and construct the project in order to address traffic mitigation needs of the Wailea-Makena region of South Maui. Both Honua'ula Partners LLC and ATC Makena Holdings LLC are engaged in the furtherance of conditions of zoning imposed on the Honua'ula and Makena Resort projects;

- The Applicant proposes to implement the construction of two (2) additional lanes and related improvements to Pi'ilani Highway from approximately 1,000 feet to beginning of taper north of Kilohana Drive to Wailea Ike Drive at Pi'ilani Highway's existing terminus. Proposed improvements include excavation and embankment work, widening of the road with asphaltic concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention systems, retaining walls, sound attenuation walls, relocation of electrical transmission lines, guard rails, installation of utilities as may be necessary, and adjustments to existing utilities, including as may be necessary, the relocation of existing waterlines. Reconstruction of the existing traffic signal at the Kilohana Drive/Mapu Place/Pi'ilani Highway intersection and installation of new traffic signals at the Okolani Drive/Mikioi Place/Pi'ilani Highway intersection, and the

250 SOUTH HIGH STREET, 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

Wailea Ike Drive/Pi'ilani Highway/proposed Honua'ula project access road intersection are also proposed; and

- The Accepting Authority is the State of Hawaii, Department of Transportation.

Based on the foregoing, the Department provides the following comments in preparation of the Draft EA and summarizes its conclusion as follows:

1. Please confirm with the Department's Zoning Administration and Enforcement Division (ZAED) as to the accuracy of the zoning designations and provide a signed Zoning and Flood Confirmation Form for each parcel under review in the Draft EA;

2. Provide mitigation alternatives to ensure that Best Management Practices shall be implemented to insure that water quality and marine resources are protected;

3. Provide mitigation alternatives to ensure that potential environmental impacts on the social and physical landscape of the surrounding area are minimized; and

4. The Special Management Area (SMA) boundary in the vicinity of the Project is determined as lands makai of the Pi'ilani Highway right-of-way easement. Portions of the project appear to involve lands within the SMA; consequently, the action will require an SMA review and approved SMA Use Permit.

Thank you for the opportunity to comment. Please include the Department on the distribution list of the Final EA and further documents. Should you require further clarification, please contact the Department's Current Division by phone at (808) 270-8205. To assist with clarification as requested, Staff Planner Kurt Wollenhaupt of the Department's Current Division is also available.

Sincerely,

Kathleen Ross Aoki

KATHLEEN ROSS AOKI
Planning Director

xc: Clayton I. Yoshida, AICP, Planning Program Administrator
Aaron H. Shinmoto, PE, Planning Program Administrator (2)
John F. Summers, Planning Program Administrator
Kurt F. Wollenhaupt, Staff Planner
Project File
General File

KRA:KFW:vb
K:\WP_DOCS\PLANNING\EAC\2010\0016_Piilani Highway Widening\Draft EA Comments.DOC



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1085

APR - 3 2012

Mr. William Spence
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Spence:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your department's letter dated November 22, 2010. We offer the following information in response to your comments.

1. Zoning and Flood Confirmation Forms were obtained from the Department of Planning's (Department) Zoning Administration and Enforcement Division during the preparation of the Draft Environmental Assessment (EA) for the Pi'ilani Highway right-of-way.

2. The Final EA will elaborate on the Best Management Practices to be implemented to insure water quality and marine resources are protected.

3. The Final EA will further elaborate on mitigation measures to minimize potential impacts on the social and physical landscape of the surrounding area.

4. Through early consultation with the Department we are aware that portions of the improvements along the County of Maui's Fire Station property are located within the Special Management Area (SMA) and will require an appropriate SMA approval. The improvements will involve the acquisition of additional right-of-way from the County of Maui and appurtenant improvements to extend the drainage culvert and pavement, and nonstructural improvements including curbs, gutters and sidewalks.

   Upon completion of the EA process, an SMA Assessment Application will be filed with the Department.

Further, the Department by attached letter dated July 2, 2009,confirmed that improvements at the intersection of Piilani Highway, Okolani Drive and Mikioi Street for the signalization of the intersection were a condition of Special Management Area Permit No. SM1 2004/0015 and are already permitted.

Your department's comments will be included in the Final EA. Your department's participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

Attachment

c: Charles Jencks, Honua'ula Partners, LLC (w/attachment)
Rebecca Broudy Collins, ATC Makena Holdings LLC (w/attachment)
Randall Endo, A&B Wailea, LLC (w/attachment)
Don Fujimoto, Keaka LLC (w/attachment)
Colleen Suyama, Munekiyo & Hiraga, Inc. (w/attachment)



CHARMAINE TAVARES
Mayor
JEFFREY S. HUNT
Director
KATHLEEN ROSS AOKI
Deputy Director

RECEIVED
JUL 08 2009
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
Honolulu, Hawaii 96817-5031

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

July 2, 2009

Mr. Stanley T. Watanabe
Austin, Tsutsumi & Associates, Inc.
501 Summner Street, Suite 521
Honolulu, Hawaii 96817-5031

Dear Mr. Watanabe:

**SUBJECT: SPECIAL MANAGEMENT AREA ASSESSMENT AND DETERMINATION FOR SUBDIVISION ACTION FOR APPURTENANAT IMPROVEMENT AT THE PIILANI HIGHWAY/OKALANI DRIVE INTERSECTION (RFC 2009/0207)**

The Department of Planning (Department) is in receipt of the above-referenced request for comment. Upon reviewing the request, the Department has the following comment to offer:

Condition number 25 of Special Management Area permit, SM1 2004/0015, states:

*"That the applicant shall provide improvements at the Piilani Highway/Okolani Drive/Mikioi Street intersection, including traffic signals and synchronization as recommended by the State Department of Transportation (DOT) highways Division. The applicant shall also carry our warrant studies and submit the warrant studies to DOT, Highways Division until the warrants are met. If traffic signal warrants for the Piilani Highway/Okolani Drive/Mikioi Street intersection cannot be met by final Certificate of Occupancy, the applicant shall post a bond or other satisfactory instrument of funding obligation equivalent to the construction value of intersection improvements described in this condition. The applicant shall also participate in and provide its fair share traffic impact fees towards local and regional roadway improvements. With respect to your request for information about impacts of the project on Native Hawaiian, cultural, religious, and/or burial sites; the Department advises you to contact the State Historic Preservation Division of the Department of Land and Natural Resources for more specific information;"* (Underlining added)

Based on the above condition of the SMA permit, the Department concurs with your finding that the subdivision action is exempt and the Applicant is required to fulfill the condition as written.

250 SOUTH HIGH STREET, 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

Thank you for the opportunity to comment. Should you require further clarification, please contact Staff Planner Paul Fasi at paul.fasi@mauicounty.gov or 270-7814.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

*for* JEFFREY S. HUNT, AICP
Planning Director

xc: Aaron H. Shinmoto, PE, Planning Program Administrator (2)
Paul Fasi, Staff Planner
RFC File
General File
JSH:CIY:PFF:ma
K:\WP_DOCS\PLANNING\RFC\2009\0207_KaiMalu\Comment.doc



CHARMAINE TAVARES
Mayor

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

MICHAEL M. MIYAMOTO
Deputy Director

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

DEC 06 2010

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

December 2, 2010

Ms. Gwen Ohashi Hiraga, Principal
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Hiraga:

**SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PIILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE DRIVE)**

We reviewed the subject application and have the following comment:

1. Suggest that the State right of way at Mapu Place, Mikioi Place, Okolani Drive, and Wailea Ike Drive be adjusted to include that area that includes the traffic signal loop detectors for their respective intersection. Also, intersection-related signage should be the responsibility of the State to maintain, rather than the County.

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\piilani_hwy_widening_proj_kilohana_to_wailea_iki_dea_ls.wpd

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1087

APR - 3 2012

Mr. David Goode
Director
County of Maui
Department of Public Works
200 S. High Street, Room 434
Wailuku, Hawaii 96793

Dear Mr. Goode:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your department's letter dated December 2, 2010. We will have our design consultants review your department's recommendation for the traffic signal loop detectors at the respective intersections noted in your department's letter. Also, the State Department of Transportation will take responsibility for the maintenance of all intersection-related signage within the State-owned portion of the intersection.

Your department's comments will be included in the Final Environmental Assessment. Your department's participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



# III. Other Organizations

OCT 29 2010

**Maui Economic Opportunity, Inc.**

P.O. Box 2122
Kahului, HI 96733
808-249-2990
Fax: 808-249-2991
www.meoinc.org

October 28, 2010

Mr. Michael Formby
State Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment (EA) for the Pi'ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) at Kihei, Maui, Hawaii.

Dear Mr. Formby:

Maui Economic Opportunity, Inc. is in receipt of a request for review and comment on the Piilani Highway Widening Project in Kihei, Maui, Hawaii.

We have no comments on the Draft Environmental Assessment.

Thank you for the opportunity to review the project. We are in support of the widening of Pi'ilani Highway to Wailea Ike Drive.

Sincerely,

Sandy K. Baz, CEO

cc: Gwen Ohashi Hiraga, Munekiyo & Hiraga, Inc.

**The Promise of Community Action**
Community Action changes people's lives, embodies the spirit of hope, improves communities, and makes America a better place to live. We care about the entire community, and we are dedicated to helping people help themselves and each other.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
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RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1091

APR - 3 2012

Ms. Lyn McNeff
Maui Economic Opportunity
P.O. Box 2122
Kahului, Hawaii 96732

Dear Ms. McNeff:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your organization's letter of support dated October 28, 2010.

Your organization's comments will be included in the Final Environmental Assessment and your organization's participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

NOV 09 2010

# Maui Bicycle Alliance

***Keeping Maui on the Right Path!***

November 8, 2010

Munekiyo and Hiraga Inc.
Attn: Gwen Ohashi Hiraga
305 High St., Suite 104
Wailuku, HI 96793

RE: **Pi'ilani Highway Widening Project, Kilohana Drive to Wailea Ike Drive (DEA)**

Aloha Ms. Hiraga,

We would like to comment on the proposed Pi'ilani Highway Widening Project Draft Environmental Assessment as noted in the October 23, 2010 Edition of the Office of Environmental Quality Control "The Environmental Notice".

The Maui Bicycle Alliance is a grassroots bicycling advocacy organization committed to improving conditions for bicycling in Maui County. We promote bicycling and advocate bicycle use in Maui County for health, recreation, sport and transportation purposes. In that regards, we would like to comment on some of the bicycle related features of this project.

We are pleased to see the addition of 4 ft bike lanes on both the Mauka and Makai side of the roadway included as part of this project (as noted in Figure 3 of the DEA).

The diagrams of the intersections (Figures 8-12) do not accurately portray how the bikes lanes will be integrated at the intersection crossings. We would like the opportunity to review and comment on the actual engineered drawings once drafts are completed because these are key safety concerns for bicycle transportation.

We would ask that the project incorporate all applicable AASHTO Design Standards for Bicycle Facilities along with 2009 MUTCD required signage and roadway markings.

The Draft Environmental Assessment fails to mentions that the Kihei Makena Community Plan (1998) states in the "Transportation" section on page 11 (emphasis and red lettering added).

> **"B. Identification of Major Problems and Opportunities of the Region**
> This section describes the major problems and opportunities facing the Community Plan region. The description of key problems and opportunities forms the underlying basis for planning goals, objectives and policies which are described in Part III.
> **1. Problems**
>
> ***1. TRANSPORTATION.*** Inadequate traffic circulation and lack of public transportation are recognized as the most significant problems in Kihei-Makena.
>
> On short vehicular trips within the district such as grocery shopping, visiting a beach park, or going to work, residents must utilize South



Maui Bicycle Alliance

*Keeping Maui on the Right Path!*

> Kihei Road or Pi'ilani Highway. Alternative travel routes are necessary to help meet Kihei's internal circulation needs. Lack of adequate on-street and off-street parking is also a problem. **There is a need to lessen the dependence on automobiles through efficient land use distributions. Bicycle and pedestrian paths separate from automobile traffic would provide an effective alternative to the automobile.** Mass transit and public transportation must also be considered. The relative lack of mobility of both the youth and elderly must also be considered through alternate modes of transportation such as van services."

And on pages 30 and 31:

> "**Transportation**
>
> ***Objectives and Policies***
>
> c. Strengthen the coordination of land use planning and transportation planning to promote sustainable development and to reduce dependence on automobiles. **New residential communities should provide convenient pedestrian and bicycle access between residences and neighborhood commercial areas, parks and public facilities.**
>
> d. Support ridesharing, **bicycle and pedestrian use**, alternative work schedules, traffic signal synchronization, and/or other transportation demand management strategies."

This information was missing from the DEA (pages 57, 59) and should be added to recognize the need for bicycling facilities that conform to the "Objectives and Policies" noted in the Kihei Makena Community Plan. In fact, "bike" and "bicycle" are noted throughout the Kihei Makena Community plan in approximately 24 different locations. We would like to know specifically how your project will address this community plan requirement.

We hope that the future housing projects that will benefit from this road widening project will also incorporate bicycle facilities, as noted in the Kihei Makena Community Plan, and help to provide a continuous system for bicycle travel throughout the Wailea-Makena Area.

We thank you for this opportunity to provide input and we look forward to your responses.

Aloha and Mahalo,

Walter Enomoto
President .
Maui Bicycle Alliance

# Maui Bicycle Alliance

***Keeping Maui on the Right Path!***

293 S. Mokapu St.
Kahului, HI 96732

Email: bikeguy@hawaiiantel.net
Phone: 808-877-5947


cc: C. Jencks. Honuaula Partners LLC.
R. Endo. A&B Wailea LLC
D. Fujimoto, Keaka LLC
R. Broudy Collin. ATC Makena Holdings LLC
M. Formby. SDOT



NEIL ABERCROMBIE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
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GLENN M. OKIMOTO
DIRECTOR

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FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1090

APR - 3 2012

Mr. Walter Enomoto
President
Maui Bicycle Alliance
293 South Mokapu Street
Kahului, Hawaii 96732

Dear Mr. Enomoto:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated November 8, 2010. In response to your comments, we are providing you with the following information.

**BIKEWAY DESIGN**

1. The scope of the project is limited to the provision of additional lanes between Kilohana Drive and Wailea Ike Drive. As noted in your letter, provisions have been made to include bike lanes on both sides of Piilani Highway. Unfortunately the limitation of the scope of work does not include provisions for future bike lane connections to the intersecting streets and are not accommodated in the plans. Such plans will require future design, funding and coordination between the HDOT and the County of Maui.

2. The bike lanes on Piilani Highway are being designed in accordance with American Association of State Highway and Transportation Officials Design Standards for Bicycle Facilities and the 2009 Manual on Uniform Traffic Control Devices.

**KIHEI-MAKENA COMMUNITY PLAN**

We acknowledge receipt of the additional statements in the Kihei-Makena Community Plan and will incorporate the appropriate statements in the Final Environmental Assessment (EA). We recognize that transportation is a major challenge in the Kihei-Makena region. The proposed improvements to Piilani Highway will help to alleviate traffic problems for the region and includes provisions for the continuation of bike lanes along the highway corridor in compliance with the Community Plan goals and objectives.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



NOV 22 2010

Hawaiian Telcom

November 17, 2010

State of Hawaii
Dept. of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Attention: Michael Formby, Interim Director

Subject: Piilani Highway Widening Project
Kilohana Drive to Wailea Ike Drive, Kihei

Dear Michael,

Thank you for allowing us to review and comment on the subject project. Your plans have been received and put on file.

Hawaiian Telcom, Inc. has no comment, nor do we require any additional information at this time.

Should you require further assistance, please call me at 242-5107.

Sincerely,

Tom Hutchison
OSP Engineer

cc: Munekiyo & Hiraga, Gwen Ohashi Hiraga
Lynette Yoshida, Network Engineering Senior Manager

BICS File # 0902-014 (3035)

PO Box 2200 • Honolulu • Hi 96841

NEIL ABERCROMBIE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
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GLENN M. OKIMOTO
DIRECTOR

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FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1089

APR - 3 2012

Mr. Tom Hutchison
OSP Engineer
Hawaiian Telcom
P. O. Box 2200
Honolulu, Hawaii 96841

Dear Mr. Hutchison:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter of November 17, 2010, responding to our request for comments on the Draft Environmental Assessment (EA). We appreciate your review of the document and your conveying confirmation that Hawaiian Telcom has no comments at this time.

Thank you again for your participation in the Chapter 343, Hawaii Revised Statutes review process. A copy of your letter will be included in the Final EA. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



From: Sierra Club Maui Group
PO Box 791180
Paia, HI 96779

December 8, 2010

To : Ms. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, HI 96793

## Re: DRAFT EA FOR PIILANI HIGHWAY WIDENING PROJECT

On behalf of our seven hundred members on Maui, Sierra Club Maui Group (SCMG) is very grateful to DOT and the project applicants that the comment period for the Piilani Highway Widening project has been extended. We wish to offer the following comments.

The Piilani Highway Widening Project Draft Environmental Assessment (DEA) should reach the conclusion that the project has a number of primary, secondary and cumulative impacts which would require the preparation of an Environmental Impact Statement. It is surprising to us that, instead, the conclusion is drawn that the DEA should be given a "Finding Of No Significant Impact" (FONSI). SCMG requests that a FONSI not be issued and instead, a full and complete EIS be required for this project due to the reasons provided below.

### SEGMENTATION OF CUMULATIVE AND SECONDARY PROJECT IMPACTS

The highway widening is part of an overall larger development scenario. The DEA concludes that no impacts of eventual further construction or population growth in the Wailea-Makena area can be attributed to the road widening. There is absolutely no proof given, other that consultant's estimates, to support this conclusion.

Also, the DEA does not tie in the language of the Kihei-Makena Community Plan which requires a four lane road before major projects in the area can be approved. No research is done to determine if the highway is not widened, if the volume of traffic, rate of development, growth in population, demand for water and other services would be virtually the same as if the road was enlarged.

As an example, when a highway was planned to go from Makena to Ulupalakua, it and its secondary and cumulative impacts, were rightly discussed in the 1973 Makena Resort EIS. That road was not built during the 30-year time frame examined in the Makena EIS. Growth in the area remained modest.

Road improvements do facilitate growth. That doesn't mean they are not needed. It simply means that environmental documents should accurately portray

a big picture view as required by HAR 11-200-7 which sets forth criteria for examining related impacts of a proposed action:

**HAR §11-200-7 *Multiple or Phased Applicant or Agency Actions:***

*A group of actions proposed by an agency or an applicant shall be treated as a single action when: The component actions are phases or increments of a larger total undertaking; An individual project is a necessary precedent for a larger project; An individual project represents a commitment to a larger project;*

The widening of Piilani Hwy to four lanes is a condition of zoning for several development projects. It is a "a necessary precedent for a larger project." It is also a "phase or increment of a larger project-" namely the extention of Piilani Highway into the Honua'ula project lands. The cumulative impacts of the overall larger projects the road will service warrant an full EIS. The Makena Resort Project completed its environmental review in 1974, over 35 years ago.

**Kihei-Makena Community Plan**

An EIS on the impacts associated with Piilani road widening should include a discussion of the environmental impacts of construction projects currently planned for the 670 acre Honua'ula project district as well as the 1000 acres of urban-zoned Makena Resort lands.

The Kihei-Makena Community Plan (p. 31) specifically requires the *"widening of Piilani and Mokulele highways to four lanes prior to construction of major projects developments being built south of Kilohana Rd or mauka of Piilani Highway."*

**HRS 11-200-12- Significance Criteria**
*In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action.*

*In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action.*

Hawaii State laws clearly require that the cumulative and secondary impacts of this project be considered, not dismissed, in the DEA in order to determine if an EIS should be prepared.

SCMG respectfully requests that the applicants and the HDOT follow our laws and issue an EIS Prep Notice for this project. An EA,, even one that consumes 500 pages, is not a substitute for a proper EIS. The need for an EIS is



determined when significance criteria are accurately evaluated and reveal cumulative and longer-term impacts of the project. The project's DEA, mistakenly, dismisses the presence of these impacts.

**Other Areas of the Draft EA which do not provide adequate information:**

**Noise Impacts**

The DEA does not adequately address noise impacts from the widening of Pi'ilani Highway. Instead, it attempts to present the impacts as minimal. These impacts were not discussed in the Honua'ula EIS, because they would "be discussed later." An EIS is needed to address these impacts and propose alternative road designs that could minimize noise.

There are extensive discussions of noise levels and sound attenuating walls, for future traffic noise volume, but it is unclear if many of these walls will actually be constructed because they exceed the HDOT cost formula. The EA concludes that few structures appear to warrant sound protection, although noise levels will exceed allowable standards. The report concludes that some existing residences which have walls experience less noise. Direct communication with MTF supporters who live in the impact zone does not confirm that theory.

**Noise Impacts on Planned Future Residences**

Future structures built along the project route, including, 2-story multifamily neighborhoods proposed for the Honua'ula project District and depicted in the Honua'ula Draft EIS, will need to provide sound buffering walls and interior sound dampening modifications at their own expense. These projects may or may not be constructed by one of the road widening partners, Honua'ula Partners LLC.

If the neighborhoods are sold off to other housing development firms, will those firms be required to provide the noise buffering infrastructure, or will the current partnership? Will adequate buffer zones be created? Will the presence of the widened road affect the sales price of the future houses? An EIS should discuss the price range of the proposed housing within 500 ft of the widened road corridor. Would the affordability of these residences be affected be the need to construct additional sound barriers? These impacts should not be segmented out of the discussion of the Piilani Highway widening.

The noise study in the DEA noted that the upper floor of two story buildings could not be effectively buffered from unacceptable levels of traffic noise through walls. What is the effect of the increased noise volumes attributed to road widening project on these future residential areas? This entire impact appears to be very downplayed and needs to be discussed.

**Alternative Designs or Transportation Systems**

No alternative routing or design of the project is discussed in the "alternatives ' section to move noise impacts further from existing residences on the Maui meadows side of the road. The majority of the route has considerably more room on the makai side of the highway corridor, but this is not even discussed.

The DEA does not address viable alternatives to Piilani Highway widening such as expanded bus service or a future mass transit corridor. A full EIS would be required under HAR 11-200-17 to examine a full range of Alternative Actions, regardless of cost, and

*"..include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks."*

**• Use of the state right-of-way for the Pi'ilani extension through the Honua'ula property to connect with Kaukahi Dr.**

This portion of Piilani improvements is not discussed in terms of its impacts in the Piilani Widening EA. Such segmentation of aspects of a larger project is not consistent with Hawaii environmental law.

**Archaeological Review**

It does not appear from the Honua'ula Project AIS that the proposed Piilani Highway extension corridor has had specific archaeological review, in the past five years. In fact, of the 7 cultural sites originally located along the Piilani extension corridor in a 1972 survey, only 4 have been relocated by the present project. A portion of the corridor will be directly included in the widening project as an entranceway to Honua'ula is proposed to be constructed. Other portions will be indirectly included as they constitute the next phase of a multi-phased road building project..

A series of retention basins are proposed mauka of the newly widened road. There is no discussion of archaeological review of these specific areas where the basins are proposed to be located. Known archaeological sites are present near the Piilani Hwy corridor , on Wailea Resort parcel SF 7 -a small shrine (site 2867) and parcel MF11 site 2493 and 2494 (overhang shelters in the sides of the gulch with extensive midden.) Wailea parcels MF-6, Mf-12 and MF-13 may not have had an archaeological review. Construction could impact unrecorded archaeological sights, unless that review is done along the proposed corridor route. If they have had review, it should be summarized in a EIS.



*** Segmentation of widening of Pi'ilani Hwy between Kilohana and Wailea Ike Dr.and Wailea Ike/Piilani Hwy intersection improvements from Honua'ula project**

The Draft EA states: "The project itself is not a master-planned component of the Honua'ula, Wailea Resort or Makena Resort projects." It should reveal that the road project is linked to these projects and their impacts, because it is a condition of their zoning.

No summary of this DEA for the Piilani road widening or the EA for Piilani Road improvements was provided in the Honua'ula DEIS, nor were the two project's environmental impacts evaluated in the DEIS, except for a summary of the traffic impacts they addressed. The Piilani road widening project also includes the entry road to proposed Honua'ula project.

For example several multifamily neighborhoods, park and open space areas are being proposed in Honuaula, relatively near the Piilani Hwy widening corridor. There is no analyses of potential traffic noise levels at these proposed park sites. Will portions of the parks and neighborhoods be impacted by traffic noise? As discussed above, will future residences proposed for the northern portion of Honua'ula need to invest in soundproofed walls and high concrete block walls to block out traffic noise?

A storm water detention basin for the Piilani Highway is proposed for construction in the Honua'ula property. Will it displace any capacity of proposed onsite retention basins that are needed to deal with considerable existing and post development flows in the Honua'ula project. The two projects should not be separated.

A discussion of the cumulative impacts of both interconnected projects should be addressed in a full EIS for the road-widening project, since this was not done in the earlier Honua'ula DEIS.

**Impacts to Local Residents**

The Draft EA explains that; "Extensive excavation removing significant quantities of basalt is not anticipated." The terms "extensive" and 'significant are not clearly defined and should be.

Specific amounts of rock and dirt to be removed during the project are not discussed in the project's engineering report , and it states that the actual length of construction time is not known. As mentioned above, the impacts of construction noise and activities on home and rental values, home businesses the elderly and ill, is simply not taken into consideration.

The DEA section on construction noise discusses limiting days of blasting, drilling deeper holes, monitoring vibration levels and other mitigations. It is hoped that these will be effective, but without knowing how much rock needs to be removed, the public has little way to judge the severity of the impacts.

Air quality impacts on human health from non- carbon monoxide pollutants (MSAT) are also unknown. The project's air quality report stated "...concentrations and exposures created by each of the project alternatives can not be predicted with enough accuracy to be useful in estimating health impacts."

**Solid waste**
The amount of solid waste to be generated is not specified, only that it will be disposed of in private facilities.

**Drainage**

While the EA notes that the Maui County Public Works Department commented that flooding was not an issue in this area, several notable drainage issues have surfaced over the past decade in just this area. Local redients along the project corridor have also reported flooding issues on their properties.

It appears that the existing drainage capacity of the culverts and gulches is based on 1977 report, with some additional data provided in a 2006 study. Their capacity to contain 50 or 100-year flood events is portrayed in a series of data tables. While the theory is that all new development, such as Honua'ula, will retain its post construction run-off, nature itself does not always conform to these theories.

Drainage plans for the proposed Honua'ula development should be discussed in relationship to the plans to mitigate increased runoff from the nearly doubled Piilani road bed. If additional filtration and stormwater retention capacity is needed to be on the prudent side, the matter should be openly considered and designs suggested.

The Honua'ula Project DEIS reported a tremendous amount of existing flow passing through gulches in its northern end. This flow will remain. Additional flow from new roads and housing will be created. The north end of the proposed Honua'ula project already has minimal open areas, such as golf courses, proposed to absorb the flows. The two projects should not be segmented.

**Native Fauna Habitat**

It is not discussed whether any portion of the proposed Piilani extension corridor is part of the endangered Blackburn moth, native owl or native bat habitat found on the Honua'ula site. If portions of this corridor will be used as a 'baseyard" for the Piilani widening project, this information should be provided.



**Contractual Arrangements Affecting Public Funds**

Environmental review of the Piilani road widening should also supply specific agreements the developers have with the State of Hawaii DOT for use of the right of way, to insure a transparent process. Was the state, or the four partners responsible for the road widening required to compensate private landowners for additional right of way land?

Will the proposed Piilani extension right of way remain public land, or be considered one of the Honua'ula project's "private roads." What agreements does Honuaula LLC have with Upupalakua Ranch for future shared use of the majority of the Piilani Hwy extension right of way still under Ranch ownership. Will any federal funds be involved in either the Piilani Hwy widening or the proposed Piilani extension?

For all the reasons discussed above, the Draft EA for the Piilani Road widening project should serve to inform accepting agencies that significant cumulative impacts are associated with the project and preparation of an EIS is warranted.

Sierra Club Maui Group thanks you for the opportunity to submit these comments and looks forward to attending an EIS scoping meeting for this project.

Lance Holter, Chair

Lucienne de Naie, Conservation Committee.

NEIL ABERCROMBIE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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IN REPLY REFER TO:

HWY-PA
2.0998

March 13, 2012

Mr. Lance Holter
Ms. Lucienne de Naie
Sierra Club Maui Group
P.O. Box 791180
Paia, Hawaii 96779

Dear Mr. Holter and Ms. de Naie:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. Before proceeding with our point-by-point responses to the comments provided, we believe it beneficial to clarify and set proper context for the proposed highway widening action. The explanation which follows addresses issues relating to segmentation and cumulative impacts, which we agree, are important themes to address as part of the Chapter 343, Hawaii Revised Statutes (HRS) process.

The State of Hawaii, Department of Transportation's (HDOT) perspective however, differs in that we view the Pi'ilani Highway widening project as a stand-alone project, not a component of other proposed private development actions such as the Honua`ula project, Makena Resort project, or any other project occurring in the Kihei-Makena Community Plan region.

## A. SEGMENTATION AND CUMULATIVE IMPACTS CONSIDERATIONS

The fundamental premise for the HDOT, in undertaking all of its regional highway improvements projects, is that HDOT facilities improvements shall be based on sound planning and programming which considers opportunities, where available, for private-public partnerships. It is important to recognize that the Pi'ilani Highway Widening project is a part of our long range transportation plans, and not a component of any private development project which may contribute traffic to this important South Maui highway. For instance, if the HDOT did not have the planned widening project programmed, or if HDOT was not in a position to implement the widening project at this time, private development entities would then be obligated to identify and implement





alternative solutions, independent of HDOT's capital improvements program and long range plans.

The improvements are the last segment of the widening of Pi'ilani Highway from Mokulele Highway to Wailea Ike Drive recommended in the long range transportation plans. As noted in the traffic study, the improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region.

With this in mind, the scope of Chapter 343, HRS EA for the Pi'ilani Highway widening project should not reach into the realm of projects being undertaken by others in the Kihei-Makena region. The connection between the Honua'ula and Makena projects, as you have noted, are the conditions requiring private entities to participate in cost sharing for the project. The HDOT views the conditions imposed as beneficial in establishing an alternative funding source to the State Transportation Improvement Program (STIP) through a private-public partnership, as the developers' contributions will help to mitigate impacts of not only their projects but anticipated growth within the Kihei-Makena region.

Importantly, this highway widening project would have proceeded irrespective of the zoning conditions, based on anticipated highway capacity constraints calculated. As a HDOT project implementing our long-range transportation plans, we do not believe that mitigative conditions imposed through the County land entitlement process are a basis for concluding that the Honua'ula and Makena Resort projects must be analyzed as part of the Chapter 343, HRS process. In particular, if a State and County traffic impact fee system was in place at the time the zoning conditions were imposed, our recommendation for the funding contribution conditions for the Honua'ula and Makena projects would not have been suggested as the cost of this regional improvement would have been borne by all development projects having potential trip contributions to Pi'ilani Highway.

To summarize, the HDOT has, throughout the State of Hawaii, regional transportation improvements scheduled or under construction, which are subject to similar circumstances. For the Lahaina Bypass project, as an example, we have suggested to discretionary authorities, that conditions of approval include participation in the construction of that regional roadway project. It has been our practice, in the absence of an implementable traffic impact fee system, to ask developers to participate in such improvements as a means of achieving a fair-share cost objective which is viewed as an appropriate means of project financing while recognizing potential mitigation value for projects proposed in the region. Thus, as a matter of public policy, the HDOT believes that the conditions imposed on projects for roadway participation are appropriate, and should not be considered a basis for defining segmentation or cumulative impact criteria pursuant to Chapter 343, HRS. In this instance, therefore, the scope of the Chapter 343, HRS EA for Pi'ilani Highway should not include the development proposals and related impacts of the Honua'ula, Makena Resort, or any other development proposal which may be asked to participate in the roadway widening project.

To address specific concerns raised in your comments, the following responses are provided:

1. *The highway widening is part of an overall larger development scenario. The Draft Environmental Assessment (EA) concludes that no impacts of eventual further construction or population growth in the Wailea-Makena area can be attributed to the road widening. There is absolutely no proof given, other that consultant's estimates, to support this conclusion.*

**Response:** According to Hawaii Administrative Rules (HAR) §11-200-7, the following criteria are used to determine whether an individual project is part of a larger development:

a. *The component actions are phases or increments of a larger undertaking*
b. *An individual project is a necessary precedent for a larger project*
c. *An individual project represents a commitment for a larger project*
d. *The actions in question are essentially identical and a single statement will adequately address the impacts of each individual action and those of the group of actions as a whole.*

**Criteria a:** The Pi'ilani Highway widening project is an independent roadway project to implement the long range transportation plans of the HDOT and the County of Maui which will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region resulting from land use decisions made by the Land Use Commission and County of Maui which designated this area for future urban growth. However, the proposed improvement may facilitate development in the Wailea-Makena area by removing an impediment to development by providing an improved transportation system in the area.

**Criteria b:** As stated previously, this is an independent roadway improvement by the HDOT recommended in the long range transportation plans of the HDOT and County of Maui, which is required to keep pace with population growth in the Kihei-Makena region and is not a precedent to any single development such as Honua'ula or Makena Resort. Whether Honua'ula is built or Makena Resort is expanded, this improvement is necessary by 2016 to accommodate the anticipated growth of the region.

**Criteria c:** The Pi'ilani Highway widening does not represent a commitment for a larger project. Land use decisions made by the State Land Use Commission and County of Maui urbanized Honua'ula and expanded Makena Resort. As noted at the onset of this letter, the conditions requiring widening of Pi'ilani Highway





were mitigation measures to ensure that these projects did not create unacceptable level of service in the area. As a governmental agency we believe it is fair and appropriate to seek participation from projects to support the implementation of regional roadway improvements. We do not believe that participation in a regional roadway improvement implies the need for the HDOT to include the impacts of the individual developments themselves. Such an approach would make the public infrastructure and facilities development process unwieldy and beyond the scope and intent of Chapter 343, HRS. Therefore, just as there is no expectation that Chapter 343, HRS documents for a new public school address the direct impacts of those individual projects contributing to the development of a new school facility, there is no Chapter 343, HRS EA requirement for a roadway project to address the impacts of the individual projects contributing to the roadway improvement.

**Criteria d:** Pi'ilani Highway widening is a public roadway improvement that is not identical to Honua'ula and the Wailea and Makena Resorts.

2. *The Draft EA does not tie in the language of the Kihei-Makena Community Plan which requires a four lane road before major projects in the area can be approved. No research is done to determine if the highway is not widened, if the volume of traffic, rate of development, growth in population, demand for water and other services would be virtually the same as if the road was enlarged.*

*As an example, when a highway was planned to go from Makena to Ulupalakua, it and its secondary and cumulative impacts, were rightly discussed in the 1973 Makena Resort EIS. That road was not built during the 30-year time frame examined in the Makena EIS. Growth in the area remained modest.*

**Response:** Page 6 and Pages 56 through 59 of the Draft EA tie in the language of the Kihei-Makena Community Plan. A traffic report was prepared for the project, included as Appendix "I" of the Draft EA, which analyzed population growth, the rate of development and volume of traffic in the Year 2016 and 2022. Based on the Maui Travel Demand Forecasting Model an annual defecto traffic growth rate of 0.5 percent resulted. The defacto traffic growth rate is consistent with the average annual rate of change used in the 2030 General Plan Update. The traffic report determined the improvements will be necessary by 2016. In order to keep pace with anticipated growth, the funding of this project by private entities is seen as an opportunity to implement the widening of Pi'ilani Highway as evidenced in the project's identification in several long range transportation plans.

3. *Road improvements do facilitate growth. That doesn't mean they are not needed. It simply means that environmental documents should accurately portray a big picture view as required by HAR 11-200-7 which sets forth criteria for examining related impacts of a proposed action.*

**Response:** As stated previously, the Pi'ilani Highway improvements may facilitate growth by removing an impediment to developments by providing an improved transportation system to urban growth areas. Both the State Land Use Commission and County of Maui have identified Honua'ula and Makena Resort as future urban growth areas that will need to be serviced by an improved transportation system. As analyzed in the traffic report, the proposed improvement will be necessary by 2016 to accommodate the existing rate of growth in the Kihei-Makena region.

**B. HAR §11-200-7 MULTIPLE OR PHASED APPLICANT OR AGENCY ACTIONS:**

A *group* of *actions proposed by an agency or an applicant shall be treated* as a *single action when: The component actions are phases or increments of a larger total undertaking; An individual project is a necessary precedent for a larger project; An individual project represents a commitment to a larger project;*

**Response:** The applicability of HAR §11-200-7 has been previously addressed in Response No. 1 and the Pi'ilani Highway widening does not meet the criteria in which an individual project is determined to be part of a larger development. The proposed improvement is the implementation of the HDOT's and the County of Maui's long range transportation plans. This portion is the last segment of the existing highway to be implemented and is independent of Honua'ula and Makena Resort.

The State of Hawaii owns a portion of the right-of-way proposed to connect to Honua'ula which originally was to provide a route to Upcountry Maui. However, since then the Kihei-Upcountry Connector Road has been re-evaluated in the Maui Long Range Land Transportation Plan. The connection to Upcountry is now being proposed between Kaonoulu Street and Haleakala Highway. This connector roadway is also identified in the Draft Maui Island Plan under review by the County of Maui while the previous extension of Pi'ilani Highway has been deleted from the proposed transportation plan. In 2006, design work on the Kihei-Upcountry Road was initiated. Future extension of Pi'ilani Highway beyond Wailea Ike Drive is no longer being pursued by the HDOT.

The HDOT acknowledges that the EIS for the Makena Resort was completed in 1974, however, environmental review of the Resort in the





context of Chapter 343, HRS, would be appropriate in the event the Resort triggers compliance requirements. As such, it is not part of the HDOT's review of the Pi'ilani Highway widening project.

**1. Kihei-Makena Community Plan**

Environmental review of Honua'ula is appropriately being conducted in the Honua'ula Draft EIS while environmental review of Makena Resort would be appropriate in the event Makena Resort triggers compliance requirements. As such, these projects are not part of HDOT's review of the widening of Pi'ilani Highway. Discussion of the Kihei-Makena Community Plan is included in Pages 6 and 56 through 59 of the Draft EA.

The HDOT acknowledges that the Kihei-Makena Community Plan includes the following policy statement:

> *"undertake transportation system improvements concurrently with planned growth of the Kihei-Makena region. Require adequate inter regional highway capacity, including the widening of Piilani and Mokulele Highways to four lanes, prior to the construction of major projects south of Kilohana Road or mauka of Pi'ilani Highway".*

In response to this policy, Honua'ula and Makena Resort, through a zoning condition imposed by the County of Maui are required to construct the two (2) additional lanes of Pi'ilani Highway.

Enforcement of this policy statement is by the County of Maui. Completion of the widening of Pi'ilani Highway prior to when these projects are ready for construction is not a requirement of the HDOT. The widening project is to implement our long range transportation plan.

**2. HRS 11-200-12-Significance Criteria**

*In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action.*

*In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action.*

**Response:** In response to your comments and in accordance with Chapter 343, HRS, Section II (E) Cumulative and Secondary Impacts will be

revised in the Final EA. Further, as the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, HRS in determining if an EIS is warranted.

## C. OTHER AREAS OF THE DRAFT EA WHICH DO NOT PROVIDE ADEQUATE INFORMATION:

### 1. Noise Impacts:

A noise study was prepared for the project and is included as Appendix "F" in the Draft EA. The noise study addresses construction and operational noise impacts along the existing highway corridor and is based on the U.S. Federal Highways Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria. The HDOT has a policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

### 2. Noise Impacts on Planned Future Residences:

Potential noise impacts that may be experienced by the development of Honua'ula are best addressed in the Honua'ula Draft EIS, as well as consideration of appropriate mitigation measures. The Draft EIS for Honua'ula is under review including impacts on future homes in Honua'ula. Similarly, impacts on the affordability of these units should be addressed in the Honua'ula Draft EIS.

The noise study was conducted along the entire length of the highway corridor and addressed impacts on the adjacent residential areas which are most affected by the improvements. The further away a residence is from the highway, in which the line of sight to the highway becomes obstructed, the less noise will be experienced by these residents. The existing residences and landscaped properties located along the highway corridor limits the line of sight to the highway and as such acts as noise abatement measures for residences located away from the highway corridor. Pursuant to the HDOT's policy, noise abatement is limited to sound walls and only if the abatement meets the criteria for "reasonable noise abatement". As stated previously, three (3) properties near the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection meet the criteria for "reasonable noise abatement".

### 3. Alternative Designs or Transportation Systems:

As recommended, the alternatives section of the Final EA will be revised to include the following discussion of a makai alignment and mass transit corridor as alternatives:





**a. Makai Alignment Alternative**

Vacant properties adjacent to the right-of-way (ROW) are not consistently aligned on the same side of the highway. This creates a situation in which the highway, if realigned, would transition from one side of the ROW to the other. To meet FHWA and HDOT design standards including transition taper requirements, moving the improved section of the highway in a makai direction is not possible due to the irregular and inconsistent spacing of vacant land areas. A makai alignment will increase impacts on the makai improved residential and commercial lots, while reducing impacts on mauka Maui Meadows homeowners.

**b. Mass Transit Corridor Alternative**

The draft Maui Island Plan identifies a future mass transit corridor mauka of Pi'ilani Highway. The mass transit corridor begins from a future transit station at the intersection of Honoapi'ilani Highway and North Kihei Road and continues south around Kealia Pond towards Kihei and across Mokulele Highway, mauka of Pi'ilani Highway to a proposed southern terminus at Ke Alii Alanui Drive north of Wailea Resort. The existing Pi'ilani Highway is also proposed to be incorporated into this future mass transit system with a transit station proposed at its intersection with Kaonoulu Street. However, this is a long term recommendation of the draft Maui Island Plan which has yet to be adopted by the County of Maui. The traffic study prepared for the project identified the need for additional capacity in the near future, year 2016. As a long-term alternative, mass transit may be feasible to mitigate future increases in traffic and further improve the level of service (LOS) of Pi'ilani Highway.

Discussion of an expanded bus system is not discussed in the alternatives since the operation of the bus system is by the County of Maui and future expansion of the system is a function of local government. The HDOT is responsible for state-wide transportation systems which includes a system of State roadways.

**Use of the state right-of-way for the Pi'ilani extension through the Honua'ula property to connect with Kaukahi Drive**

Although a portion of the land for the future extension of Pi'ilani Highway is owned by the State of Hawaii, said extension is not being actively pursued by the HDOT. To accommodate future highway capacity needs either Pi'ilani Highway will be required to be upgraded to six (6) lanes of traffic or a new mauka highway will be required. Due to existing right-of-way (ROW) constraints the more feasible alternative appears to be the mauka highway. This alternative is also supported by the County of Maui as identified in the 2003 Kihei Traffic Master

Plan by the Department of Public Works and draft Maui Island Plan under review by the County of Maui.

Originally, the extension of Pi'ilani Highway was proposed as a future connection to Upcountry. However, since this proposal, the Kihei-Upcountry Connector Road has been re-evaluated in the Maui Long Range Land Transportation Plan. The connection to Upcountry is now being proposed between Kaonoulu Street and Haleakala Highway. This connector roadway is also identified in the draft Maui Island Plan under review by the County of Maui while the previous extension of Pi'ilani Highway has been deleted from the proposed transportation plan. In 2006 design work on the Kihei-Upcountry Road was initiated. The future extension of Pi'ilani Highway into Honua'ula is not being pursued by the HDOT. The extension of Pi'ilani Highway to connect to Honua'ula is discussed in the Honua'ula Draft EIS.

4. **Archaeological Review:**

Increased runoff from the project will be retained within the highway ROW and will not be released into the existing drainage ways. As such, it will not impact known and unknown archaeological sites makai of the highway within Wailea Resort. The Department of Land and Natural Resources, State Historic Preservation Division (SHPD) has determined that since the proposed work was within or along side the existing ROW, archaeological monitoring during ground altering disturbances would be sufficient mitigation for the project. See Appendix "G" in the Draft EA.

5. **Segmentation of widening of Pi'ilani Highway between Kilohana and Wailea Ike Drive and Wailea Ike/Pi'ilani Highway intersection improvements from Honua'ula project**

As noted at the beginning of this letter, we view the issue of segmentation and its implications to secondary and cumulative impact analysis differently from that represented by the comments provided. To recap, all development projects in the South Maui region and beyond contribute to vehicle trips within the Pi'ilani Highway corridor. As a governmental agency we believe it is fair and appropriate to seek participation from projects to support the implementation of regional roadway improvements. We do not believe that participation in a regional roadway improvement implies the need for the HDOT to include the impacts of the individual developments themselves. Such an approach would make the public infrastructure and facilities development process unwieldy and beyond the scope and intent of Chapter 343, HRS.

Your comments relating to inclusion of the Draft EA in the Honua'ula Draft EIS should be addressed in the Honua'ula Final EIS. Similarly, your comments on





future impacts on the Honua'ula community along the widened Pi'ilani Highway should also be addressed in the Honua'ula Final EIS.

As stated previously, no drainage improvements for the widening of Pi'ilani Highway will be constructed within Honua'ula.

Also, as stated previously, Section II (E) Cumulative and Secondary Impacts will be revised in accordance with Chapter 343, HRS as it relates to the Pi'ilani Highway widening project. Cumulative and secondary impacts from the Honua'ula project will need to be addressed in the Honua'ula Final EIS.

6. **Impacts to Local Residents:**

Until construction plans are developed in the next phase, specific amounts of rock and dirt to be removed cannot be determined. However, due to geological conditions, construction equipment will be used to remove rocks and dirt. As an alternative, chemical demolition will be considered to split and fracture rock without producing any noise or vibration. However, minimal blasting may be necessary to fragment or dislodge rock. Further, the section on potential impacts and mitigation measures for noise will be revised to include the following discussion on chemical demolition and vibrations from blasting.

a. **Chemical Demolition**

As an alternative to blasting, the use of chemical expansion to break or dislodge rock will be considered. Chemical demolition agents are non-toxic and provide environmentally-friendly, safe, controlled demolition. Expansive powders are mixed with water and poured into pre-drilled holes in the rock. The non-explosive demolition agent swells and exerts significant expansive thrust on the hole-wall. After a certain period, the pressure induced by the chemical non-explosive demolition agent fractures the wall and splits the rock across the line of the drill holes. These chemicals easily split and fracture mass rock without producing significant noise or vibration.

b. **Air Blasts**

Air blasts associated with blasting are concussion type, low frequency vibrations which are of relatively short duration. The low frequency characteristics of air blasts noise tends to induce vibrations in structures and subsequent complaint reactions due to the low resonant frequency of buildings. Although the human ear is less sensitive to low frequency sounds, structures which vibrate can produce secondary audible effects such as rattling sounds and effects which are sensitive to touch. Sound levels at which these secondary effects occur vary with the weight or

stiffness of the structure. In general, the beginning point of sound induced vibration may occur at levels as low as 80 linear weighted decibels (dBL). These levels are significantly below the peak levels of 120 to 136 dBL which have been associated with low risk of damage to structures.

The levels of air blasts are anticipated to be well below the structural damage criteria for buildings, so risks of window glass breakage from blasting at the proposed project are considered to be very low. Although the anticipated blasts are estimated to be well below peak levels, complaints resulting from air blasts may occur. The project's Noise Study conducted additional analyses to estimate the percent of the blast noise levels of 120 dBL, and with no more than five (5) blasts per week. The average noise exposure levels from blasting operations are predicted to be very low, and less than 1.0 percent of the population exposed to this level are expected to be highly annoyed. Risk of adverse noise impacts from blasting operations of up to five (5) blasts per week which are also controlled to avoid risks of damage to structures, are considered to be very low.

Ground vibrations or seismic waves are also generated during blasting operations. Most of the seismic energy remains trapped in the ground, but some energy is released as an over pressure pulse into the air. Limiting the charge weights of the blasts is expected to minimize the energy released into the air and adverse human responses to vibrations. It was concluded that risks of adverse impacts from ground vibrations can be very low, provided sizes of the charge weights per delay are kept at relatively small values in order to minimize risks of damage to nearby structures.

In response to your comments regarding mobile source air toxics (MSAT), the Air Quality report included as Appendix "E" of the Draft EA concluded even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. A qualitative analysis gives a basis for identifying and comparing the potential differences among MSAT emissions from the various alternatives. The FHWA study *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives* was used to evaluate the project.

In the study it was indicated that the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT. For this project the estimated daily VMT in 2016 with or without the project remained the same at 28,926 VMT/day. The project is not expected to affect traffic volumes, and should not result in increased emissions of MSATs. According to the study, the improved traffic flow with the project may actually help to reduce MSAT emissions.





7. **Solid Waste:**

As stated previously, until construction plans are developed in the next phase, specific amounts of rock and dirt to be removed cannot be determined. Along with green waste from grubbing activity, this will make up the majority of the construction solid waste for the project. Construction solid waste will be hauled a short distance south to Honua'ula.

8. **Drainage:**

A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. An updated drainage report has been prepared and is included in the Final EA. The existing highway culverts were designed based on the "Hydrology Report for Pi'ilani Highway" dated March 1977 for the original Pi'ilani Highway, as well as the Maui Meadows Subdivision. As such, the findings and recommendations in the 1977 report are applicable to the existing drainage improvements. Further, the culvert size information was obtained from field measurements conducted by Austin, Tsutsumi & Associates, Inc. (ATA) on July 24, 2008. Updated preliminary hydrological calculations were prepared by ATA and included as Appendix "A" of the drainage report.

As required by the HDOT, the drainage improvements will conform to HDOT Design Criteria for highway drainage and the HDOT Storm Water Permanent Best Management Practices Manual. Preliminary design of the drainage improvements will handle the increase in storm water runoff associated with the highway widening improvements through a proposed system of retention basins, creating no increased flows into the existing drainage gulches located makai of the highway ROW. Storm water runoff mauka of the highway ROW within Honua'ula is addressed in the Honua'ula Draft EIS.

9. **Native Fauna Habitat:**

As stated previously, comments on the proposed extension of Pi'ilani Highway through Honua'ula are addressed in the Honua'ula Draft EIS. However, a portion of the Honua'ula property will be utilized as a construction baseyard. This site within Honua'ula was selected based on studies conducted by Honua'ula that the area did not contain archaeological or cultural resources nor habitat for endangered flora or fauna. The EA will be revised to address the construction baseyard, as appropriate.

10. **Contractual Arrangements Affecting Public Funds:**

At present, there are no agreements between the HDOT and the developers for the design and construction of the widening of Pi'ilani Highway or for the use of the

State ROW south of Wailea Ike Drive for the future extension of Pi'ilani Highway to Kaukahi Street. Until appropriate approvals are granted for the use of State lands, the undeveloped ROW will remain as open land owned by the State of Hawaii. HDOT is also unaware of any agreements between Honua'ula LLC and Ulupalakua Ranch. The widening of Pi'ilani Highway between Kilohana Drive and Wailea Ike Drive is proposed as a public/private partnership in which the developers will design and construct the improvements without any financial assistance from the federal, state and county governments.

We appreciate the input provided by your organization. Your comments will be included in the Final EA. As cited herein, revisions to the EA document will also be completed to address comments raised. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
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MAUI TOMORROW
Protecting Maui's Future

Dec 8, 2010

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**Comments on DRAFT EA for proposed Piilani Highway Widening Project**

Maui Tomorrow Foundation, Inc (MTF) appreciates the opportunity to offer comments on the Draft EA (DEA) for the proposed Piilani Highway Widening Project. We also appreciate the extension of the comment deadline. MTF does not take a position for or against this project at this time. We do request that the accepting agencies find that this document is inadequate under HAR 11-200-12. to address the impacts of the proposed project; and that a full EIS be required.

HAR §11-200-10 Contents of an Environmental Assessment states:

*The proposing agency or approving agency shall prepare any draft or final environmental assessment of each proposed action and determine whether the*

*anticipated effects constitute a significant effect in the context of chapter 343, HRS, and section 11-200-12.*

**HRS 11-200-12- Significance Criteria**
*In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action.*

*In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action.*

As discussed below, this DEA fails to consider the project as part of the larger range of actions it is connected to, and the cumulative impacts associated with those actions. Truthful acknowledgement of these cumulative effects would trigger an EIS under HAR 11-200-12, which defines "significant effect" as:

***In most instances, an action shall be determined to have a significant effect on the environment if it:***

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

   The proposed project is a condition of zoning of several substantial development projects totaling over 2000 new units. It cannot be viewed separately from them. These developments will use a large amount of freshwater resources, impacting natural aquifers and streams in south and central Maui.

   These developments involve the destruction of hundreds of rare native wiliwili trees and other uncommon dryland forest plants. These developments involve destruction of hundreds of cultural sites and features which have been defined by the landowners as "insignificant." **The cumulative impacts of this project involve an irrevocable commitment to loss or destruction both natural and cultural resources and an EIS is required to address these impacts.**

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

Expansion of this segment of Piilani Hwy to urban scale proportions is one more step in placing barriers between the residents of the rural neighborhood of Maui Meadows that irrevocably changes the feel of the area from low density rural to urban streetscape with multiple traffic signals and related urban level infrastructure



An EIS should include alternative project designs that create significant natural or planted buffer zones between the residents and the nearly doubled width of the built-on environment. The highway widening will also directly and indirectly result in the urbanization of the adjoining 700 acres of Honua'ula, which presently serves as a habitat for native flora and fauna.

The residents of the region have long accessed these open spaces for enjoyment of the natural environment, through informal neighborhood trails. The proposed project will transform portions of the proposed Honua'ula lands into a noisy, busy, construction baseyard.

***3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 343, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;***

The state's environmental laws and subsequent court decisions make it clear that related actions that are part of a larger scope project cannot be segmented, as is being proposed in the conclusions of this DEA.

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

The road widening project and its associated phases of extension of Piilani Hwy and construction of both Honua'ula/Wailea 670 and Makena Resort will substantially impact the social and economic welfare of local homeowners and businesses in the immediate region.

The DEA does not discuss impacts on residents in the vicinity of the construction project who may be trying to sell or rent a property, or conduct a business that depends upon relative peace and quiet, and easy access. The DEA acknowledges that major relocations of electrical and water lines will be necessary during the process, and dismisses the impact that this and the ongoing noise, construction debris, traffic delays and traffic rerouting through residential neighborhoods will have on the economic and social well being of local residents and businesses.

At the recent public meeting, consultants acknowledged that lands in the proposed Honua'ula project would be used as a "baseyard" for road construction materials and equipment.. Will this generate dust, noise and vehicle fumes that affect adjoining residences? Will displaced field animals relocate to nearby rural residential lots? No impacts related to this use were discussed in the Honua'ula DEIS (segmented from this DEA), and it appears they are being ignored in this EA as well.

An EIS should be done to address the true extent of these impacts and their realistic mitigations. How many home businesses will be affected and for what

period of time? What compensation will be available to local residents for loss of revenue and the peace and sanctity of their homes?

***5. Substantially affects public health;***

The close proximity of residential structures to the proposed widening area creates a variety of public health impacts, both physical and psychological, from equipment noise, blasting, drilling, machinery vibrations and dust.

The new road design which substitutes 4 ft wide bike paths. 2 ft wide curb and gutters and 6 ft wide sidewalks for the current conditions of a 10 ft wide shoulder, leaves little, if any, room for emergency vehicle stops and could actually impact long term public safety. An EIS should discuss these impacts realistically and offer optional designs to mitigate the impacts.

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

The secondary impacts of the road widening are clear and legally spelled out in the zoning conditions for both Honua'ula and for Makena resort. The construction is required to allow thousands of new units and the subsequent increased population impacts on Wailea –Makena beaches, natural resources, public safety services, and other infrastructure.

The road widening is the first step. Widening of Piilani is not needed to serve current residents, according to DOT officials. The DEA makes unsubstantiated statements that the widening project is: "intended to address existing traffic capacity constraints as well as future demands." It appears that these statements are included to avoid triggering an honest discussion of secondary impacts.

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

It is unknown how a widened, higher capacity road will affect the surrounding environment. Will the drainage improvements designed to manage larger volumes of run-off function well or will runoff impacts increase in the vicinity of gulch outlets and the ocean? Who will be responsible for maintaining the retention basins?

The gulch capacity study referred to in the EA was from 1977, over 30 years ago. Will an updated study be provided? The EA should conclude that the scope of these impacts warrants preparation of a full EIS.

The project's environmental review should include discussion of monitoring planned for coastal water quality, pre and post-construction, and remedial actions planned if needed. It is not enough to simply state that drainage increases can be



accommodated and quality of runoff improved, or that the NPDES permit will take care of drainage impacts. Specific actions to reduce or eliminate degradation of the environment and measurements of their effectiveness should be discussed.

At least one gulch affected by the road widening has preserved archaeological sites, with substantial historic artifacts (sites 2493 and 2494). Would increased flows in the gulch impact these sites? A n archaeological monitoring plan during construction will not reveal this information and is not adequate mitigation.

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

This project most definitely involves a commitment for larger actions, it is a condition of their future development and it is financed by major landowners/developers. It is intimately connected to larger actions that should be discussed in an EIS.

***9. Substantially affects a rare, threatened, or endangered species, or its habitat;***
The future development supported by this project will affect lands that are widely documented as habitat for rare, threatened and endangered species in Honua'ula.

Provisions for monitoring the tobacco plants along the actual route for use by endangered Blackburn moths are completely inadequate, since the moth larva is burrowed into the earth during its post-caterpillar development while mitigation efforts proposed in the DEA to avoid destruction of caterpillars only involve inspection of plant leaves for traces of moth feeding.

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

Noise levels are very likely to be increased for roadside residences in Wailea and Maui Meadows when the Piilani Highway footprint doubles from 45 to 80 ft. and allows increased traffic load. Construction phase noise levels will be even worse.

The DEA does not provide information on the amount off rock that will have to be blasted or excavated from the additional 35 ft road Right of Way. More analyses should be done in a proper EIS of alternative mitigations to reduce noise. This could include acquisition of additional right-of-way to allow a larger planted buffer area and proper shoulders on the road bed. Without an EIS, these alternatives are not required to be discussed.

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Maui Tomorrow Foundation urges the Accepting agencies to require a full EIS for this significant project. The following aspects of the project have not been addressed in the Draft EA.

SEGMENTATION OF ACTIONS:

***HAR §11-200-7 Multiple or Phased Applicant or Agency Actions***
***A group of actions proposed by an agency or an applicant shall be treated as a single action when:***

The component actions are phases or increments of a larger total undertaking; An individual project is a necessary precedent for a larger project; An individual project represents a commitment to a larger project;

The law makes it clear that individual actions, which are part of a larger project, cannot be segmented from the whole.

There are actions associated with this project which are necessary precedents for several larger developments and their associated impacts. To be in compliance with HAR 11-200-7 (B), these must be examined in a DEIS to avoid segmentation of environmental review. A famous case here on Maui involving Kahana Sunset condominiums established this as an important legal precedent.

*The Supreme Court opinion stated: "the Commission is the agency receiving the request for approval of the action, and it is therefore the agency responsible for preparation of the environmental assessment." In so holding, we recognized that "[i]solating only that particular component of the development for environmental assessment would be improper segmentation of the project."*

For example several multifamily neighborhoods, park and open space areas are being proposed in Honua'ula, relatively near the Piilani Hwy widening corridor. There is no analysis in the DEA of potential traffic noise levels at these proposed park sites. Will portions of the parks and neighborhoods be impacted by future traffic noise? Will future residences proposed for the northern portion of Honua'ula need to invest in soundproofed walls and high concrete block walls to block out traffic noise?

A storm water detention basin for the Piilani Hwy is proposed for construction in the Honua'ula property. Will it displace any capacity of proposed onsite retention basins that are needed to deal with considerable existing and post development flows in the project? The two projects should not be separated.

A discussion of the cumulative impacts of all the interconnected projects should be addressed in a full EIS for the road-widening project, since this was not done in the earlier Honua'ula DEIS, nor in the out-dated 1974 Makena Resort EIS.

A number of actions connect the Piilani Road widening to the Honua'ula and Makena Resort projects. Widening of Piilani Hwy from Kilohana to Wailea Ike St. is a required condition of rezoning, as are improvements to Wailea Ike and other



intersections. Environmental review for these actions has been done separately and was not included in any meaningful way in the Honua'ula project's DEIS. No current environmental review has been done for the whole Makena Resort project. This style of review process is, in essence, segmenting connected and interdependent actions.

As stated above in HAR 11-200-7, Environmental review of actions proposed by the applicants and/ or required as conditions of their rezoning by the Maui County Council should have been included in the DEIS for the Honua'ula development project, but were not.

Instead, such consideration of overall impacts has been segmented by the creation of this separate, and more narrow Environmental Assessment for the Piiilani Highway widening project.

The Honua'ula DEIS stated that impacts of the proposed road widening and the proposed extension of Piilani Highway from Wailea ike drive south would be "evaluated later." Now we are presented with a DEA which does not discuss the proposed extension of Piilani hwy and its impacts in any meaningful terms, and concludes that the widening of Piilani Hwy will have no cumulative impacts.

Because the proposed project is falsely assumed to not trigger the criteria of HAR 11-200-12, and require an EIS, no significant discussion of alternative designs or actions will take place in the public forum, as described in HAR 11-200-17

*"Alternatives related to different designs or details of the proposed actions which would present different environmental impacts;"*

Action: Maui Tomorrow Foundation requests that no FONSI be issued for this project at this time and that a full EIS be done for the Piilani Hwy widening project between Kilohana and Wailea Ike Dr. to be in compliance with Hawaii's rules governing environmental review.

Thank you for the opportunity to offer these comments.

Irene Bowie

Irene Bowie
Executive Director

**55 N. Church St. Ste. A5, Wailuku, HI 96793 808.244.7570 director@maui-tomorrow.org**

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IN REPLY REFER TO:

HWY-PA
2.0997

March 13, 2012

Ms. Irene Bowie
Maui Tomorrow
55 North Church Street, Suite A5
Wailuku, Hawaii 96793

Dear Ms. Bowie:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments, dated on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. Before proceeding with our point-by-point responses to the comments provided, we believe it beneficial to clarify and set proper context for the proposed highway widening action. The explanation which follows addresses issues relating to segmentation and cumulative impacts, which we agree, are important themes to address as part of the Chapter 343, Hawaii Revised Statutes (HRS) process.

The State of Hawaii, Department of Transportation's (HDOT) perspective however, differs in that we view the Pi'ilani Highway widening project as a stand-alone project, not a component of other proposed private development actions such as the Honua'ula project, Makena Resort project, or any other project occurring in the Kihei-Makena Community Plan region.

## A. SEGMENTATION AND CUMULATIVE IMPACTS CONSIDERATIONS

The fundamental premise for the HDOT, in undertaking all of its regional highway improvements projects, is that HDOT facilities improvements shall be based on sound planning and programming which considers opportunities, where available, for private-public partnerships. It is important to recognize that the Pi'ilani Highway Widening project is a part of our long range transportation plans, and not a component of any private development project which may contribute traffic to this important South Maui highway. For instance, if the HDOT did not have the planned widening project programmed, or if HDOT was not in a position to implement the widening project at this time, private development entities would then be obligated to identify and implement alternative solutions, independent of HDOT's capital improvements program and long range plans.





The improvements are the last segment of the widening of Pi'ilani Highway from Mokulele Highway to Wailea Ike Drive recommended in the long range transportation plans. As noted in the traffic study the improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region.

With this in mind, the scope of Chapter 343, HRS EA for the Pi'ilani Highway widening project should not reach into the realm of projects being undertaken by others in the Kihei-Makena region. The connection between the Honua'ula and Makena projects, as you have noted, are the conditions requiring private entities to participate in cost sharing for the project. The HDOT views the conditions imposed as beneficial in establishing an alternative funding source to the State Transportation Improvement Program (STIP) through a private-public partnership, as the developers' contributions will help to mitigate impacts of not only their projects but anticipated growth within the Kihei-Makena region.

Importantly, this highway widening project would have proceeded irrespective of the zoning conditions, based on anticipated highway capacity constraints calculated. As a HDOT project implementing our long-range transportation plans, we do not believe that mitigative conditions imposed through the County land entitlement process are a basis for concluding that the Honua'ula and Makena Resort projects must be analyzed as part of the Chapter 343, HRS process. In particular, if a State and County traffic impact fee system was in place at the time the zoning conditions were imposed, our recommendation for the funding contribution conditions for the Honua'ula and Makena projects would not have been suggested as the cost of this regional improvement would have been borne by all development projects having potential trip contributions to Pi'ilani Highway.

To summarize, the HDOT has, throughout the State of Hawaii, regional transportation improvements scheduled or under construction, which are subject to similar circumstances. For the Lahaina Bypass project, as an example, we have suggested to discretionary authorities, that conditions of approval include participation in the construction of that regional roadway project. It has been our practice, in the absence of an implementable traffic impact fee system, to ask developers to participate in such improvements as a means of achieving a fair-share cost objective which is viewed as an appropriate means of project financing while recognizing potential mitigation value for projects proposed in the region. Thus, as a matter of public policy, the HDOT believes that the conditions imposed on projects for roadway participation are appropriate, and should not be considered a basis for defining segmentation or cumulative impact criteria pursuant to Chapter 343, HRS. In this instance, therefore, the scope of the Chapter 343, HRS EA for Pi'ilani Highway should not include the development proposals and related impacts of the Honua'ula, Makena Resort, or any other development proposal which may be asked to participate in the roadway widening project.

**B. HAWAII REVISED STATUTES (HRS) §11-200-12 SIGNIFICANCE CRITERIA:**

Regarding HRS 11-200-12- Significance Criteria, each of your comments pursuant to the ten (10) criteria cited in your letter are addressed, as follows:

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

**Response:** Section II, of the Draft EA assessed the impacts of the widening and proposed appropriate mitigation measures as recommended by the specialized studies contained in the Appendices in order to ensure there is no irrevocable commitment to loss or destruction of any natural or cultural resource.

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

**Response:** Although Pi'ilani Highway provides access to Maui Meadows, a rural residential subdivision, it is classified as an existing urban principal arterial roadway that also provides access to the urbanized areas of Wailea and Makena Resorts. As an existing urban principal arterial roadway, the proposed widening will not create additional barriers to the Maui Meadows subdivision but will provide improved traffic circulation in the area to keep pace with growth in the Kihei-Makena region by 2016. We note that the additional traffic signal at the Pi'ilani Highway/Okolani Drive/Mikioi Street intersection is required to be constructed in conjunction with the Kai Malu project built in Wailea Resort.

Alternatives studied in the Draft EA included obtaining additional right-of-way (ROW); however, to minimize impacts associated with land acquisition on the adjacent built properties, design of the highway has been constrained within the existing highway ROW. The limitation of the existing ROW prohibits the creation of significant natural or planted buffer zones between the residences and the widened highway corridor. Pi'ilani Highway is classified as an "Urban Principal Arterial" and the design meets the standards of the Federal Highways Administration (FHWA) and HDOT.

As stated previously, the Pi'ilani Highway Widening project may remove an impediment to future developments in the area but it will not lead directly or indirectly to the urbanization of the adjoining 670 acres of Honua'ula. Although not built, Honua'ula has already been designated as a future urban growth area through actions of the State Land Use Commission and County of Maui.





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***

**Response:** The project does not conflict with the State's long-term environmental policies or goals and guidelines of Chapter 344, HRS, as reviewed in accordance with HRS 11-200-12 Significance Criteria. The widening of Pi'ilani Highway is intended to implement the HDOT's and the County of Maui's long range transportation plans. Discussion regarding the issue of segmentation has been previously addressed.

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

**Response:** The Pi'ilani Highway Widening does not include the extension of the highway into Honua'ula and, as such, is not associated with the proposed development of Honua'ula and Makena Resort. As a roadway improvement project, and in the context of its spatial location, we have no indication that the project will significantly impact the social and economic welfare of existing residents and businesses in the immediate area. According to the records of the County of Maui, within the Maui Meadows area there are a total of six (6) permitted Bed and Breakfast homes and one (1) permitted transient vacation rental and no permits for home occupations in the Wailea Resort area. There are no other home occupations permitted in the area.
As previously noted, Pi'ilani Highway is an urban principal arterial planned as an eventual four-lane roadway within the existing ROW. The proposed improvement between Kilohana Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui traffic impact studies conducted over the years and policy statements within the Kihei/Makena Community plan call for this widening project.

To address concerns regarding the relationship between project construction and real property sales in the surrounding neighborhoods, the project team will have available a project construction coordinator who will respond to questions from residents and realtors representing sellers and buyers. If there are concerns expressed, the project coordinator will communicate

those concerns to the construction management team and will be able to provide information as to construction segment duration, as well as mitigation measures proposed for each construction segment. As with any other roadway construction project, temporary inconveniences may be expected. However, we believe that with proper noticing, communication, and a sound program of best management practices, there should not be significant adverse impacts to property sales.

5. ***Substantially affects public health***

**Response:** The Draft EA recognizes that there will be temporary construction impacts. To minimize such impacts on the health of residents in the area, the following construction mitigation measures are proposed:

a. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. As an alternative, chemical demolition will be considered to split and fracture rock without producing significant noise or vibration. If blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Noise associated with construction activities will comply with the Department of Health (DOH) noise regulations.

b. Best Management Practices (BMPs) such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure, be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

With respect to infrastructure system relocation, we note that the relocation of overhead electrical lines is temporary and limited to relocation of the overhead lines outside of the construction





corridor. Modifications to County infrastructure located in the ROW such as waterlines may be necessary but it will not involve relocation of major waterlines or other utilities within the highway corridor.

Regarding traffic diversions and construction traffic, two (2) lanes of traffic will be open on Pi'ilani Highway at all times and no traffic diversions shall be routed through residential areas. In addition, a construction Transportation Management Plan will be implemented by the contractor to reduce construction traffic disruptions through the area. The construction Transportation Management Plan will be included in the Final EA.

As stated at the community meeting, a five (5) acre area directly across the Pi'ilani Highway/Wailea Ike Drive intersection in Honua'ula will be used as a construction baseyard. The site was selected due to its distance from existing residential areas to minimize impacts from dust, noise and fumes, as well as based on available studies conducted on the site which indicated the site does not include any historic or cultural resources or habitat for endangered flora and fauna. The Draft EA will be revised to include discussion of impacts associated with the use of this five (5) acre construction baseyard.

As required by the County, construction debris will be disposed of at an approved construction debris site. Rock and soil material from excavation work will be disposed of at the construction baseyard in accordance with permitting requirements of the County and State of Hawaii to minimize hauling these materials a greater distance. With appropriate mitigative measures incorporated into the project, it is not anticipated to substantially affect public health.

With regard to emergency vehicle stops, once the highway widening is completed there will be at least one (1) travel lane open in which vehicles will be able to maneuver around any stalled vehicle until it can be moved or towed away and reopened to both lanes of traffic.

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

**Response:** As stated previously, the Pi'ilani Highway improvements are not sourced to the Honua'ula and Makena Resort projects. It is the implementation of the long range transportation plans of the

HDOT and County that provides the basis for project need. These improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region even if Honua'ula is not built and there is no further expansion of Makena Resort.

As with other regional transportation improvements, the completion of the Pi'ilani Highway Widening project does serve as a mitigation measure for other private development actions in the Kihei-Makena region and, therefore, removes a potential impediment to development. The Final EA will, therefore, include additional analysis relating the secondary impacts of project completion, referencing both the Honua'ula and Makena Resort projects.

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

**Response:** A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. An updated drainage report has been prepared and will be included in the Final EA.

Importantly, the drainage system design will conform to HDOT Design Criteria for Highway Drainage and the HDOT Storm Water Permanent Best Management Practices Manual, as well as County of Maui requirements. Increase in storm water runoff associated with the highway widening improvements will be entirely retained in the proposed retention system, creating no increased flows into the existing drainage gulches. The retention system will allow sediments and pollutants to settle, creating no new impacts to near shore waters. As such, monitoring of coastal water quality is not considered necessary. Additionally, a mechanical filtration system, which will further improve water quality is proposed. Further discussion on the filtration system is provided below.

As a HDOT facility, we will be responsible for maintenance of the retention system.

As referenced in Appendix "J" of the Draft EA, the existing highway culverts were designed based on the "Hydrology Report for Pi'ilani Highway" dated March 1977 for the original Pi'ilani Highway as well as the Maui Meadows Subdivision. The findings and recommendations in the 1977 report are applicable to the existing drainage improvements. The culvert size information was obtained from field measurements conducted by Austin, Tsutsumi & Associates, Inc. (ATA) on July 24, 2008. Updated preliminary





hydrological calculations were prepared by ATA and included as Appendix "A" of the drainage report.

As referenced in Appendix "J", page 10, the proposed storm water system will provide water quality treatment via mechanical filtration systems and reduce the discharge of pollutants to the maximum extent practicable in accordance with the HDOT Storm Water Permanent Best Management Practices Manual, dated March 2007. With this in mind, the project is not anticipated to substantially degrade environmental quality.

With regard to historic sites, by letter dated July 16, 2009, Appendix "G" of the Draft EA, the Department of Land and Natural Resources, State Historic Preservation Division (SHPD) determined that since the proposed work was within or along side the existing ROW, that archaeological monitoring during ground altering disturbances would be sufficient for the project. The SHPD did not indicate specific concerns regarding sites 2394 and 2395 which we understand are located makai in the Wailea Resort. As noted previously, increases in storm water runoff generated by the project will be retained in the proposed drainage retention system. Thus, there will be no increase in flows discharged into gulches that would impact these historic sites.

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

**Response:** As noted previously, the proposed roadway improvements are not triggered by the Honua'ula and Makena Resort projects. The proposed action is tied to the implementation of the long range transportation plans of the HDOT and County. Discussion regarding cumulative impacts, secondary impacts and segmentation are provided in Section "A" and Section "B.6" of this letter.

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

**Response:** Appendix "C" and Appendix "D" of the Draft EA assessed impacts on rare, threatened and endangered species and their habitat within the project corridor. The studies concluded that with appropriate mitigation the project will not substantially affect any rare, threatened, or endangered species, or its habitat.

With regard to the construction baseyard's impacts to rare, threatened and endangered species, please refer to our response provided in Item No. 5, above.

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

**Response:** A noise study was prepared for the project and is included as Appendix "F" in the Draft EA. The noise study addresses construction and operational noise impacts and is based on the U.S. FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria. The HDOT has a policy, applicable to all state roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this policy, three (3) properties south of the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

Regarding construction noise, especially from blasting, the existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. As stated previously, as an alternative, chemical demolition will be considered to split and fracture rock without producing significant noise or vibrations.

However, if blasting becomes necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Noise associated with construction activities will comply with the DOH noise regulations.

In general, proper mitigating measures will be employed to minimize construction-related noise impacts and comply with all Federal and State noise control regulations. Noise from construction activities will be short-term and will comply with State DOH noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed the DOH's allowable limits, a permit will be obtained from the DOH. Specific permit restrictions for construction activities are as follows:

- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday;





- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 9:00 a.m. and after 6:00 p.m. on Saturday; and
- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels on Sundays and holidays.

With appropriate mitigation measures, the project is not expected to detrimentally affect air or water quality or ambient noise levels.

Section IV, pages 69-70, of the Draft EA includes a discussion of the alternatives considered. As requested, Section IV of the Final EA will be revised to include ROW acquisition as an alternative.

We note your comments did not include significance criteria 11, 12 and 13. We assume that these criteria have been adequately addressed in the Draft EA.

**C. <u>SEGMENTATION OF ACTIONS:</u>**

As noted at the onset of this letter, we view the issue of segmentation and its implications to secondary and cumulative impact analysis differently from that represented by the comments provided. To recap, all development projects in the South Maui region and beyond contribute to vehicle trips within the Pi'ilani Highway corridor. As a governmental agency we believe it is fair and appropriate to seek participation from projects to support the implementation of regional roadway improvements. We do not believe that participation in a regional roadway improvement implies the need for the HDOT to include the impacts of the individual developments themselves. Such an approach would make the public infrastructure and facilities development process unwieldy and beyond the scope and intent of Chapter 343, HRS. Therefore, just as there is no expectation that Chapter 343, HRS documents for a new public school address the direct impacts of those individual projects contributing to the development of a new school facility, there is no Chapter 343, HRS EA requirement for a roadway project to address the impacts of the individual projects contributing to the roadway improvement.

**D. <u>ENVIRONMENTAL IMPACT STATEMENT (EIS):</u>**

As the approving agency, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, HRS in determining if an EIS is warranted.

A Final EA will be prepared and reviewed for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact (FONSI) and approve the Final EA or we may determine that there is

a potential for significant impacts and issue a notice to prepare an EIS (EIS Preparation Notice).

We appreciate the input provided by your organization. Your comments will be included in the Final EA. As cited herein, revisions to the EA document will also be completed to address comments raised. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: MADGE SCHAEFER Address: 520 Mikioi PL

Phone: 874-9293 Email: msch4@hawaiiantel.net

**Comments:** See attached

My name is Madge Schaefer and I am speaking on behalf of the Board of Directors of the Maui Meadows Neighborhood Association.

Thank you for the opportunity to speak on this project. The MMNA has given early consultation input on this project in a letter dated February 16, 2009. We had a response from consultants on August 28, 2009 which briefly addressed our points. We were under the impression that there would be an in depth discussion of our issues in the EA. In several major issues, that does not seem to be the case.

We must be practical about the impacts and what we will be subject to during construction.

I have several procedural questions before I make specific comments:

What agency will set the conditions on this project?

Is this EA hearing the only opportunity to raise specific conditions we would like to see with this project approval?

Will the Maui County Council be holding hearings on this project?

Now our questions and concerns which were not addressed in the EA:

(1) Noise and Traffic during construction

47 Maui Meadows properties back directly on the construction area. 150+ properties are located within 500 feet of the Piilani. Most properties have a main house and an ohana so approximately 250 families would be affected by this project in the construction phase. If the traffic diversion plan puts traffic on Akala Drive, the impact will be a double edged sword for those residents.

(a) Will construction take place 6 days a week? We believe it should be only 5 days a week.

(b) Will there be night construction? This would bring a whole new set of problems and we are opposed to this happening

© Will construction noise be monitored? What agency will monitor? The Dept of Health regulates but do not have inspectors on Maui. How will that be handled to insure residents' right to peaceful enjoyment of their homes?

(d) Where will the staging area be set for construction equipment and employee parking? It should be away from Maui Meadows.

(e) What is the estimated time for completion of the project?

EBISU & ASSOC.

The new noise study does not address the impact of construction and projected traffic noise beyond the immediately adjacent residential properties. Noise goes beyond those properties and we would request that further noise studies be done to project "line of noise" uphill in Maui Meadows. Receptors were placed on rear property lines. Tables should list addresses of property instead of receptor numbers





There are numerous concerns raised in regards to the potential for sound walls. It is unclear whether a continuous sound wall is being proposed or only several walls in sections of the project. We would ask that the sound consultants meet with our Board and interested MM neighbors so that we can discuss our concerns in depth. We need more information regarding the effects of the sound walls on properties located above the top of the walls that will be subject to reflected noise, what is "plan B" if the cost of walls that might exceed the DOT reasonable standard, consideration of sound absorption walls vs. sound reflecting walls, improvements to upper floors of properties that might be above sound walls i.e. double pane windows, to name just a few. Many more than the 16 properties noted in the study will be affected by traffic noise. Bottom line, we are not satisfied with the answers in the noise study. This is probably our biggest concern.

35,000

Traffic diversion plan is not identified specifically. We object to any consideration of Akala Drive for diversion of traffic. It is an undulating street in some sections with line of sight problems. It is a double loaded residential street. We would support diversion to Kihei Road or Kaila Street.

Dust Control

Fugitive dust is a major problem in Kihei. A best management practice is not the answer we are looking for. Who specifically will be responsible for those BMP's are being carried out during construction? We would prefer that an independent person be given authority for oversight. We would like a hot line to be set up so that residents have a contact during construction.

Blasting

While the blasting information in the EA references limitations of 5 blasts a week and at very small intensities, we need reassurances that should the blast create problems (structural damage, etc) that property owners will have recourse. Notices should be posted at entrances to Maui Meadows as early as possible relating blast day and time. Cursory looks at the rock faces along the route appear to show a vein of blue rock. How will that be dealt with—mechanical or blast?

reduction of charge sizes

Emergency Access

I have given a cursory perusal of the traffic studies. Perhaps this issue is addressed but I raise it out of an abundance of caution. In the event of a natural disaster, i.e. tsunami, Kihei Road is in the inundation zone. Piilani Highway is not. If it is closed, what is Plan B? How is this addressed?

Good Neighbor policy

We have attempted to keep our residents informed about this project. Communication will go a long way to help both sides through this project. We would ask that immediately prior to the start of construction, a public meeting or a complete advisory will be mailed to all residents of Maui Meadows.

Again, I thank you for this opportunity. MMNA has an obligation to our members to do everything possible to mitigate the impacts to the residents of Maui Meadows. You have an obligation to address our concerns and assure us that everything that can be done to mitigate impacts will be done.

Maui Meadows Neighborhood Association
P. O. Box 160, Kihei, HI 96753

December 5, 2010

Munekiyo & Hiraga Inc VIA FAX: 244-8729
Attention: Colleen Suyama
305 High Street
Suite 104
Wailuku, HI 96793

Re: Additional Comments on Draft EA for Piilani Rd Widening

Dear Ms. Suyama;

Thank you for holding the meeting on December 1 which provided the opportunity to hear from consultants and make comments on the draft Environmental Assessment (EA) for the project to widen Piilani highway from Kilohana/Mapu to Wailea Ike Drive. We were pleased that many questions were answered at the meeting and hope these answers will be incorporated into the EA.

The Maui Meadows Neighborhood Association did submit comments for early review on the project and note that our correspondence is included in the EA, but the report has not adequately addressed all the issues we initially raised. We continue to have concerns about exactly how the project will be constructed and about construction related impacts affecting the peaceful enjoyment of properties in Maui Meadows immediately adjacent to, and in close proximity of the project.

Below is a list of questions which we would appreciate comprehensive answers be provided in the final document. We recognize that as professionals, you may communicate in terms that may not be clear to laymen. We would appreciate it if the answers were conveyed in laymen's terms with appropriate references to pages in the EA for those seeking more comprehensive answers.

1. What is the anticipated time frame for construction? Is the project going to be done in sections or will the entire project be done at one time? If the project is to be phased, what is the timeframe for each phase?
2. What are the proposed days of the week and work hours?
3. Is any night construction anticipated? If so, what specific steps will be taken regarding, noise, shielding of lights, generators, etc to accommodate adjacent properties that would be affected by this activity.
4. Will a schedule of construction be made available to interested parties?
5. Please provide specific information as to Best Management Practices in controlling dust and noise. Will dust fences be constructed prior to groundwork commencing? Who can property owners call to report dust or noise problems created caused by the construction?
6. A problem hotline was discussed at the meeting. Will these "hotlines" be staffed on the weekends when, even without construction taking place, dust could still be come a problem







because of high winds and the dry climate? What are industry standards for fugitive dust control?
7. What will be the method for informing affected property owners about blasting times?
8. What recourse will property owners have if they experience collateral damage associated with planned blasting? Who will administer the claim process?

We would appreciate comments to the following discussion:

Additional Noise Concerns
The EA addresses at length the expected noise from the roadway after the project is completed. The EA concludes that only 13 homes are expected to have noise levels exceeding DOT standards, but we continue to have concerns for all 47 property owners who directly back up to the project and would like a more thorough noise study conducted to address all the properties with potential noise issues as a result of the road. We would like to see a comprehensive noise mitigation plan rather than one that only deals with each parcel expected to exceed standards.

Our Board's primary concerns are that of the effects of noise and dust during the construction phase of this project. While the EA addresses Department of Health regulations of construction noise, this is not sufficient to address the potential impacts to those of residents living close to the construction. The nuisance created by up to 18 months of construction noise that, as stated in the EA, will be from 80 to 90 dB, with occasions of as much as 98 dB. This kind of noise level is equivalent to that of a rock concert and if this should take place from 7 am to 6 pm would render many homes uninhabitable for this period.

This study should incorporate the anticipated effects of the increased construction traffic that will be a result of the future developments being facilitated by this road widening project. These effects will be long term in their duration and will significantly increase road noise.

The need for this project has been established, but the residents living within close proximity of this project should not be unduly burdened by the noise, dust and property damages that may be a result of the construction, without mitigation measures and/or compensation.

We do understand that some noise from construction activities will be inevitable. But the MMNA board would like to see the EA address what mitigation measures are planned, and what additional mitigation actions could be taken, should construction dust and noise impacts overwhelm the residents living in close proximity to the project.

Further Traffic Diversion Issues
The EA does not address traffic diversions in the case of lane closures. The Board continues to have concerns that should construction related lane closures cause traffic backups on Piilani highway, those seeking to bypass the traffic may use Akala Drive as an alternate route. We would ask that, in the event of lane closures, police are stationed at the Mapu and Mikioi

entrances of Maui Meadows to restrict drivers from using Akala Drive as a bypass. Alternately, the Mikioi entrance of Maui Meadows could be temporarily closed during these periods of lane closure to prevent drivers traveling northbound, from entering Maui Meadows and using Akala Drive to make their way to the Mapu exit of Maui Meadows.

Undergrounding Utilities

Our board would like to request consideration of relocating MECO's power lines underground to remove the visual blight of the wires. This project will require relocation of the current poles and the planned construction of the road is the best opportunity to place the wires underground. Construction will provide a cost effective opportunity for undergrounding all utilities.

Sidewalk Issues

Our board believes that sidewalks that are proposed on both sides of the highway should be reconsidered. Elimination of sidewalks on one side would reduce the total width of this project and reduce some areas of blasting of blue rock. It may also allow more flexibility of the exact routing of the road and allow better landscaping options. Most importantly, the proposed sidewalks dangerously terminate at Mapu and Kilohana and would leave pedestrians in an unsafe situation traveling further north on Piilani highway without any sidewalks.

The portion of road between Mikioi/Okolani and Mapu/Kilohana is an area where there are neither any entrances to subdivisions nor any businesses. Pedestrians generally do not walk in this section of road and we can see no reason that they ever would in the future. It is a route that would lead neither to any public transportation, nor to any services for pedestrians. Even if space and costs were not a consideration, the plan for double sided sidewalks between Okolani and Kilohana is ill conceived because of liability issues and non comprehensive nature of their terminus.

Our board supports a plan that would have a single sidewalk on the makai side of the Piilani highway from Wailea Ike to Okolani Drive. This sidewalk would terminate at Okolani allowing pedestrians to turn makai onto the existing sidewalk on Okolani Drive or turn mauka via a crosswalk at the new traffic light and enter Maui Meadows on Mikioi Place. Ideally this crosswalk would lead to a sidewalk that would continue 200 additional feet on Mikioi Place to terminate at Akala Drive. This proposal would provide complete access for all residents of Maui Meadows, Wailea and the proposed Honua'ula to safely walk to anything they need to reach in south Maui without walking in areas without sidewalks.

Scenic Corridor

The plan in the current EA calls for a paved and striped median. We would prefer to see a landscaped median. This short stretch of highway is a perfect opportunity to create a scenic corridor with landscaping watered by reclaimed water, utilities undergrounded, attractively designed sound walls where appropriate, and pedestrian friendly walkways instead of just another ribbon of concrete. We strongly support this concept and urge the DOT to look beyond the engineering to the opportunities to enhance the Piilani Highway.







Our board appreciates consideration of these issues and asks to be informed when the final draft EA is available for inspection and further comment. Thank you for your assistance.

Sincerely,

Madge Schaefer for
Board of Directors
Maui Meadows Neighborhood Association

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1092

APR - 3 2012

Ms. Madge Schaefer
Maui Meadows Neighborhood Association
P. O. Box 160
Kihei, Hawaii 96753

Dear Ms. Schaefer:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting and your subsequent letter dated December 5, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**DECEMBER 1, 2010 COMMUNITY MEETING:**

1. *What Agency will set the conditions on this project?*

   Pursuant to Chapter 343, Hawaii Revised Statutes, the Hawaii Department of Transportation (HDOT) is the Accepting Authority. The Environmental Assessment (EA) is a disclosure document of the potential environmental and ecological impacts of the project and includes proposed mitigation measures to address said impacts. It is not a permit approval where conditions can be placed on the project. The HDOT will work with the private entities and their contractor to ensure implementation of the mitigation measures included in the EA.

2. *Is this EA hearing the only opportunity to raise specific conditions we would like to see with this project approval?*

   Although a hearing is not required during the environmental review process, the HDOT convened two (2) community meetings to inform the community of the project and to solicit public comment. These meetings were held on April 16, 2009 and most recently on December 1, 2010.





3. *Will the Maui County Council be holding hearings on this project?*

   We do not anticipate any hearings to be held by the Maui County Council on this project, as there are no permits requiring Council review and approval during construction.

**NOISE AND TRAFFIC:**

4. *Will construction take place 6 days a week?*

   Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as that involving connections to County infrastructure be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

5. *Will there be night construction?*

   As noted above, unless required by the County of Maui there will not be any night construction.

6. *Will construction noise be monitored? What agency will monitor? The Dept of Health regulates but do not have inspectors on Maui. How will that be handled to insure residents' right to peaceful enjoyment of their homes?*

   The contractor for the project is required to comply with the noise standards and permitting requirements of the State Department of Health. We will request the contractor to periodically monitor construction noise to ensure that they are within the acceptable levels.

7. *Where will the staging area be set for construction equipment and employee parking? It should be away from Maui Meadows.*

   A 5-acre construction baseyard (staging area) will be located away from Maui Meadows directly across the Wailea Ike Drive/Pi'ilani Highway intersection on land owned by Honua'ula Partners LLC. Construction equipment will be stored on this site and a portion of the area will be used for construction employee parking. See attached **Exhibit "1"**.

8. *What is the estimated time for completion of the project?*

   It is estimated that construction will take approximately 18 months to complete.

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In response to your other comments, we are providing you the following information:

**NOISE STUDY AND SOUND WALLS:**

9. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   HDOT's Policy for the installation of sound walls establishes standards that are nondiscriminatory and uniformly applied to all properties located along one rights-of-ways. As such, we are unable to accommodate your request for additional sound walls that do not meet the criteria as provided in HDOT's Policy.

10. The noise study included as Appendix "F" of the Draft EA assesses the impact from construction noise beyond the immediately adjacent residential properties, as well as traffic noise from highway operations. Traffic noise will be mitigated as previously mentioned with sound walls pursuant to our Policy. Relative to construction noise, according to Figure 3 of the report, as the distance from construction equipment increases the noise levels decrease. At a distance of approximately 400 feet construction equipment noise levels are expected to fall within acceptable levels. According to the study construction noise impacts will be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site which is the adjacent properties.

    As clarified at the meeting, Table 5 of the noise study identified the receptor locations by tax map parcel numbers.

**TRAFFIC DIVERSION:**

11. Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

**DUST CONTROL:**

12. As required by the County of Maui and State of Hawaii, the contractor will be responsible in implementing the Best Management Practices (BMPs) during the construction. BMPs such as frequent watering, limiting the size of disturbed areas, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control. Periodic inspections by County of Maui inspectors during construction will be undertaken to monitor compliance with grading permit requirements.





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In response to your comment regarding complaints, a pre-construction meeting with residents will be held to explain contact information for complaints and protocol to be followed during construction. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**BLASTING:**

13. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**EMERGENCY ACCESS:**

14. As stated previously, two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

**GOOD NEIGHBOR POLICY:**

15. Every effort will be made to inform the public of the progress of the project. In the Transportation Management Plan (TMP) for the project, a transportation coordinator will implement a public information and outreach program consisting of the following:

    a. Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a web site or written notice;

    b. Notify motorists of lane or road closures giving them time to plan ahead and use different routes;

    c. Establish a hotline for inquiries, construction activities and complaints;

    d. Conduct regular informational meetings with surrounding neighborhoods;

    e. Coordinate delivery schedules and roadway construction schedules with other projects in the area;

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f. Coordinate with unions and construction companies; and

g. Consider a quarterly newsletter for the public.

**ADDITIONAL COMMENTS FROM THE DECEMBER 5, 2010 LETTER:**

1. *What is the anticipated time frame for construction? Is the project going to be done in sections or will the entire project be done at one time? If the project is to be phased, what is the timeframes for each phase?*

   As stated previously, the anticipated construction time frame is 18 months. The project will be constructed in one phase in sections beginning from either the northern or southern terminus of the project area.

2. *What are the proposed days of the week and work hours?*

   As stated previously, work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

3. *Is any night construction anticipated? If so, what specific steps will be taken regarding, noise, shielding of lights, generators, etc to accommodate adjacent properties that would be affected by this activity.*

   As stated previously, if County infrastructure connections are necessary, certain work elements may be required to be conducted during night time. Every effort will be taken to minimize construction noise, dust and light spillage on neighboring properties during this work.

4. *Will a schedule of construction be made available to interested parties?*

   A general construction schedule will be made available.

5. *Please provide specific information as to Best Management Practices in controlling dust and noise. Will dust fences be constructed prior to groundwork commencing? Who can property owners call to report dust or noise problems created caused by the construction?*

   As requested, the following mitigation measures will be included in the Final EA:





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a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is necessary, blasting activities will be kept to a minimum.

b. BMPs such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

As previously stated a single telephone contact line will be made available for all complaints associated with the construction activities.

6. *A problem hotline was discussed at the meeting. Will these "hotline" he staffed on the weekends when, even without construction taking place, dust could still become a problem because of high winds and the dry climate? What are industry standards for fugitive dust control?*

   All complaints to the "hotline" will be monitored 24 hours a day, 7 days a week.

   All construction activities will comply with the provisions of Chapter 11-60.1-33, Hawaii Administrative Rules on fugitive dust. Measures to control dust during construction may include the following:

   - Planning phases of construction to minimize the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of least impact;
   - Watering active work areas and any temporary unpaved work roads daily;
   - Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
   - Minimizing dust from shoulders and access roads;
   - Providing adequate dust control measures during weekends, after hours and before daily start-up of construction activities;
   - Controlling dust from debris being hauled away;
   - Using wind screens and/or limiting the area of disturbance at any given time;
   - Covering dirt-hauling trucks traveling on roadways;
   - Preventing trucks from tracking dirt onto paved roadway by routine road cleaning and/or tire washing; and

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- Monitoring dust at the property boundary during the construction period as a means to evaluate the effectiveness of the dust control program, and adjusting the program if necessary.

7. *What will be the method for informing affected property owners about blasting times?*

As stated previously, the homeowners associations and property owners in the immediate area will be notified of blast times. Such notices will likely be issued through written hand notices conducted by the construction company.

8. *What recourse will property owners have if they experience collateral damage associated with planned blasting? Who will administer the claim process?*

A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**ADDITIONAL NOISE CONCERNS:**

9. As stated previously, the noise study prepared for the project is a comprehensive analysis of both the construction and operational noise impacts from the highway and the study limits go beyond the immediately adjacent parcels. According to the study, at a distance of approximately 400 feet construction equipment noise levels should be at acceptable levels.

Further, the noise study was conducted in accordance with FHWA's noise model and in accordance with FHWA and HDOT standards. As stated previously, HDOT's Policy for reasonable noise abatement establishes standards that are nondiscriminatory and uniformly applied to all properties. As such, we are unable to accommodate your request to consider other noise abatement measures as well as consideration of additional properties that do not meet the criteria of HDOT's Policy.

In response to your comments on other construction impacts, as previously stated appropriate mitigation measures for noise, dust and blasting will be included in the Final EA to be implemented by the contractor during construction.

With regards to your concerns resulting from future construction traffic, the proposed highway widening project will implement a construction TMP to include the following strategies to reduce construction worker-related traffic which will be included in the EA:





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a. Hire a transportation coordinator to coordinate with contractors, administrators, employees, officials and the general public to implement transportation initiatives and programs; coordinate with construction managers and employees to establish work shifts during off-peak hours; and monitor surrounding residential areas to ensure construction workers are not parking in these areas;

b. Off peak hour arrivals and departures of construction workers and suppliers;

c. Implementation of ride sharing, car pooling and van pooling programs;

d. Create park and ride facilities outside of the construction zone;

e. Implement a guarantee ride home program to ensure workers a ride home for emergencies, sickness or unexpected situations in order to encourage use of car pooling programs;

f. Create employee parking areas; and

g. Develop an emergency evacuation plan for workers.

Further, to reduce the potential for rocks and soil falling on the highway, materials in construction vehicles will be appropriately covered, as required by law.

**TRAFFIC DIVERSION:**

10. As stated previously, Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

**UNDERGROUND UTILITIES:**

11. The relocation of existing utilities underground will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for the existing condition of overhead utilities to be maintained.

**SIDEWALKS:**

12. The current FHWA and HDOT design standards for urban arterial roadways require sidewalks (on both sides), medians and bike lanes. As such, we are unable to accommodate your request to delete the sidewalk on the Maui Meadows side of the project.

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**SCENIC CORRIDOR:**

13. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way (ROW) and long-term maintenance needs, a landscape median and sidewalks have not been incorporated in the project plans. Also, as stated previously, we are unable to provide underground utilities. The scenic corridor envisioned by your association cannot be accommodated within the constraints of the existing ROW.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

Attachment

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





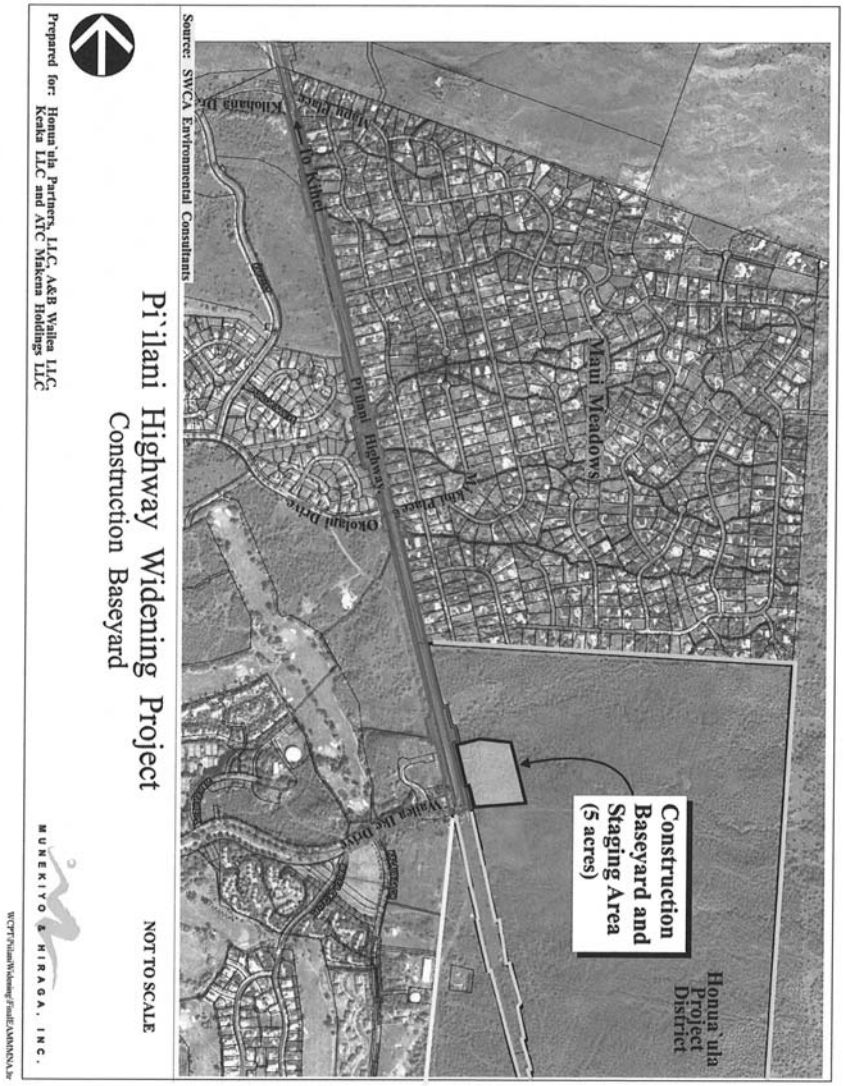


EXHIBIT "1"

Wailea Community Association

555 Kaukahi Street
Wailea, Hawaii 96753-8333
(808) 874-6866 • (808) 874-4027
*email gm@wcamaui.com*

December 2, 2010

Munekiyo & Hiraga, Inc.
Attn: Colleen Suyama
305 High Street, Suite 104
Wailuku, HI 96793

RE: Piilani Highway Road Widening Project between Kilohana Drive and Ike Drive

Aloha,

Although this widening project is moving forward I think it is important to note that it was put upon the developers to accommodate the future traffic into Makena Resort and Honua'ula, and yet it falls short of accomplishing that goal by not extending all the way to Makena. And though this project is necessary, the extension of Piilani to Makena is the real solution for future traffic to Makena and must be considered prior to their development.

Seven years ago a coalition of South Maui communities presented another solution for future traffic in South Maui without the need to widen Piilani or other widening that was being considered at the time for South Kihei and the North-South collector roads (see attached). The type of long term planning that was proposed in this plan is what is needed in terms of safety, emergency outlets, traffic flow, and beautification of the major roadways in the area. This plan must be put on the STIP immediately, we already lost seven years.

As for the proposed widening, it presents many issues for the Wailea community:

1) Resort identification.
    a. The present plans indicate a sound wall running right through the Wailea entry monument (sign) at Kilohana Drive, and both entry features at Okolani appear to be impacted severely.
    b. WCA requests that the preservation or replacement of these be considered and discussed as part of the final plan. They are critical in the overall identity of this economically important resort community.
2) Beautification
    a. The Community Plan calls for a landscaped buffer and bike path on both sides of the highway. The current plan presented has the bike paths but no buffer.



    b. The plan calls for a striped median rather than a landscaped median which would provide a visual buffer to oncoming traffic as well as a safety buffer (raised curbs on median, such landscaped medians have a calming effect to slow drivers down).
    c. WCA requests that you work with the community to see how such improvements can be accomplished in a public/private agreement.
    d. Burying the utility lines would be a great improvement. Now is the time to do this. Improving the views of Maui Meadows residents can be good community relations.
    e. Street lighting – any relocation or installation of lights need to be fully shielded.
3) Increased speeds on a four lane highway (posted limits mean nothing on Maui).
    a. This can be helped by a properly divided highway (see above).
    b. Request that the limit be set to 40 mph maximum with the reduction down to 20 mph at the approach of Ike Drive until the extension is completed.
4) Traffic light at Okolani/Mikoi must be installed immediately upon construction of intersection and not wait for later phasing.
5) Sound issues
    a. The sound wall indicated for the Makai side of the highway south of Kilohana, is constructed adjacent to an existing wall of the Kanani subdivision. Could a coordination of the walls be considered to have one wall instead of two? This wall should utilize the same materials as presently found in the existing wall for continuity to the community.
    b. Are sound walls proposed for the Makai side adjacent to the Pualani subdivision just north of Okolani? If not, why? It appears they would be appropriate since the homes are at or slightly below the grade of the road.
    c. These walls would need to be properly designed and/or landscaped as to not cause a "chimney effect" with sound going up to Maui Meadows).
6) Construction noise and traffic
    a. Hours of construction are critical. Wailea typically allows work between 7:30 am – 5 pm, Mon. thru Fri., with noisy construction equipment after 8 am and blasting between 9 am and 4 pm.
    b. Routing of construction traffic will be a big issue with traffic at times being rerouted through residential areas.
        i. What kind of traffic control will there be through the community to prevent unnecessary speeding? This needs to be addressed with MPD.
        ii. There may be other construction projects in Wailea at the same time as this project, what assistance can we get to coordinate their construction traffic through the resort with the highway work.
7) Timing of construction is critical. Wailea is a resort community and there are certain peak seasons where tourists as well as homeowners are more prevalent. These need to be considered for the economic well-being of the resort.

a. Although these seasons have changed over the years November through March have the bulk of tourists and property owners in the resort, with July and August as the second peak season.

Thank you for allowing me to present these issues. I look forward to hearing from you on these and other issues as the project progresses.

For the Association,

Frank "Bud" Pikrone
WCA General Manager



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.0999

March 13, 2012

Mr. Frank "Bud" Pikrone
General Manager
Wailea Community Association
555 Kaukahi Street
Kihei, Hawaii 96753

Dear Mr. Pikrone:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for your comments dated December 2, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**LONG TERM SOLUTION:**

1. We acknowledge the Wailea Community Association's long standing position is the extension of Pi'ilani Highway to Makena and it is your Association's priority for the accommodation of future traffic from Makena Resort and Honua'ula. An alternative solution identified in the Environmental Assessment (EA) for traffic is the construction of a new highway mauka of Pi'ilani Highway. The new mauka highway is identified in the EA as one of the alternatives considered. This alternative was not chosen due to the timeframe associated with implementation of a new highway alignment and was not deemed to be a prudent alternative considering the current capacity constraints which requires a more timely response by 2016.

**RESORT IDENTIFICATION:**

2. During the design phase the consultant will coordinate the plans with the Wailea Community Association to minimize impacts to the entry monument sign at Kilohana Drive, as well as the entry features at Okolani Drive.

**BEAUTIFICATION:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, landscape buffers and median have not been incorporated in the project plans.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

4. The relocation of existing utilities underground will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**INCREASED SPEEDS:**

5. As stated previously, due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

   The speed limit for this segment of the existing highway is currently 45 mph highway reducing to 25 mph at the approach to Wailea Ike Drive.

   In response to complaints on speeding on the highway received at the community meeting, the Hawaii Department of Transportation (HDOT) will notify the Maui Police Department of the excessive speeding in the area and request appropriate enforcement of the speed limit.

**TRAFFIC LIGHT AT OKOLANI DRIVE/MIKIOI STREET:**

6. Construction will include installation of a traffic signal at the Okolani Drive/Mikioi Street/Pi'ilani Highway intersection and will be installed concurrently with the widening of the highway.

**SOUND ISSUES:**

7. Every effort will be made to coordinate the sound wall south of Kilohana Drive adjacent to the Kanani Wailea property in order to incorporate the Kanani Wailea wall into the project, eliminating the construction of a separate wall.





The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

HDOT's Policy establishes standards that are nondiscriminatory and uniformly applied to all properties located along our rights-of-ways. As such, your request for a sound wall for the Pualani subdivision, cannot be accommodated since it does not meet the criteria as provided in HDOT's Policy

The sound walls will be designed and constructed to minimize the potential for "chimney effects" which allows sound to travel upland.

**CONSTRUCTION NOISE AND TRAFFIC:**

8. **Construction Hours:** Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If night work involving County infrastructure improvements is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

9. **Blasting:** Due to existing geologic conditions, minimal blasting is anticipated. Major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting work will be kept to a minimum.

10. **Traffic Diversion:** At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

11. **Construction Traffic:** With regards to your concerns resulting from future construction traffic, the proposed highway widening project will implement a construction Transportation Management Plan (TMP) to include the following strategies to reduce construction worker-related traffic which will be included in the EA:

    a. Hire a transportation coordinator to coordinate with contractors, administrators, employees, officials and the general public to implement transportation initiatives and programs; coordinate with construction managers and employees to establish work shifts during off-peak hours; and monitor surrounding residential areas to ensure construction workers are not parking in these areas;

b. Off peak hour arrivals and departures of construction workers and suppliers;

c. Implementation of ride sharing, car pooling and van pooling programs;

d. Create park and ride facilities outside of the construction zone;

e. Implement a guarantee ride home program to ensure workers a ride home for emergencies, sickness or unexpected situations in order to encourage use of car pooling programs;

f. Create employee parking areas; and

g. Develop an emergency evacuation plan for workers.

Further, every effort will be made to inform the public of the progress of the project. In the Transportation Management Plan, the transportation coordinator will implement a public information and outreach program consisting of the following:

a. Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a web site or written notice;

b. Notify motorist of lane or road closures giving them time to plan ahead and use different routes;

c. Establish a hotline for inquiries, construction activities and complaints;

d. Conduct regular informational meetings with surrounding neighborhoods;

e. Coordinate delivery schedules and roadway construction schedules with other projects in the area;

f. Coordinate with unions and construction companies; and

g. Consider a quarterly newsletter for the public.

**TIMING:**

12. Construction is anticipated to start in early 2012 and will take approximately 18 months to complete. Every effort will be made by the contractor to complete construction in a timely manner or in less than the allotted time.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula, Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

# IV. Individual Letters

DEC 07 2010

**COMMENT FORM**

**PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT**
**(KILOHANA DIRVE TO WAILEA IKE DRIVE)**

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Lyman L. ABBOTT Address: 3328-A AKALA Rd

Phone: _____ Email: lymanlabbott@gmail.com

**Comments:** NO VAGUE PROMISES.
WANT TO KNOW SPECIFICS OF
NOISE ABATEMENT
DUST

WANT AN EIS.
WEATHER PATTERNS ARE
CHANGING WHAT HAPPENS IN A
100 YR STORM?

DON'T TELL ME YOU GOT THIS
FAR WITH NO PLAN TO BURY THE
POWERLINES. Duh!

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1000

March 13, 2012

Mr. Lyman L. Abbott
3328-A Akala Road
Kihei, Hawaii 96753

Dear Mr. Abbott:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION AND SOUND WALLS:**

1. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

**DUST CONTROL MEASURES:**

2. Best Management Practices (BMPs) such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**ENVIRONMENTAL IMPACT STATEMENT:**

3. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.





A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact (FONSI) and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**DRAINAGE:**

4. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

5. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Virginia Acevedo Address: 3254 AKALA DRIVE

Phone: 385-6792 Email: vacevedo@hawaii.rr.com

**Comments:** Residents of maui meadows want to know that an EIS was done remember the Super Ferry? Better cross your t's and dot your i's! While you're at it please bury the powerlines.

We appreciate promises to keep noise + dust down but it sounds pretty vague. Am curious as to why there is no News Coverage -



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1001

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

March 13, 2012

Ms. Virginia Acevedo
3254 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Acevedo:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact (FONSI) and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**CONSTRUCTION MITIGATION MEASURES:**

3. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If deemed necessary, blasting will be kept to a minimum.

b. Best Management Practices (BMPs) such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**NEWS COVERAGE:**

4. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Audrey Barber Address: 140 Uwapo Rd. 33-102
Kihei, HI 96753

Phone: 808-346-7649 Email: California4kiz@yahoo.com

Comments: I use the highway often & can think of a lot of other things more important to put our money on than this.

DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: Brian Barber Address: 140 Uwapo Rd. 33-102
Kihei, HI 96753
Phone: 530 320-3695 Email: Brianbarber@hotsheet.com

**Comments:** There are so many roads that need work on this island... in my opinion this one doesn't.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1002

March 20, 2012

Mr. Brian Barber
Ms. Audrey Barber
140 Uwapo Road, 33-102
Kihei, Hawaii 96753

Dear Mr. and Ms. Barber:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NEED FOR PROJECT:**

For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
c. Kihei-Makena Community Plan, 1998 (County); and
d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans

that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

Your comments will be included in the Final. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

Despite conspicuous absence of news in the newspaper Maui is watching & aware of the political pressure to widen the highway.

Talk of a 30 million dollar gift is a joke and an example of developers in bed with government.

Rip up the highway, destroy property values of local residents, don't compensate their losses & make a bundle of money. Some gift!

Don't bury the power lines! Whose bright idea was that? Oh wait a minute - the developers?

They must have come up with not planting the median. Cement is so much nicer.

Did they ever consider maybe we just look stupid?

David A Barber

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1003

March 13, 2012

David A. Barber
140 Uwapo Road, 33-102
Kihei, Hawaii 96753

Dear Mr. Barber:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT NEED:**

1. The widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection





improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**NEWS COVERAGE:**

2. Pursuant to Chapter 343, Hawaii Revised Statutes (HRS), public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

**PROPERTY VALUES:**

3. Pi'ilani Highway is an urban arterial roadway master planned as an eventual four-lane roadway within the existing right-of-way. The proposed improvement between Kilohana Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui traffic impact studies conducted over the years and policy statements within the Kihei/Makena Community plan call for this widening project. We are not able to assess the impact, if any, to your or anyone else's property values as a result of the implementation of these studies or the community plan.

**COMPENSATION:**

4. Although every effort will be made to include mitigation measures to address construction-related impacts we cannot establish a compensation program for such inconveniences or loss of rental income.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

5. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**LANDSCAPING:**

6. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: Eriedo Broudy Gora Address: 3216 Mapu Place
Kihei, Hawaii 96753

Phone: 879-6073 Email: none no computer

Comments: We have lived here since 1976 and feel we do not need 4 lanes going to Wailea.

We need other things more than a 4 lane highway

- New Police Station
- A Hospital
- Put all the telephone lines and electrial lines underground for Safety.

DEC 08 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: JULIANA BRAUTIGAM Address: 3216 MAPU PL.

Phone: 879-6073 Email: —

Comments: ~~N/A~~ good enough to enjoy all ready ROADS ARE GOOD ENOUGH



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1004

March 13, 2012

Ms. Freida Brautigam
Ms. Juliana Brautigam
3216 Mapu Place
Kihei, Hawaii 96753

Dear Mses. Brautigam:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NEED FOR PROJECT:**

1. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**MAUI ELECTRIC COMPANY, LTD. MECO UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 09 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Annette C. Sugata Brautigam Address: 3340 Akala Drive
Kihei, Maui, HI. 96753

Phone: (808) 879-9189 Email: don't have one

**Comments:** The last time they worked on the highway our glass door store shattered in our cottage. Please only extend the road on the Makai Side (ocean) of already existing highway.

Also please plant a median with proper climate Hawaiian Vegetation & Maintain it.

For Safety Reasons please bury the Power lines and Do an EIS Report!!

Also Why was none of all this Work Project in the Maui News???

Dec. 1st/2010

To whom it May Concern,
& the developer:

If you are planning to put an extra lane into the Wailea Area please note:

- the last time the highway was extended, blasting shattered our oven door. We were given a mere $200.00 for Repair but it was never the same.
- do not add an extra lane on Maui Meadows side - too many homes are already too close to the highway there.

Respectfully Submitted

Annette Suapaia

# 385-7798



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1067

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

APR 13 2012

Ms. Annette Suapaia Brautigam
3340 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Suapaia Brautigam:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**BLASTING:**

1. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**REALIGN HIGHWAY:**

2. We have reviewed the alignment of the highway further makai, however, we are unable pursue this alternative since it will require land acquisition from the makai property owners, additional permitting requirements and will cause delays to the roadway construction.

**LANDSCAPING:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

4. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**ENVIRONMENTAL IMPACT STATEMENT:**

5. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEWS COVERAGE:**

6. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





Lisa Buchanan

**From:** modika [modika@hotmail.com]
**Sent:** Thursday, December 09, 2010 11:06 AM
**To:** Colleen Suyama
**Subject:** Address

Aloha Colleen, if possible I would like you to email me instead of spending money on mailing out a response. My P.O Box is 347 Puunene, HI 96784. kind regards, Lisa Buchanan

**From:** althea modika [mailto:modika@hotmail.com]
**Sent:** Wednesday, December 08, 2010 2:15 PM
**To:** General eMail
**Subject:** Highway

Do not let it happen - it will leave a gate way to the influx of destruction!!! period. Enough leave Makena alone already, enough desecration of ANCESTORS BONES. We know it's just under the guise to develop further. Thank you for taking the time to to hear my views, Happy Holidays



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1006

March 13, 2012

Ms. Lisa Buchanan
P. O. Box 347
Puunene, Hawaii 96784

Dear Ms. Buchanan:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your email correspondence received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We acknowledge your opposition to development in Makena. However, for your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
c. Kihei-Makena Community Plan, 1998 (County); and
d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

**COMMENT FORM**

**PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)**

Aloha! Welcome to the public meeting for the proposed Pi'ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Larry Burke Address: 3181 Akala Drive

Phone: 267-2885 Email: Larrykburke@gmail.com

**Comments:**

EIS

EIS

EIS

Tell us about the next 100yr flood. Will be looking for updates in the Maui news

Mahalo

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1007

March 13, 2012

Mr. Larry Burke
3181 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Burke:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**DRAINAGE:**

2. The roadway improvements will not alter existing drainage patterns in Maui Meadows. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: PAT CHONG KEE Address: 3486 AKALA DR

Phone: 276-1561 Email:

**Comments:** would like to see an EIS.
was upset to hear powerlines would not be buried.

HOPE GOODFELLOW WILL BE RESPONSIBLE FOR ANY DAMAGE CAUSED



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1008

March 13, 2012

Mr. Pat Chong Kee
3486 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Chong Kee:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**DAMAGE CLAIMS:**

3. Pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: JOHN CLARK Address: 432 KUPULAU DR.
KIHEI, HI. 96753

Phone: 874-1952 Email: captjohno@maui.net

**Comments:** Want an EIS. WANT POWERLINES BURIED WANT a planted median. DONT WANT a Hane highway.
IS There a plan for a full time Dust Abatement person?
When sound studies were made where the engineers aware speeds are 70-80 or over 100mph when kids drag. The kids will love the added room. maybe they can go 120mph
Where is the Maui News when all this is happening?

John C. Clark 12/5/10

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1009

March 13, 2012

Mr. John Clark
432 Kupulau Drive
Kihei, Hawaii 96753

Dear Mr. Clark:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. In response to your comments, please be advised as follows:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.





**LANDSCAPING:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**COMPLAINTS:**

4. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**DUST CONTROL MEASURES:**

5. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**NOISE STUDY:**

6. The noise study included as Appendix "F" of the Draft EA is based on the U. S. Federal Highways Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria. The study took into consideration that motorists do not drive at the posted speed limit and adjusted the speeds upward to 50 miles per hour for southbound traffic and 55 mph for northbound traffic.

**SPEEDING:**

7. The HDOT will notify the Maui Police Department of the excessive speeding in the area and request appropriate enforcement of the speed limit.

**NEWS COVERAGE:**

8. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Stephanie + Richard Cooper Address: 62 Poailani Place Kaonoi Wailea

Phone: 214-6149 Email: _____

**Comments:**

1. Bike lane - great idea but why a sidewalk?
2. Why can't the power poles be put underground? That would be a positive step for those living in the area and for visitors and future developments.
3. The noise barrier should continue along the whole stretch of this project, especially where homes are along the highway.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1010

March 13, 2012

Mr. Richard Cooper
Ms. Stephanie Cooper
Kanani Wailea
62 Poailani Place
Kihei, Hawaii 96753

Dear Mr. and Ms. Cooper:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting, to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT DESIGN:**

1. We appreciate your support of bike lanes within the project. However, the current Federal Highways Administration (FHWA) and Hawaii Department of Transportation (HDOT) design standards for urban arterial roadways require sidewalks, medians and bike lanes.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**NOISE MITIGATION:**

3. The FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to





providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regards to your request for a sound wall along the entire length of the roadway improvements, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: RICK CREEL Address: 3456-A AKALA

Phone: 268-6601 Email:

**Comments:** Popular concensus is WE NEED AN EIS - & the POWERLINES buried.

EVERYONE IS challenging the validity of NOT DOING one.

WE ARE ALSO WORRIED About responsibility for damages and of course the NOISE and dust.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1011

March 13, 2012

Mr. Rick Creel
3456-A Akala Drive
Kihei, Hawaii 96753

Dear Mr. Creel:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact (FONSI) and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**DAMAGE CLAIMS:**

3. Pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**CONSTRUCTION NOISE:**

4. Blasting which is a source of construction noise is of relatively short duration and will be kept to a minimum. Another source of construction noise will be associated with the operation of heavy construction machinery, paving equipment and material transport vehicles. Proper mitigation measures, such as mufflers for construction equipment, in compliance with Federal and State noise control regulations will be implemented.

   The EA will also include the following restrictions for construction activities:

   Noise from construction activities will comply with State Department of Health (DOH) noise regulations (Hawaii Administrative Rules, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit must be obtained from the DOH. Specific permit restrictions for construction activities are:

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

**NOISE MITIGATION AND SOUND WALLS:**

5. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.





**DUST CONTROL MEASURES:**

6. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 0 7 2010

Thomas Croly & Denise McKinnon
3259 Akala Drive
Kihei, HI 96753
TCroly@maui.net
(808) 879-7044

December 2, 2010

Munekiyo & Hiraga Inc.
Attention Colleen Suyama
305 High Street
Suite 104
Wailuku, HI 96793

Re: Comments on Draft EA for Piilani Rd Widening

Aloha Ms. Suyama,
Mahalo for your participation in last night's public information meeting and for the opportunity to provide comment on the draft Environmental Assessment (EA) for the project to widen Piilani highway from Kilohana/Mapu to Wailea Ike Drive. It was too bad that this meeting was not recorded, as many important questions about the project were answered at this meeting, yet most of those answers have not been included in the draft EA.

My wife and I are property owners living on Akala Drive just mauka of the project and within 250 feet of the proposed widening. I have reviewed the draft EA and find it incomplete in addressing exactly how the project will be constructed and have personal concerns about the impacts resulting from the construction phase of the project impacting both my own peaceful enjoyment of my property and the potential impacts to, and loss of business from, my Bed and Breakfast, located at my home.

I would request that the EA be expanded to include a more complete discussion of the proposed time frames and methods of construction and proposed mitigation measures. For example:

1. What will be the proposed period for the entire construction of the project? The Goodfellow Bros. representative said "up to 18 months". This needs to be better nailed down with more certainty.
2. Will the project be broken down into phases affecting only specific areas during specific periods?
3. What will the daily hours of construction be? The representative from Goodfellow Bros. said 7:00 to 3:30. Monday-Friday, but the EA makes reference to 7:00 am to 6:00 pm M-F and 9:00 am to 6:00 pm Saturday.
4. Where can affected neighbors call to get updates on the planned construction for a given period?
5. Where can neighbors call to report dust or noise problems caused by the construction? And what mitigation measures or compensation actions will be taken? Will these "hotlines be staffed on the weekends when even without construction taking place dust could become a problem because of high winds and the dry climate?
6. Exactly what are the "Best Practices" methods that will be employed to control fugitive dust? Will dust fences be constructed prior to groundwork commencing?
7. Where will affected neighbors file claims for collateral damage associated with planned bastings?
8. What will be the method for informing affected neighbors about blasting times?



The EA addresses at great length the affects of traffic noise from the roadway after the project is completed. My primary concern is that of the affects of construction noise during the construction phase of this project on my right to peaceful enjoyment of my property. While the EA addresses Department of Health regulations of construction noise so as not to cause permanent hearing loss, this is not sufficient to address the impact to those of us living close to the construction and the nuisance from up to 18 months of construction noise that is estimated in the EA to be from 80 to 90 dB with occasions of as much as 98 dB. This kind of noise level is equivalent to that of a rock concert and if this should take place from 7 am to 6 pm, it would render my home and many others uninhabitable for this period.

The need for this project has been established, but the residents living within close proximity of this project should not be unduly burdened by the noise, dust and property damages that may be a result of the construction, without mitigation measures and/or compensation. The EA dismisses all of these construction related impacts as short-term. But a project lasting 18 months will hardly seem short-term to the residents impacted by the noise and dust emanating from the proposed construction activities.

I do understand that some noise will be inevitable. The frequency, duration and volume of this noise is the issue, and may have an affect on my ability to use of my home, and definitely will impact that of my Bed and Breakfast business. My guests expect a reasonable level of quiet and if I cannot provide that, I might have to shut down my operations during the construction period or offer steeply discounted rates. Either of which could cause me a financial loss of as much as $364/day. It may be impossible to predict whether the noise will rise to the level that would require me to close down operations during construction, however I ask that this possibility be noted in the EA and the recognition that documented losses, as a result of these disturbances, will need to be reimbursed. I would also request that I be given advance notice of construction activities nearby my property so that I can inform guests of potential impacts to minimize damages.

The EA does not address traffic diversions in the case of lane closures. One concern that I have is that should lane closures cause traffic backups on Piilani highway, drivers seeking to bypass the traffic will use Akala Drive as an alternate route. I would ask that, in the event of lane closures, police are stationed at the Mapu and Mikioi entrances of Maui Meadows to restrict Akala drive from being used as a bypass. Alternately, the Mikioi entrance of Maui Meadows could be temporarily closed during these periods of lane closure to prevent drivers traveling northbound, from entering Maui Meadows and using Akala drive to make their way to the Mapu exit of Maui Meadows.

Finally, I ask that consideration be given to eliminating most of the sidewalks proposed along this road. Elimination of the sidewalks would reduce the total width of this project by 12 feet and this would help in the narrow areas where blasting of blue rock will be required. It may allow more flexibility of the exact routing of the road and allow better landscaping options. Most importantly, the proposed sidewalks dangerously terminate at Mapu and Kilohana and would leave pedestrians in an unsafe situation traveling further north on Piilani highway without any sidewalks.

The portion of road between Mikioi/Okulani and Mapu/Kilohana is an area where there are neither any entrances to subdivisions nor any businesses. Pedestrians generally do not walk in this section of road and I can see no reason that they ever would in the future. It is a route that would lead neither to any public transportation, nor to any services or destinations for pedestrians.

A better plan would be to have a single sidewalk on the makai side of the Piilani highway from Wailea Ike to Okolani Drive and then the sidewalk would turn makai onto the existing sidewalk on Okolini Drive or pedestrians could turn mauka via a crosswalk at the new traffic light and enter Maui Meadow on Mikioi Place. Ideally this sidewalk would continue 200 feet on Mikio Place to terminate at Akala Drive.

This proposal would provide complete access for all residents of Maui Meadows, Wailea and the proposed Honouaula to safely walk to anything they need to reach in south Maui without walking along unsidewalked stretches of Piilani highway. This route could be made even more comprehensive by tying it into the proposed North-South collector in Kihei that would terminate at Kapaliil Street.

The final comment I will make about the proposed double sidewalks along both sides of Piilani is that the presence of these sidewalks creates a liability for the State of Hawaii in several ways. Even if space and costs were not an issue, their inclusion is ill conceived because of these liabilities and non-comprehensive consideration of their terminus.

Please contact me for any further clarification of the issues noted above and please inform me when the final draft EA is available for inspection and further comment.

Sincerely,

Thomas Croly

Denise McKinnon



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1012

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

March 13, 2012

Mr. Thomas Croly
Ms. Denise McKinnon
3259 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Croly and Ms. McKinnon:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated December 2, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your eight (8) specific questions:

**QUESTION NO. 1:** *What will be the proposed period for the entire construction of the project?*

**RESPONSE:** Once construction is initiated and there are no unforeseen delay's it is anticipated to take approximately 18 months to complete. Initiation of construction is anticipated to start in early 2012.

**QUESTION NO. 2:** *Will the project be broken down into phases affecting only specific areas during specific periods?*

**RESPONSE:** The improvements between Kilohana Drive and Wailea Ike Drive are the final Hawaii Department of Transportation (HDOT) planned phase for Pi'ilani Highway expansion. The proposed project will be constructed in sections, likely starting at one (1) of the highway terminus points. Every effort will be made to notify residents when construction will occur in their area.

**QUESTION NO. 3:** *What will the daily hours of construction be?*

**RESPONSE:** Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times.

If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**QUESTION NO. 4:** *Where can affected neighbors call to get updates on the planned construction for a given period?*

**RESPONSE:** Every effort will be made to inform the public of the progress of the project. In the proposed transportation management plan for the project, the transportation coordinator will implement a public information and outreach program consisting of the following:

a. Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a web site or written notice;

b. Notify motorist of lane or road closures giving them time to plan ahead and use different routes;

c. Establish a hotline for inquiries, construction activities and complaints;

d. Conduct regular information meetings with surrounding neighborhoods;

e. Coordinate delivery schedules and roadway construction schedules with other projects in the area;

f. Coordinate with unions and construction companies; and

g. Consider a quarterly newsletter for the public.

**QUESTION NO. 5:** *Where can neighbors call to report dust or noise problems caused by the construction? And what mitigation measures or compensation actions will be taken? Will these "hotlines be staffed on the weekends when even without construction taking place dust could become a problem because of high winds and the dry climate?*

**RESPONSE:**

1. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.





2. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices (BMPs) such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**QUESTION NO. 6:** *Exactly what are the "Best Practices" methods that will be employed to control fugitive dust? Will dust fence be constructed prior to groundwork commencing?*

**RESPONSE:** As stated previously, BMPs such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**QUESTION NO. 7:** *Where will affected neighbors file claims for collateral damage associated with planned blasting?*

**RESPONSE:** As stated previously, pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**QUESTION NO. 8:** *What will be the method for informing affected neighbors about blasting times?*

**RESPONSE:** When blasting is necessary, the contractor prior to any blasting will notify the Homeowners Associations and nearby property owners of the blast date and time.

We offer the following information, in response to your other comments:

**CONSTRUCTION NOISE:**

1. Blasting which is a source of construction noise is of relatively short duration and will be kept to a minimum. Another source of construction noise will be associated with the operation of heavy construction machinery, paving equipment and material transport

   vehicles. Proper mitigation measures, such as mufflers for construction equipment, in compliance with Federal and State noise control regulations will be implemented.

   The EA will also include the following restrictions for construction activities:

   Noise from construction activities will comply with State Department of Health (DOH) noise regulations (Hawaii Administrative Rules, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit must be obtained from the DOH. Specific permit restrictions for construction activities are:

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

**COMPENSATION:**

2. Although every effort will be made to include mitigation measures to address construction-related impacts we cannot establish a compensation program for such inconveniences or loss of rental income.

**AKALA DRIVE:**

3. Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.





**SIDEWALK AND LANDSCAPING:**

4. We are unable to accommodate your request to delete or realign the sidewalks in the project. The current U. S. Federal Highway Administration and HDOT design standards for urban arterial roadways require sidewalks, medians and bike lanes, and traffic safety constraints dictate the placement of the sidewalks. Further, due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, landscaping has not been incorporated in the project plans.

As stated at the community meeting, once the Final EA is submitted to the HDOT for action, there will not be any additional community meetings or comments solicited. The Final EA will be filed with the Office of Environmental Quality Control (OEQC) and a determination published in the Environmental Notice. The Final EA will then be available online for review. To receive notification of such filing you are advised to contact OEQC and be placed on their mailing list for the Environmental Notice or to check periodically on their website at http://hawaii.gov/health/environmental/oeqc.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Dorothy Crouse Address: 3130 Akala Dr Kihei, Hi 96753

Phone: 879 2004 Email: dot crouse@aol.com

**Comments:** Am very ill but am willing to help stop this travesty. Will be sending a ck. as soon as someone tells me where to send it. Am offended the EA believes damage to health as temporary. And to propose all this with no plan to bury the powerlines is ludicrous.



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1014

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

March 13, 2012

Ms. Dorothy Crouse
3130 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Crouse:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments.

**HEALTH CONCERNS:**

1. We note your concerns regarding the impacts noise and dust may have on residents in the area. We realize temporary construction impacts from noise and dust will be experienced by nearby residents. As much as may be practicable, mitigation measures noted in the Draft Environmental Assessment (EA) will be implemented to minimize the potential for construction-related impacts on neighboring residents in the area.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 09 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Patricia CURBAT Address: 3526 AKALA DR
Kihei Hi 96758
Phone: 879-9988 Email:

**Comments:** Do you remember what happened to the superferry? What about the extend the runway at the airport project?
This sounds like a similar project for Maui Tomorrow and the Sierra Club to take on.
NO EIS - I don't think so. add lanes and not bury electric lines, I don't think so.
NO planted median really.
NO news coverage - interesting? or something else?



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1015

March 13, 2012

Ms. Patricia Curbat
3526 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Curbat:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**LANDSCAPING:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**NEWS COVERAGE:**

4. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 0 6 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

**Name:** Jamie David **Address:** 3328 Akala Drive, Kihei, HI 96753

**Phone:** (808) 874-0580 **Email:** jamie@johannsebastianhumpbach.com

**Comments:** Commentary is attached.

Jamie David
3328 Akala Drive
Kihei, HI 96753
email: jamie @ johannsebastianhumpback.com

December 2, 2010

Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793
Attn: Colleen Suyama, Senior Associate

Re: Pi'ilani Road Widening

Aloha Ms. Suyama, et al,

There must be an EIS. There are a multitude of issues that have not been addressed satisfactorily in the EA. To suggest in any way that the widening of Pi'ilani Hwy will have zero to minimal impact is ludicrous and insulting to those of us who have everything to lose.

Of major concern is the "segmenting" of the project, the attempt to divorce it from the big picture. It's apparent that the road widening is as much a part of Wailea-Makena development as rice on a plate lunch. It was obvious to everyone at the community meeting that the so-called "improvements" to the highway are integral to the developer's wish list for paving paradise.

As a homeowner on Akala with the current highway running a short distance from my back yard, of course I am concerned. I lived (barely) through the building of the highway and I can tell you from experience it was an absolute nightmare. The unbearable noise, dust and dirt, the noxious fumes, and damage to my house (cracked walls) was not an experience I care to repeat.

I have lived in my home for 25 years, and like many have an ohana that I depend on for income. What if I can't rent my cottage for two or so years because of the disruption? Will I be compensated if my livelihood goes down the tubes? What becomes of my property values when there is a four-lane highway abutting my back yard? What happens to my quality of life, sacrificed on the alter of luxury housing for part-time or infrequent occupants?

Questions regarding noise, fumes, dirt and damages were not adequately addressed in the EA. There were promises and pretty words at the meeting but all mitigation measures must be detailed in writing. And what of damages? Is there a bond to assure adequate funds are available for compensation?



There are numerous environmental concerns that must be addressed in detail as well. How about runoff? Highways don't absorb water. Our near shore waters are already in peril.

And sidewalks are a priority? Come on, who wants to run or walk along the highway and fill their lungs with carbon monoxide? This smacks of ill-conceived planning and a lack of common sense. And yet, there is no provision for putting the poles underground, something everyone favors. These priorities are skewed at best.

There was much attention paid to the back-up of traffic at "rush hour." For less than an hour a day this is an issue but was given as a justification for widening the road. When an associate was asked about the hotels perhaps staggering their shifts to avoid this condition he simply blew it off with "we can't tell them how to run their businesses." The DOT could in fact ask and work to persuade as this is a viable and relatively painless solution.

The DOT wants this project because it's free. Well, news alert! Nothing is free. Someone always pays. Again, it will be the homeowners who live along the highway. We will pay with lost property values and income, diminished quality of life, and increased noise in perpetuity. So much for a peaceful, well earned retirement.

Sincerely,

Jamie David

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1016

March 20, 2012

Mr. Jamie David
3328 Akala Drive
Kihei, Hawaii 96753

Dear Mr. David:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 6, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**SEGMENTATION:**

2. Although development in the Kihei-Makena region may benefit from the widening of Pi'ilani Highway, the widening remains a HDOT project separate from these other developments. The HDOT and the developers have a common goal to build Pi'ilani Highway as a four-lane arterial roadway and completing the last segment of the highway. The widening of Pi'ilani Highway is a long standing transportation need identified in the various transportation plans of the HDOT and County of Maui. The highway widening is being designed in accordance with Federal Highway Administration (FHWA) and HDOT requirements. The opportunity to utilize private funding with the HDOT overseeing the design, permitting and construction will allow the improvements to be built prior to 2016 when the roadway improvements will be required to accommodate the growth rate of the





Kihei region. The use of state lands triggers agency compliance with Chapter 343, HRS, and is being initiated precedent to development.

Segmentation occurs when projects are broken into smaller segments of the same project to avoid the environmental review process and public scrutiny. This has not occurred in this situation. The project is undergoing the environmental review process similar to previous reviews for improvements to Pi'ilani Highway and the public has been given the opportunity to comment on the project.

**NEED FOR PROJECT:**

3. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the EA for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**CONSTRUCTION IMPACTS:**

4. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**COMPENSATION:**

5. Although every effort will be made to include mitigation measures to address construction-related impacts we cannot establish a compensation program for such inconveniences or loss of rental income.

**PROPERTY VALUES:**

6. Pi'ilani Highway is an urban arterial roadway master planned as an eventual four-lane roadway within the existing right-of-way. The proposed improvement between Kilohana Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui traffic impact studies conducted over the years and policy statements within the Kihei/Makena Community plan call for this widening project. We are not able to assess the impact, if any, to your or anyone else's property values as a result of the implementation of these studies or the community plan.

**CONSTRUCTION MITIGATION MEASURES:**

7. In addition to the previously stated measures to reduce blasting and construction-related impacts, the EA will include the following mitigation measures:

a. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**DAMAGES AND BONDING:**

8. Pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit. Further, there is no bonding requirement for this project.





**DRAINAGE:**

9. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**SIDEWALKS:**

10. The current FHWA and HDOT design standards for urban arterial roadways require sidewalks, medians and bike lanes. As such, we are unable to accommodate your request to delete the sidewalks in the project.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

11. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**ALTERNATIVES:**

12. The EA will include an evaluation of staggering hotel shifts as an alternative.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Earl Eckel Address: 3404 Akala
Kihei 96753

Phone: 879-2021 Email:

Comments: I believe an impact (Environmental) study is Reasonable + should be done.
Earl Eckel

64

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1017

March 20, 2012

Mr. Earl Eckel
3404 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Eckel:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comment received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement is warranted.

A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

65

December 7, 2010

Ms. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High St. #104
Wailuku, HI 96793

Re: Piilani Highway Road Widening Project

Dear Ms. Suyama,

As homeowners on Akala Drive, we will be highly affected by the widening of the Piilani Highway. Our property backs right up to the highway and we see approximately 300 feet of the road from our living room. We believe there may be factors that were not taken into account during the traffic noise assessment that determined the need for sound mitigation barriers. Therefore, we are requesting a reevaluation and recalculation of the traffic noise test.

An example of a variable that may not have been factored into the noise study is the speed of vehicles traveling the highway. There is a strong correlation between the speed a vehicle travels and the amount of noise it generates and, unfortunately, we consistently see cars traveling 60 mph or more in the designated 45 mph zone. As drivers already exceed the speed limit, they will likely do it more so when the road is widened. Therefore, if this was not considered in the noise test, then the results may not be accurate.

We noticed that the first three houses had noise readings high enough to warrant sound barriers; however, other homes that will undoubtedly experience elevated noise levels, do not have barriers. We would like the barriers to be extended to more houses, like our own, that will be adversely affected by the results of this construction project.

We hope that compensation will be awarded so that we and others can make the required modifications to our homes that are necessary to balance out the permanent changes created by widening the highway.

Additionally, other residents have expressed issues regarding road expansion including: logistics of redirecting traffic, dust control, loss of property value, length of construction period, configuration of sidewalks, etc. It is important to us and the community that these problems are remedied.

Sincerely,
Rik Fitch
3160 Akala Drive
Kihei, HI 96753
rikfitch@gmail.com



DEC 08 20

**From:** Laura Coyle [mailto:lauracoyleaustin@yahoo.com]
**Sent:** Wednesday, December 08, 2010 12:18 PM
**To:** Colleen Suyama
**Subject:** Need for Environmental Impact Study for Piilani Rd Widening

Dear Ms. Suyama,
As a concerned citizen of Maui and homeowner on Akala Drive in Maui Meadows , I am asking for an EIS for the PRW project. Segmenting the Piilani Rd. Widening from the whole does not represent the full impact of the project on the area. An Environmental Impact Statement for the PRW project will be able to see the full impact of how the multiple improvements from all projects under consideration will really impact the area.
I am for Smart Growth. This is an opportunity to create something beautiful that the whole community can be proud of.

Laura Coyle
3160 Akala Drive
Kihei, Hi. 96753

808-250-7471

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1018

March 20, 2012

Mr. Rik Fitch
Ms. Laura Coyle
3160 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Fitch and Ms. Coyle:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated December 7, 2010, and comments received by email on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE STUDY:**

1. The noise study included as Appendix "F" of the Draft Environmental Assessment (EA) is based on the Federal Highways Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria. The study took into consideration that motorist do not drive at the posted speed limit and adjusted the speeds upward to 50 miles per hour (mph) for southbound traffic and 55 mph for northbound traffic.

**SPEEDING:**

2. The HDOT will notify the Maui Police Department of the excessive speeding in the area and request appropriate enforcement of the speed limit.





**NOISE MITIGATION AND SOUND WALLS:**

3. The U.S. FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   With regard to your request for a sound wall, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

**CONSTRUCTION MITIGATION AND COMPENSATION:**

4. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

   c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

   Although every effort will be made to minimize construction-related impacts we are unable to establish a compensation program for your inconveniences or loss of your rental income.

**AKALA DRIVE:**

5. Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

**PROPERTY VALUE:**

6. Pi'ilani Highway is an urban arterial roadway master planned as an eventual four-lane roadway within the existing right-of-way. The proposed improvement between Kilohana Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui traffic impact studies conducted over the years and policy statements within the Kihei/Makena Community plan call for this widening project. We are not able to assess the impact, if any, to your or anyone else's property values as a result of the implementation of these studies or the community plan.

**ENVIRONMENTAL IMPACT STATEMENT:**

7. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**SEGMENTATION:**

8. Although development in the Kihei-Makena region may benefit from the widening of Pi'ilani Highway, the widening remains a HDOT project separate from these other developments. The HDOT and the developers have a common goal to build Pi'ilani Highway as a four-lane arterial roadway and completing the last segment of the highway. The widening of Pi'ilani Highway is a long standing transportation need identified in the various transportation plans of the HDOT and County of Maui. The highway widening is being designed in accordance with FHWA and HDOT requirements. The opportunity to utilize private funding with the HDOT overseeing the design, permitting and construction will allow the improvements to be built prior to 2016 when the roadway improvements will be required to accommodate the growth rate of the Kihei region. The use of state lands triggers agency compliance with Chapter 343, HRS, and is being initiated precedent to development.

   Segmentation occurs when projects are broken into smaller segments of the same project to avoid the environmental review process and public scrutiny. This has not occurred in this situation. The project is undergoing the environmental review process similar to previous reviews for improvements to Pi'ilani Highway and the public has been given the opportunity to comment on the project.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Thad Flemens Address: 3106 AKALA DR
Kihei Hi 96753

Phone: _____ Email: Maui dogg@MSN.COM

Comments: NO NEED for 4 lanes.
NEED EIS



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1019

March 20, 2012

Mr. Thad Flemens
3106 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Flemens:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

We thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT NEED:**

1. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the

2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 06 2010

December 3, 2010

Ms Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High St. #104
Wailuku, HI 96793

Re: PIILANI HIGHWAY ROAD WIDENING PROJECT

Ms. Suyama,

We are homeowners on Akala Drive in Maui Meadows that will be directly impacted by this project. We are EXTREMELY concerned about the noise level of adding two more lanes to this highway. We choose not to have air conditioning in our home as we love the island breezes that come from the ocean in the daytime and the mountain in the evenings which cools off our home which means we have to have our windows opened all the time to cool us down. The traffic is so bad at night when I'm trying to sleep I have to wear earplugs. How would you like to have to wear earplugs in your home? Another MAJOR concern of ours is every time there is some kind of construction or accident on the Piilani Hwy between Mapu and Mikio the traffic races down Akala Drive which is a 20mph zone. Next door on both sides of us and across the way are little children who are occasionally in the street. It's only a matter of time before one of these kids will get hit if the traffic for this project is allowed to detour down Akala Drive.

I wish you would consider putting up noise barriers all along Piilani Hwy between Mapu and Mikio. It's the right thing to do!!!! We already have the highway 20ft from our property. Now the traffic will be RIGHT in our backyard.

We will definitely suffer from this project unless you consider different options.

Sincerely,
Carolyn and Michael Gardner
3360 Akala Drive
Kihei, HI 96753

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1020

March 20, 2012

Mr. Michael Gardner and Ms. Carolyn Gardner
3360 Akala Drive
Kihei, Hawaii 96753

Dear Mr. and Ms. Gardner:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated December 3, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION:**

1. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   With regard to your request for a sound wall between Mapu Place and Mikioi Place, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

**AKALA DRIVE:**

2. In response to your concern that Akala Drive will be used for construction and emergency traffic, for your information, Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

**CONSTRUCTION TRAFFIC:**

3. With regards to your concerns resulting from future construction traffic from the proposed highway widening and the Honua'ula project, both projects will implement a





construction Transportation Management Plan to include the following strategies to reduce construction worker-related traffic which will be included in the EA:

a. Hire a transportation coordinator to coordinate with contractors, administrators, employees, officials and the general public to implement transportation initiatives and programs; coordinate with construction managers and employees work shifts during off-peak hours; and monitor surrounding residential areas to ensure construction workers are not parking in these areas;

b. Off peak hour arrivals and departures of construction workers and suppliers;

c. Implementation of ride sharing, car pooling and van pooling programs;

d. Create park and ride facilities outside of the construction zone;

e. Implement a guarantee ride home program to ensure workers a ride home for emergencies, sickness or unexpected situations in order to encourage use of car pooling programs;

f. Create employee parking areas; and

g. Develop an emergency evacuation plan for workers.

Further, to reduce the potential for rocks and soil falling on the highway, materials in construction vehicles will be appropriately covered, as required by law.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 09 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: TERRY GRANT Address: 3496 AKALA DR

Phone: 2835959 Email: TG@RETRO BRU.COM

**Comments:** Am very disturbed to hear we will not be kept in the loop.
No more meetings and no news coverage.
Disappointing.
We would like to see an EIS.
The neighborhood is talking about needing an attorney.
Are you really considering not burying the power lines?



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1021

March 20, 2012

Mr. Terry Grant
3496 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Grant:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NEWS COVERAGE:**

1. Pursuant to Chapter 343, Hawaii Revised Statutes (HRS), public notice of an Environmental Assessment (EA) is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the Hawaii Department of Transportation (HDOT) to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners' associations were provided by letter dated November 15, 2010. In addition the HDOT published a notice in the Maui News on November 23, 2010, to inform the public of the community meeting.

**ADDITIONAL MEETINGS:**

2. Although not required, the December 1, 2010 community meeting was held to solicit public comments on the Draft EA. Additional community meetings are not planned for this project. However, during construction the transportation coordinator for the project will conduct regular informational meetings with affected residents regarding the status of project construction.

**ENVIRONMENTAL IMPACT STATEMENT:**

3. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, HRS in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

4. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





**From:** Steve and Jo [josteve2002@yahoo.com]
**Sent:** Wednesday, December 08, 2010 9:36 PM
**To:** Colleen Suyama
**Subject:** Pi'ilani Highway Noise and Dirt

Dear Colleen,

I would like to add my voice to the cry for a sound barrier wall on the Pi'ilani Highway between Keonakai Rd and Wailea. I just read the Maui Weekly article concerning the possible expansion. Along Panepoo St (the road immediately adjacent and parallel to the Pi'ilani Highway) the road noise has increased incredibly in the last ten years with every expansion in the Wailea area. A noise barrier is already needed. If the Pi'ilani expansion is allowed, the noise barrier wall absolutely must be a part of it. Please demand that the wall be a part of the project if it goes through.

The continual dirt from the road has increased right along with the noise. Hopefully, a noise barrier wall would help cut that back as well.

Personally, I am so against further development in the Wailea/Makena area due to lack of water and loss of our true Hawaii....but that's another issue.

The sound barrier wall is very important to the home lives of all of us living on Panepoo St..

Sincerely,
Jo Ginger
2817 Panepoo St.
Kihei, HI 96753

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1022

March 20, 2012

Ms. Jo Ginger
2817 Panepoo Street
Kihei, Hawaii 96753

Dear Ms. Ginger:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

We thank you for your email correspondence received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION AND SOUND WALLS:**

The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regard to your request for a sound wall between Keonekai Road and Wailea, we are unable to accommodate your request. Besides not meeting the criteria as provided in our Policy for installation of sound walls, your request is north of Kilohana Drive and outside of the project limits.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 09 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: KATHRYN GOODE Address: PO BOX 1917
KIHEI HI 96753

Phone: 874-1195 Email: N/A

**Comments:** MY NEIGHBOR IN MAUI MEADOWS INFORMED ME TODAY (DEC 6 2010) OF THE PLANS TO WIDEN PI'ILANI HIGHWAY TO 4 LANES.

I HAD NOT SEEN ANY NEWS COVERAGE OF THIS & WAS DISTRESSED TO FIND OUT THERE WAS NO ENVIRONMENTAL IMPACT ASSESSMENT EITHER.

I HAVE ASTHMA AND ALREADY THERE IS TOO MUCH VEHICLE EXHAUST FROM THE HIGHWAY.

WIDENING THE HIGHWAY WILL MEAN MORE TRAFFIC, NOISE, & EXHAUST POLLUTION - THINGS WE DON'T NEED.

THERE ARE PEOPLE WHO WILL BE HARMED IF THE HIGHWAY IS WIDENED AND I HOPE THAT IT WON'T BE.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1032

March 20, 2012

Ms. Kathryn Gootee
P.O. Box 1917
Kihei, Hawaii 96753

Dear Ms. Gootee:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NEWS COVERAGE:**

1. Pursuant to Chapter 343, Hawaii Revised Statutes, public notice of an Environmental Assessment (EA) is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control (OEQC). As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the Hawaii Department of Transportation (HDOT) to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

**ENVIRONMENTAL ASSESSMENT:**

2. As stated previously, a Draft EA was filed with the OEQC and published in the Environmental Notice on October 23, 2010. Although not required, the community meeting on December 1, 2010 was to inform the public of the project and to solicit public comments on the Draft EA. A copy of the Draft EA is available on the OEQC web site at http:\\hawaii.gov\health\environmental\oeqc.





**AIR QUALITY:**

3. An air quality study identified as Appendix "E" in the Draft EA was prepared in accordance with federal and state standards. The study addresses short-term or temporary construction-related impacts and long-term or operational related impacts of the highway. Temporary air quality impacts resulting from construction are proposed to be mitigated through Best Management Practices required by the County of Maui and State of Hawaii. These include actions such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens.

   Further, the study indicated that with the roadway improvement air pollution emissions from vehicles in the project area is expected to result in a reduction due to the improved traffic flow and a reduction of vehicles idling at the roadway intersections.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

**Subject:** FW: Piilani Widening Project Draft EA

**From:** Bill Gundry [mailto:bill@halegentry.net]
**Sent:** Friday, April 08, 2011 11:04 AM
**To:** General eMail
**Subject:** Piilani Widening Project Draft EA

Aloha,

As a homeowner affected by this project I have been reviewing the Draft Environmental Assessment you prepared for the Piilani Widening Project.

I was wondering if a Final Report will be prepared and submitted and if so what the time line would be for that document. I was also wondering if you could let me know what the approval process will be for this project.

Best regards,

Bill Gundry
344.6698



**From:** Bill Gundry [bill@halegentry.net]
**Sent:** Tuesday, April 12, 2011 8:50 AM
**To:** Colleen Suyama
**Cc:** Gwen Hiraga
**Subject:** RE: Piilani Highway

Ms. Suyama,

Thank you very much for your timely and informative reply, it is much appreciated. Since the Final EA is still in progress I was wondering if additional comments can be added to it. The reason I ask is because in reviewing the Draft EA I noticed that comments from three of the communities directly impacted by this project, Kanani Wailea, Wailea Pualani Estates and Wailea Community Association, and recognizing your efforts to solicit comments, were for whatever reason not included and as you can imagine there are some concerns common to all the communities bordering this project.

I was also wondering if you could provide me some guidance as to what would constitute a "significant adverse environmental impact" in the eyes of the HDOT.

And last, do you when specific plans regarding some of the issues, like traffic diversion, noise and dust mitigation and construction schedule will be available for review? The Draft EA states "Best Practices" will be used for many activities, but unfortunately I believe that doesn't provide a level of detail suitable for review and comment.

I really appreciate your time and consideration of these requests.

Best regards,

Bill Gundry
344.6698

**From:** Bill Gundry [bill@halegentry.net]
**Sent:** Tuesday, April 12, 2011 10:17 AM
**To:** Colleen Suyama
**Cc:** Gwen Hiraga
**Subject:** RE: Piilani Highway

Ms. Suyama,

Thank you for your reply. I do realize that my request is rather late in the day and I appreciate your background information on the request and response process and timeline.

I also appreciate your more detailed explanation of some the questions I have raised and the outreach and coordination efforts that will be implemented during the construction phase.

And my last question, in reviewing the letter from the WCA dated Dec 2, 2010 and the follow up letter from the Maui Meadows Neighborhood Association dated Dec 5, 2010 they both raise some requests regarding utilities, the median landscaping and sidewalk issues, among others, that appear to be outside the scope of the proposed project. Is there a separate process where those requests will be reviewed and responded to or will those be addressed in the Final Environmental Assessment?

I really do appreciate your time in responding to my questions and promise that I will respect the process and progress that you have undertaken so far and your time.

Much Mahalo,

Bill Gundry



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1033

March 20, 2012

(via email bill@halegentry.net)
Mr. Bill Gundry

Dear Mr. Gundry:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received by emails on April 8, and 12, 2011, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information, in response to your comments:

**APRIL 8, 2011 EMAIL AT 11:04 A.M.:**

The Final Environmental Assessment (EA) when completed will be reviewed by the State of Hawaii Department of Transportation (HDOT). As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**APRIL 12, 2011 EMAIL AT 8:50 A.M.:**

Comments from the Wailea Community Association (WCA) dated December 2, 2010, were received by the consulting firm of Munekiyo & Hiraga, Inc. and will be included in the Final EA. Also, before the December 1, 2010 community meeting we had requested through the WCA that they notify the various associations of the scheduled meeting. We did receive confirmation from WCA that they had notified the individual associations of the meeting. Although the deadline for comments was on November 22, 2010, we had extended the comment deadline to December 8, 2010 to allow additional public comments. All letters received will be responded to and included in the Final Environmental Assessment (EA).

To address some of your concerns, for your information, the following will be included in the Final EA:

1. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

2. To manage construction traffic a construction Transportation Management Plan will be implemented.

3. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control. Further, recommendations of the HDOT Storm Water Permanent Best Management Practices Manual will be implemented.

4. Construction noise is associated with the operation of heavy construction machinery, paving equipment and material transport vehicles. Proper mitigation measures, such as mufflers for construction equipment, in compliance with Federal and State noise control regulations will be implemented.

5. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

6. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible.

To keep the residents in the area informed, a pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for the construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record.

Further, every effort will be made to inform the public of the progress of the project. In the Transportation Management Plan, a transportation coordinator will be responsible to implement a public information and outreach program.

In evaluating "significant adverse environmental impact" the HDOT will review the Final EA in accordance with Chapter 343, HRS, Section 11-200-12 Significance Criteria.





**APRIL 12 EMAIL AT 10:17 A.M.:**

The comments of the WCA and the Maui Meadows Neighborhood Association relating to utilities, median landscaping, sidewalks, etc. will be addressed in the response letters to both associations and included in the Final EA. The following information is provided in response to the specific items noted in your email:

1. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in further impacts on adjacent properties. As such, the current project design calls for overhead utilities.

2. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

3. The current Federal Highways Administration and HDOT design standards for urban arterial roadways require sidewalks, medians and bike lanes. As such, these facilities have been incorporated into the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at (808) 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

**From:** Bill Gundry [mailto:bill@halegentry.net]
**Sent:** Tuesday, October 11, 2011 8:33 AM
**To:** Charlie Jencks
**Cc:** Bud Pikrone; Ron Ross
**Subject:** Piilani Widening Traffic Noise Study Comments

Aloha Charlie,

Thanks for your patience and I apologize for the lateness of this report. I realize the process has continued, but given the potential long term impacts this project will have for residents along the project area I think the findings from our review are crucial to the evaluation and design process and appreciate your assistance in forwarding them to the appropriate agencies.

As stated in my earlier messages we had the Acoustic Study for the Piilani Highway Widening April 2011 prepared by Y. Ebisu & Associates reviewed by another acoustic engineering company with experience in highway acoustic studies in Hawaii. Their review found several significant issues that bring into question some of the Study's methodology, conclusions and design decisions based on those conclusions. Below are the summaries of their findings:

**- Setback Distance Confirmation.** Distances between the centerline of the roadway and noise receptors were not provided anywhere in the report. It would be useful to know what distances were used as input into the TNM model. These distances could also be verified with the use of a surveyor to determine if the homes are inside or outside of the 127 feet setback distance. As I questioned in my earlier messages the number of homes determined to be impacted by the project as stated in the Ebisu Study appears underreported.

**- Location of Receptors.** The Ebisu TNM model was based on a receptor height of 4.92 feet. However, if any of the Wailea Pualani residences have lanai on the second floor of the residence facing the highway, the lanai should be considered the receptor location and would have a direct line-of-sight to the highway due to its height (approximately 15 feet). It would be useful to know how the acoustical consultant calculated the source-receiver distance and whether he used the façade of the home, the backyard area, or second floor lanai as the receptor location and I know of at least one home with a second floor lanai.

**- Updated HDOT Policy and Noise Abatement Criteria.** The acoustical consultant based his cost estimate shown in Table 9 on the original HDOT policy published in July 1997. However, in July 2010, the FHWA amended their *Procedures for Abatement of Highway Traffic Noise and Construction Noise* policy. The new policy mandated that every state update their noise policy regarding highway traffic noise. As a result, the HDOT's *Highway Noise Policy and Abatement Guidelines* were published in April, 2011. Per the latest guidelines, **$60,000** per benefitted receptor is now deemed to





be reasonable for cost. These updated policies nor the adjusted cost of abatement criteria were acknowledged in the revised acoustical report.

**- Cost Analysis.** The "cost per benefitted residence" was based on the an $39.00 per square foot for CMU walls. Concrete is the most commonly used material in the construction of a sound barrier wall. However, concrete is one of the more costly materials. In fact, the sound barrier walls that were installed along Honoapiilani Highway as a result of that roadway widening project were originally proposed to be CMU but were changed to Verti-Crete due to cost savings, reduction in installation time, and improvement in aesthetics. Using these construction methods and the updated HDOT guidelines could lead to more homes being protected with sound attenuation walls.

**- Sound Barrier Wall Length.** The sound barrier wall shown in Figure 2 does not appear to extend far enough based on the FHWA's rule of thumb, so it is not likely that the receptors at TMK 2-1-26: 73 or 74 will experience the intended noise reduction. The barrier wall could be designed to wrap around the corner lot in the direction of the intersecting Okolani Drive to provide better protection to TMK 2-1-26: 74 and 75 such that the 5 dB attenuation criteria would have been met. In this case the residence at TMK 2-1-26:74 may also be considered a benefitted residence and the cost analysis shown in Table 9 would have been based on 2 residences rather than one.

**- Shielding Effect Not Modeled.** The proposed project includes a re-grading of this area which will remove the existing earth berm. This re-grading may be necessary to build the additional lanes of Pi'ilani Highway. This point is important because it may mean that the change in noise level (from existing to future) may be greater than the increases indicated in Table 5 of the report (increases of 3.7 dB and 5.1 dB were reported).

**- Speed Limit Assumptions.** In the "Predicted Traffic Noise Attenuation" analysis shown in Table 8, it is not clear why the comparison was based on future traffic noise levels which included the 5 mph speed reduction. This means that a lower speed was used so the future noise levels are under-predicted.

My personal conclusions after a review of these finding is that there are enough questions regarding the methodology and conclusions of the original study to bring into question the recommendations regarding the number and placement of sound attenuation walls to provide protection to the residents of Wailea Pualani Estates.

I would appreciate your review and recommendations for next steps before the current design is approved. In the case of any follow up I would also appreciate the contact information of the appropriate agencies involved in the review and approval process.

Best Regards,

Bill Gundry

HONUA'ULA

October 25, 2011

Mr. William Gundry
357 Pualoa Nani Place
Wailea, HI 96753

Subject: Response to Noise Report Questions and Concerns Relative to the Piilani Highway Widening Project

Dear Mr. Gundry:

Please find attached a response to your concerns relating to the noise study and conclusions reached by Mr. Yoichi Ebisu in his technical study done for the Piilani Highway widening project. I asked Mr. Ebisu to respond to your concerns and also asked him if he would be willing to come to Maui and meet with you and discuss your concerns directly.

Mr. Gundry, please call if you have any questions.

Sincerely,

Charles Jencks
Owner Representative
Honua'ula Partners, LLC

Attachment

1300 N. Holopono Street, Suite 201 • P.O. Box 220 • Kihei, Hawai'i 96753 • p: 808-879-5205 • f: 808-879-2557



**Y. Ebisu & Associates**
Acoustical and Electronic Engineers

1126 12th Ave., Room 305
Honolulu, Hawaii 96816
Ph. (808) 735-1634 – Fax (808) 732-0409
e-mail: ebisuyassoc@aol.com

YEA Job #46.043
October 20, 2011

My Responses to Mr. Bill Gundry's Comments of 10-11-11; Piilani Highway Widening, Kilohana Street to Wailea Iki Drive.

**A. Setback Distance Confirmation**. The distances between the roadway and the receptor locations selected are shown in graphic format in Figure 2. The TNM model does not use inputted distances to the highway centerline as inputs into the model, but uses Cartesian coordinate system (x, y, z) points to describe receptor, roadway lanes, and noise barrier locations and elevations. These geographical inputs to the TNM are provided as a set of points and not as distances to the highway centerline. Using a ruler and Figure 2 and Table 4 of my noise study report, the distances to the centerline shown in Table 4 can be used to screen out those receptor locations where future traffic noise levels should not exceed the HDOT 66 Leq criteria. For example, the receptor at TMK: 2-1-15: 002 on Page 16 of Figure 2, is outside the 66 Leq noise contour since its distance from the highway centerline exceeds 127 feet. This is confirmed by the result of 54.4 Leq for that receiver as shown on Page 13 of Table 5.

The number of homes determined to be impacted by the project cannot be determined solely by the 127 feet distance to the centerline criteria. The number of homes impacted was determined by applying the TNM modeling results uniformly at all receptor locations within the project's limits of construction. I don't believe the number of homes were "underreported."

**B. Location of Receptors**. The location of receptors used in the noise study were as shown by the solid dots in Figure 2, and were typically chosen to be along the wall of the buildings which were closest to the highway. This has been a method approved by FHWA for highway noise studies in Hawaii as well as other states, and has been uniformly used in other highway noise studies in Hawaii.

The location of receptors has always been linked to the terms "exterior areas of frequent human use" in FHWA regulations. Under the old HDOT noise policy, this was not well defined; i.e., where the locations of receptors should be, and at what floor level for multistory residences. What has been consistently applied in prior highway noise studies is the use of receptor locations outside the closest exterior walls of residences which face the roadway. Only ground floor receptor locations have been used to maintain consistency in all noise analyses. There have been no prior objections to this methodology in selecting receptor locations in all prior highway noise studies of which I

am aware. The FHWA's more recent "Highway Traffic Noise: Analysis and Abatement Guidance" dated June 2010 (revised January 2011) supports continued use of this methodology for receptor locations as follows:

From FHWA, Page 29: "A receiver location is an area where analysts measure and/or model highway traffic noise levels. The choice of receiver locations in highway noise analyses rests with the noise analyst; receiver locations are normally resitricted to 'exterior areas of frequent human use.'"

From FHWA, Page 29: "....., highway agencies typically use one of three locations for exterior receivers:

1. At or near the highway right-of-way line;
2. At or near a building in residential or commercial areas; or
3. At an area between the right-of-way line and a building where frequent human activity occurs, such as a patio, pool, or play area in the yard of a home.

Any of these locations are acceptable, as long as the highway agency chooses one location and applies it uniformly and consistently in all its analyses."

From FHWA, Page 30: "'Exterior areas of frequent human use' are normally located on the ground level; but may include balconies of multi-story residences. ..... If there are no ground level exterior areas, the analyst may choose a balcony/deck location for analysis."

My reasons for not using 2nd floor receptor elevations in single family dwellings are as follows:

If a 2nd floor lanai has direct line of sight to the highway lanes, it must also be within the worst case setback distances shown in Table 4 before the HDOT 66 Leq criteria is exceeded. There are some 2-story homes within the project area and within the 66 Leq worst case contour setback distances. Consideration of receptor elevations higher than ground level has been evaluated on other HDOT projects, and the general practice has been to ignore the upper floors primarily because the likelihood of achieving the 5 dB minimum attenuation requirement at the upper floors is low when a cost limit of $35,000 per benefited residence also needs to be met. In addition, where 2nd floor receptors need to be shielded by much taller sound walls, the neighboring residences will also need to accept the location of the much taller walls fronting their properties. Unit costs for the taller sound attenuating walls would probably increase due to the increased costs for the foundations. And if the sound attenuation costs for 2nd floor receptors need to be considered, the sound attenuation wall which could be reasonable and feasible when considering only ground floor receptors, could turn out to be not reasonable and feasible when the second floor receptors are included in the





evaluation. And example where this occurs is at TMK: 2-1-08: 112, where a sound attenuating wall was considered to be reasonable and feasible for inclusion in the project, but would not have been if the second floor receptors were considered. So these are some examples of the disadvantages associated with the uniform use of 2nd floor receptor elevations for this study.

There can be situations where the ground floor receptor noise level is within the HDOT 66 Leq criteria, but the upper floor noise level may not be. This is an example of one of the potential noise mitigation tradeoffs which occur when only ground floor receptors are considered in the evaluations. Examples of this could occur at TMK: 2-1-14: 017; 2-1-14: 015; 2-1-13: 010; 2-1-08: 112; and 2-2-26: 029. I don't believe these 2-story residences all have patios which face the highway, but if they needed to be considered for noise mitigation, the barrier heights and costs would be higher than those for ground floor receptors. Typically, it will be more difficult to achieve the $35,000 per benefited residence criteria if 2nd floor receptor elevations are used. Where the $35,000 per benefited residence criteria is not met for 1st floor receptor elevations, it probably cannot be met for 2nd floor receptor elevations in the same home. Evaluating second floor receptors on a case-by-case basis creates problems regarding uniform application of the HDOT's reasonable and feasible criteria for selecting which mitigation measure qualifies for inclusion in or exclusion from the project. For example, if TMK: 2-1-14: 017 qualifies for a sound attenuating wall on the basis that it will mitigate noise at the 2nd floor spaces as well as at the ground floor spaces at $35,000 per benefited residence or less, then the sound attenuating wall fronting TMK: 2-1-08: 112 should not be considered reasonable and feasible because it cannot do the same.

So the selection of receptor locations for the Piilani Widening project has been based on a history of consistently applied, past practices which have been accepted by FHWA and HDOT, and have been reinforced with the more recent FHWA guidance document.

**C. Updated HDOT Policy and Noise Abatement Criteria.**

Communications with HDOT on the applicability of the new policy on this project are ongoing. The HDOT is attempting to determine how some changes to their new policy can be made and implemented. HDOT has indicated that it will be possible to use the old policy on a state highway project noise study which are planned to be completed after April 2011. A more recent communication from HDOT on the use of the new noise policy is as follows: "The noise policy to use is the noise policy that is in effect at the time the noise study for the project is being done, unless there is documentation that requires the use of another noise policy." Because this highway noise study was initiated and originally completed well before April 2011, it does not seem unreasonable to allow this project to use the old policy since a phase-in period for the new policy was not specified in the new policy.

By the new policy, the $60,000 cost per benefited residence is not the only criteria that must be used to determine reasonable and feasible mitigation measures. Included are new requirements for minimum 5 and 7 dB attenuation for specified percentages (67% and 75%, respectively) of the front row receptors. It was difficult to achieve 5 dB of attenuation for ground floor receptors under the old policy for this project. Achieving 7 dB of attenuation will be even more difficult and costly. If any of these percentages and allowable costs are not met within the limits of project construction, the entire group of sound attenuation walls fronting noise impacted residences could not be included in the project. So the new policy is much more complex in its evaluation of reasonable and feasible and uses an "all or nothing" approach toward inclusion of sound attenuating walls in highway projects. Therefore, an increase in the allowable costs from $35,000 to $60,000 per benefited residences may not allow for more sound attenuating walls to be included in the project.

**D. Cost Analysis.** The unit costs were obtained from the Ikena Avenue Bypass Project, and was confirmed by the project's civil engineers.

**E. Sound Barrier Wall Length.** The reason for not extending the sound wall toward the east beyond the middle of TMK: 2-1-26: 074 is because that lot and lot 075 to the south are vacant (see report Table 5, Page 14). Vacant lots could not have benefited residences, and increasing the wall length without an increased number of benefited residences would bias the results in report Table 9 to be even more costly and unfavorable to the existing residence at TMK: 2-1-26: 073.

**F. Shielding Effect Not Modeled.** It was not clear which "area" of the project was being referred to. Noise shielding effects were modeled by the TNM since the existing and future terrain conditions at the top of cuts and top of fills were modeled for existing and future conditions with the project. In report Table 5, the increases in future traffic noise levels with the project ranged from 2.0 dB (TMK: 2-1-14: 006) to 6.6 dB (TMK: 2-1-13: 012) and not just "3.7 dB and 5.1 dB". The average increase in future traffic noise levels with the project (without consideration of the changes in the highway sections and profiles) was 4.3 dB as derived by comparing the future traffic noise levels of report Table 6 with the existing traffic noise levels of Table 3. The 4.3 dB increase was totally attributable to the forecasted increases in traffic volumes plus the changes in posted speed limit in the northbound direction.

So, when comparing the 4.3 dB increase from traffic flow conditions against the 2.0 to 6.6 dB increases shown in report Table 5, it can be concluded that in some locations loss of noise shielding due to highway reconstruction increased future noise levels by





as much as an additional 2.3 dB (4.3 minus 2.0), and that increases in noise shielding due to highway reconstruction decreased future noise levels by as much as 2.3 dB (6.6 minus 4.3). So, it is does not appear to be correct to state that noise shielding effects (both favorable and unfavorable) were not modeled.

**G. Speed Limit Assumptions.** The 5 mph reduction in the existing posted speed limit for the northbound direction is planned as a part of the project. The future traffic noise level predictions and barrier performances shown in report Table 8 must necessarily include that planning and highway design assumption.

Yoichi Ebisu, P.E.
Y. Ebisu & Associates

DEC 07 2010

Can't fool me the 30 mil. cost of widening the highway is no gift on the part of developers it is a bribe or investment at best. It is an investment for profit not in the community.

Edwin Sniffen's low regard for our intelligence is laughable.

If the developer wants us to believe they have the community's interest in mind lets see the power lines buried. Lets see a plan for beautiful medians they will maintain. They can pass these costs along to the people who buy their overpriced properties.

What about an environmental impact statment? Proceeding without one is unconscionable.

Is everyone in the developers pocket? Where was the Maui News? the city council? the mayors' office at the Dec 2 meeting. It is offensive to see you trying to push this thru under the radar of public scrutiny.

We demand an EIS and accountability for damages that will surely be incurred by this construction

yours sincerely.

P. Hart



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1034

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

March 20, 2012

Mr. Peter Hart
657 Kaapuni Place
Kihei, Hawaii 96753

Dear Mr. Hart:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

1. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**LANDSCAPING:**

2. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**ENVIRONMENTAL IMPACT STATEMENT:**

3. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEWS COVERAGE:**

4. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition, HDOT published a public meeting notice in the Maui News on November 23, 2010, to inform the public of the community meeting.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 10 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: HAINOA HENAO Address: 101 E. WAIPUILANI RD.
KIHEI, MAUI, HI 96753
Phone: 808-463-2108 Email: HAINOA.HENAO@gmail.com

Comments: I'm an environmental grass
Pasty expert specialist running for
office I would support to conserve
(study) before any widening of any kind
Roads especially in Kihei by ocean or
any surrounding area how be are
Construction, marine, utilities and illegal
aspects will be put in border,
There are tourist Daily yard not
Coastal, important grass protect
species of Hawaiian
Communities please consider
my and all staffs and agencies
before proceeding with proper planning
over Hawaiian Environment Status in
Thank you Hainoa

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1035

March 20, 2012

Mr. Kainoa Henao
101 E. Waipuilani Road
Kihei, Hawaii 96753

Dear Mr. Henao:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 10, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL REVIEW AND CULTURE:**

Environmental review was conducted for this project in accordance with Chapter 343, Hawaii Revised Statutes. As part of this environmental review process archaeological and cultural impacts were assessed. The roadway located within the existing highway right-of-way was determined by the State Historic Preservation Division to have been previously disturbed and archaeological monitoring during construction was recommended. Based on a Cultural Impact Assessment prepared by Hana Pono, LLC involving interviews with Native Hawaiians familiar with the area it was concluded that no adverse impacts on cultural resources will result from the project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 0 8 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Ralph Hendrickson Address: PO, Box 331, Kihei, HI 96753

Phone: 874-0580 Email: write-maui@hawaii.rr.com

**Comments:** • Attached •

Ralph Hendrickson
P.O. Box 331
Kihei, HI 96753

December 8, 2010

Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793
Attn: Colleen Suyama, Senior Associate

Re: Pi'ilani Road Widening

Aloha Ms. Suyama and Associates,

This whole thing is a travesty. This project is a way for the large developers to sneak through a cheap road to their developments without having to pay for the cost of right of way. More importantly, it will forestall a new road higher up the slope that will more efficiently serve the further growth of the Kihei/Wailea/Makena area.

There must be an EIS. There are a number of issues that have not been addressed satisfactorily in the EA. This is a thinly veiled gateway project for the large concerns in Wailea and Makena. The widening of Pi'ilani Highway will have a major impact on what has been up to now the rural lifestyle of Maui Meadows residents. I'm sure that our Wailea neighbors that border the road will not appreciate the noise and additional drain on their property values the widening of this road will cause them either.

Questions regarding noise, fumes, dirt and damages are not adequately addressed in the EA. There were acknowledgements of this at the recent public meeting. It's important that should the project continue that all mitigation measures must be detailed in writing. And what of damages? Will there be a bond posted to assure adequate funds are available for compensation?

There are numerous environmental concerns that must be addressed in detail as well. How about runoff? Our coastal waters are already endangered. Our reefs are being choked by urban sprawl.

Of major concern is the "segmenting" effect of this project, the attempt to separate it from the whole picture. It was obvious to everyone at the community meeting that the so-called "improvements" to the highway are integral to the enrichment of Wailea/Makena developers.

We've lived on Akala Drive for over 25 years much of it without the current highway running a short distance from our back yard. We are very concerned



about the additional disruptions that this widening will cause. There have been times when we were veritable prisoners in our home to the traffic that builds up on Pi'ilani Highway as the hotel workers are getting off work, not to mention the additional cars of the tourists they serve. The work on this section of highway will just increase the load on this already challenged stretch of roadway. There needs to be a more modern arterial road somewhere above Maui Meadows.

Can you imagine what would happen if there would be some sort of civil emergency during this widening process and residents would have to leave this area? It could be a tsunami, flooding, earthquake or fire, etc. How would we be able to reach safety? The times that we've had storms, accidents or power outages, Kihei has become a giant parking lot. What would it be like with additional workers and equipment on this already taxed road?

The DOT wants this project because they say it's free but it won't be! Maui Meadows homeowners who live along the highway will pay with lost property values and income, diminished quality of life, and increased noise forever. It's not right. It's not pono.

Sincerely,

Ralph Hendrickson

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1036

March 20, 2012

Mr. Ralph Hendrickson
P. O. Box 331
Kihei, Hawaii 96753

Dear Mr. Hendrickson

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter dated December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT NEED:**

1. The widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order





to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**ALTERNATIVES:**

2. Under the Alternatives section on Pages 69 through 70 of the Draft EA, a future highway alignment further mauka of the existing Pi'ilani Highway was considered. The Pi'ilani Highway widening will be necessary by year 2016 to accommodate population growth in the Kihei-Makena region well in advance of any new mauka highway being built. The regional and sub-regional transportation plans of the State and County which identify highway projects for implementation to the year 2022 do not include a new mauka highway in the region which means any new highway will need to be planned, designed and built after 2022.

**ENVIRONMENTAL IMPACT STATEMENT:**

3. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**CONSTRUCTION MITIGATION:**

4. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.
   c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**DAMAGES AND BONDING:**

5. Pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit. Further, there is no bonding requirement for this project.

**DRAINAGE:**

6. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**SEGMENTATION:**

7. Although development in the Kihei-Makena region may benefit from the widening of Pi'ilani Highway, the widening remains a HDOT project separate from these other developments. The HDOT and the developers have a common goal to build Pi'ilani Highway as a four-lane arterial roadway and completing the last segment of the highway. The widening of Pi'ilani Highway is a long standing transportation need identified in the various transportation plans of the HDOT and County of Maui. The highway widening is being designed in accordance with Federal Highways Administration (FHWA) and HDOT requirements. The opportunity to utilize private funding with the HDOT overseeing the design, permitting and construction will allow the improvements to be built prior to 2016 when the roadway improvements will be required to accommodate the growth rate of the Kihei region. The use of state lands triggers agency compliance with Chapter 343, HRS, and is being initiated precedent to development.

   Segmentation occurs when projects are broken into smaller segments of the same project to avoid the environmental review process and public scrutiny. This has not occurred in this situation. The project is undergoing the environmental review process similar to previous reviews for improvements to Pi'ilani Highway and the public has been given the opportunity to comment on the project.

**TRAFFIC:**

8. The need for this project is reflected in your comments that there have been times when you have been "veritable prisoners" in your home due to traffic building up when hotel workers are getting off work, as well as from tourists. A construction transportation management plan will be implemented to reduce construction worker-related traffic to include such measures as the following:





   a. Hire a transportation coordinator to coordinate with contractors, administrators, employees, officials and the general public to implement transportation initiatives and programs; coordinate with construction managers and employees to establish work shifts during off-peak hours; and monitor surrounding residential areas to ensure construction workers are not parking in these areas;

   b. Off peak hour arrivals and departures of construction workers and suppliers;

   c. Implementation of ride sharing, car pooling and van pooling programs;

   d. Create park and ride facilities outside of the construction zone;

   e. Implement a guarantee ride home program to ensure workers a ride home for emergencies, sickness or unexpected situations in order to encourage use of car pooling programs;

   f. Create employee parking areas; and

   g. Develop an emergency evacuation plan for workers.

**EMERGENCY ACCESS:**

9. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 09 2010

In regards to the Piilani Road widening project

We were on Maui when the enclosed letter was mailed to our mainland address.

We are opposed to the widening project for these reasons. The current road traffic produces a terrible amount of traffic noice to our home and neighborhood. If the road is widened the traffic noice will be worse and the traffic proximity to our house could be a safety issue. We have already found debris behind our house that has blown off vehicles.

If the widening project is allowed to proceed we recommend that either a very high birm or concrete wall be constructed between the road and our home and housing development.

Richard D. and Sharon F. Hews
388 Pualoa Nani Place
Kihei, Hawaii

Richard D Hews
Sharon F. Hews

112

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

TO: OWNERS/LESSEES

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Sir or Madam:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

**Date:** December 1, 2010
**Time:** 6:30 p.m.
**Place:** Kihei Elementary School Cafeteria
250 Lipoa Street
Kihei, Hawaii 96753

The deadline for comments on the Draft EA is November 22, 2010. Since the scheduled community meeting is after the comment deadline we will continue to accept written comments until December 8, 2010, in order to include comments from participants at the community meeting.

planning environment
305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

113

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NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1037

March 20, 2012

Mr. Richard Hews and Ms. Sharon Hews
388 Pualoa Nani Place
Kihei, Hawaii 96753

Dear Mr. and Ms. Hews:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

We thank you for your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION AND SOUNDWALLS:**

The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regard to your request for a sound wall, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Mark Hyde Address: 4320 E. Waiola Loop
Kihei, HI. 96753

Phone: 874-3839 Email: bydem001@hawaii.rr.com

**Comments:**

[1] The widened roadway should meet federal highway standards.
[2] Please publish any agreements between the DoT + the four developers
(a) share the cost-sharing provisions
[3] Indicate the project's time line.
[4] Describe the ultimate terminus of the highway. Kula Highway?
(a) How will Makena Resort connect with this highway?

Thank you for inviting comments.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1038

APR - 3 2012

Mr. Mark Hyde
4320 E. Waiola Loop
Kihei, Hawaii 96753

Dear Mr. Hyde:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT DESIGN:**

1. The widening project is being designed in accordance with U. S. Federal Highways Administration and Hawaii Department of Transportation (HDOT) standards.

**AGREEMENTS:**

2. Agreements between the HDOT and the private entities are currently being prepared for this project.

**TIMELINE:**

3. Once construction is initiated it is anticipated to take approximately 18 months to complete. Construction is anticipated to start in early 2012.

**TERMINUS:**

4. The highway, as designed, will terminate at the Wailea Ike Drive intersection. Eventually, the Honua'ula development is required to construct an additional two (2) lanes to Kaukahi Street as part of their development. The HDOT has no plans to connect Pi'ilani Highway with the Makena Resort project or the Kula Highway.





Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: JOE Juaana Address: 3357 Akala Kihei 96753

Phone: 879 2690 Email:

Comments: Demand an EIS.
Wide~~extend~~ the highway better bury the powerlines.
Sick of developers disguising self interest as a gift.
We want to know what's happening. Why is there no news in the Maui News.
Concrete median? What about trees?

Joseph M Kuaana



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PS
2.1039

APR - 3 2012

Mr. Joe Juaana
3357 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Juaana:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**NEWS COVERAGE:**

3. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

**LANDSCAPING:**

4. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Ms. Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



-----Original Message-----
From: Barbara Kaneshige [mailto:barbara.kaneshige@hawaiiantel.net]
Sent: Wednesday, December 08, 2010 12:35 PM
To: General eMail
Subject: EIS

thank you for reading my comments in the attached letter

barbara kaneshige
3304 akala dr.
kihei hi. 96753

Munekiyo &Hiraga
305 High St. ste 104
Wailuku hi 96793

Dear Ms. Suyama,

Segmenting the widening of the highway from the Wailea 670, Wailea Resort and Makena Resort projects is ludicrous. Any EIS should include the whole package.

The 100 year storm produced 3-4 feet of water in my back yard. Can you tell me if I can expect 6 feet next time? With changing weather patterns you cannot tell me there will not be a next time. With no structural damage clean up cost me $2000.

I have a 12 foot poured in place concrete wall, 40 foot pool, 75 foot water feature, 12 foot waterfall, hollow tile walls on all sides of my property, wrap around driveway and 2700sq. ft stucco home with stone floors totaling $1,250,000 or more in improvements.

I think the public is entitled to know the size of the bond the state is requesting when the potential damage to our homes is substantial.

I want to know what affects blasting and dust will have on the environment as well as my personal property. I also want to know the responsible party will be able to compensate me for that damage.

The 12 foot wall I put up to reduce the noise didn't work. The waterfall I put in to drown out the din of traffic worked. It creates so much noise you can't hear



traffic. You also cannot hear anyone next to you unless they scream.

I am curious to see how successful your noise abatement protocols are as mine have all failed.

I also hope you are aware that nothing less than a full time person or persons dedicated to dust abatement will be equal to the task of adequately relieving the untenable conditions caused by dust. I am disturbed and on guard when I hear things like best method.

Planting the median and maintaining it with trees would reduce noise and pollution. Ca., Fl., and Vegas all have fabulous medians. Why do we have nothing like this anywhere on Maui? Our roads and highways are an embarrassment. Small palm trees could be maintained and installed at minimal expense. In ten or twenty years other states could be admiring our highways instead of laughing at our dead Hawaiian grass.

I applaud the DOT suggestion to bury utility lines. I feel that this and a planted median would be far more effective in assuaging the ill will of the thousands of people this project will adversely affect.

Developer money is no gift. It is an investment in corporate profit. This being so we ask the DOT to protect us from those interests that demand we pay for their profit. The proposed plan as it stands will cost some of us our homes, our health, our businesses. It is naïve and insulting to call these losses temporary inconveniences.

Did your sound engineer crunch numbers based on 45 mph speeds or did he use the actual speeds people travel? Did he know that that strip of highway is drag lane heaven for our teens? I'm sure they will love the increased room.

Maybe then they can top speeds of 100mph. Is death another temporary effect?

Were the studies determining the temporary ill effects of sound and dirt on healthy adults or new borns, children, the aged and people with sensitive health issues? Or does this population not count?

The increased noise and pollution will permanently affect the values of our properties, quality of our lives and cause irreparable damage to our oceans. We are asked to suffer these losses so big business can profit.

While it is easier for the people who make the laws to not break them, I believe if ever there was a time for civil disobedience pushing this project through without an EIS would be one. Should this occur it would be my honor and privilege to get arrested stepping in front of a bulldozer that would destroy our oceans and the quality of our lives in the name of profit. There are people in wheel chairs who share my sentiments.

Police carting off the aged in wheelchairs is a great image.

Where is the news coverage? the city council? The mayor's office. Sometimes you can be too clever. The people have a right to know what is happening. Angry people are dangerous. Everyone I talked to who did not know what was going on was angry. That would be everyone I talked to in maui meadows. I knocked on 46 doors.

barbara kaneshige



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PS
2.1040

APR - 3 2012

Ms. Barbara Kaneshige
3304 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Kaneshige:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your letter received by email on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**SEGMENTATION:**

1. Although development in the Kihei-Makena region may benefit from the widening of Pi'ilani Highway, the widening remains a Hawaii Department of Transportation (HDOT) project separate from these other developments. The HDOT and the developers have a common goal to build Pi'ilani Highway as a four-lane arterial roadway and completing the last segment of the highway. The widening of Pi'ilani Highway is a long standing transportation need identified in the various transportation plans of the HDOT and County of Maui. The highway widening is being designed in accordance with Federal Highway Administration (FHWA) and HDOT requirements. The opportunity to utilize private funding with the HDOT overseeing the design, permitting and construction will allow the improvements to be built prior to 2016 when the roadway improvements will be required to accommodate the growth rate of the Kihei region. The use of state lands triggers agency compliance with Chapter 343, Hawaii Revised Statutes (HRS), and is being initiated precedent to development.

   Segmentation occurs when projects are broken into smaller segments of the same project to avoid the environmental review process and public scrutiny. This has not occurred in this situation. The project is undergoing the environmental review process similar to previous reviews for improvements to Pi'ilani Highway and the public has been given the opportunity to comment on the project.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the HDOT will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, HRS in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**DRAINAGE:**

3. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. According to the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

   Also, stormwater runoff from the mauka properties including the Maui Meadow's subdivisions will not be altered and will continue to flow through the existing culverts under the highway.

**BONDING:**

4. There is no bonding requirement for this project.

**BLASTING:**

5. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**DUST:**

6. Further, to minimize impacts on the adjacent properties, as stated in the Draft EA, Best Management Practices such as frequent watering, limiting the amount of disturbed areas, applying soil stabilizers, mulching, and wind screens will be utilized for dust control.





**DAMAGES:**

7. Pre- and post-construction on- and off-site property details will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**COMPLAINTS:**

8. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**LANDSCAPING:**

9. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

10. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in further impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**NOISE STUDY:**

11. The noise study included as Appendix "F" of the Draft EA is based on the FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria. The study took into consideration that motorist do not drive at the posted speed limit and adjusted the speeds upward to 50 miles per hour (mph) for southbound traffic and 55 mph for northbound traffic.

**SPEEDING:**

12. The HDOT will notify the Maui Police Department of the excessive speeding in the area and request appropriate enforcement of the speed limit.

**HEALTH CONCERNS:**

13. We note your concerns regarding the impacts noise and dust may have on residents in the area. We realize temporary construction impacts from noise and dust will be experienced by nearby residents. As much as may be practicable, mitigation measures, as discussed in the Draft EA, will be implemented to minimize the potential for construction-related impacts on neighboring residents.

**NEWS COVERAGE:**

14. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

**NOTIFICATION OF MAYOR AND COUNTY COUNCIL:**

15. Copies of the Draft EA were forwarded to the Mayor's Office and County Council for review and comment as part of the EA preparation process for the project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



**Daniel Kanahele**
**1100 Kupulau Drive**
**Kihei, HI 96753**

**Comments Submitted by E-mail on DEA for proposed Pi'ilani Hwy Widening Project on December 8, 2010**

---

**Director**
**Michael Formby**
**michael.formby@hawaii.gov**
State Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

**Ms. Colleen Suyama**
**planning@mhplanning.com**
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, HI 96793

**Director**
**Planning Department**
**kathleen.aoki@mauicounty.gov**
**planning@mauicounty.gov**
County of Maui Kalana Pakui Building, Suite 200
250 High Street Wailuku, Hawaii 96793

**Hawaii State Office of Environmental Quality**
**oeqc@doh.hawaii.gov**
235 South Beretaina Street
Honolulu, Hawaii, 96813-2419

---

My Name is Daniel Kanahele. I am a resident of the Maui Meadows subdivision in Kihei, Maui. I am one of many residents in one of the many communities in Kihei that will be directly and/or indirectly impacted by the proposed Pi'ilani Highway Widening Project. I would like to offer the following comments on the draft environmental assessment (DEA) for the proposed Pi'ilani Widening Project.

Firstly, if the Department of Transportation (DOT) had not held the community public informational meeting and extended the deadline for the submittal of written public comments to the draft environmental assessment (DEA) until December 8, 2010, I would have definitely miss "the boat", and not had the opportunity to gain a greater awareness of this proposed highway widening project and comment on its impacts. Thank you for holding the public meeting and extending the DEA comment deadline.

Secondly, at the DOT public meeting held on December 1, 2010, it was very apparent to me that this DOT project did not receive a warm and fuzzy welcome by most of those at the meeting. The majority of the residents in attendance expressed serious reservation and concerns regarding the projects impacts and benefits to the community. Some shouted over and over again, "how can we stop this thing?" What is clear is that the community has lots and lots of questions and concerns that need to be adequately addressed. To be fair to those of us who live in this community and enjoy this quiet place of natural beauty and historic interest, I believe that the Director of the DOT needs to require that a full environment impact statement (EIS) be prepared for this proposed project to adequately disclose all of its potential impacts. Anything less than an EIS would be a disservice to the community and the environment this project will impact.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1041

APR 13 2012

Mr. Daniel Kanahele
1100 Kupulau Drive
Kihei, Hawaii 96753

Dear Mr. Kanahele:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT NEED:**

1. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani

Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

## COMMENT FORM

### PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: [illegible] Address: 3140 ARAIA ST

Phone: (808) 633-1612 Email: KEGNANMAUI@GMAIL

Comments: Dont DO it!!
NO EIS!!
NO PLAN TO BURY
POWER LINES

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1465

APR 13 2012

Mr. Ken Keenan
3140 Akala Street
Kihei, Hawaii 96753

Dear Mr. Keenan:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

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**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
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Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: BARBARA KENNEDY Address: 3097 AKALA DRIVE

Phone: 874-7664 Email:

**Comments:** Against the widening, the absence of an EIS, and not burying the powerlines.
Will give time and money to prevent it.
Vocal opponent of this action



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1042

APR - 3 2012

Ms. Barbara Kennedy
3097 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Kennedy:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

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**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

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Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

**From:** Barbara Kenrich [mailto:barbara@kenrich.com]
**Sent:** Tuesday, December 07, 2010 11:59 AM
**To:** General eMail
**Subject:** comments on widening of Piilani Highway from Kilohana to Wailea Ike

Dear Sirs,

I am a Wailea Resident living at Kai Malu of Wailea and having lived in Wailea Pualani Estates I would like to see the following:

1. A sound wall should go in along the highway in the stretch from Kilohana to Wailea Ike. The sound is already audible on the greenbelt areas at Pualani and the homes nearer to the road. At night and early mornings the hotel workers drive at very high speeds along that stretch rushing to get to work which makes it unpleasant to have your windows open.

2. There needs to be a stop light at Okolani and the Highway, not just a left hand turn lane. It is nearly impossible during certain times of day, usually during hotel shift changes, to get out onto the highway there safely. I know of several serious accidents where folks have been "t-boned" by anxious drivers turning to turn in both sides of the highway. We had been told by A&B a stop light would go in after Kai Malu was done, but now they are saying it wont happen until the County deems it necessary.

3. Decorative sound wall materials should be used or vegetation should be planted. On a recent visit to Northern California I noticed they have some creeping vines that grow very quickly and cover the concrete fence/walls. The vegetation would also help mitigate sound as well as release oxygen into the air to help with the emissions.

Thank you for your time,

Barbara

Barbara Kenrich, R (B)

Pacific Island Realty, LLC

The Villas at Kehalani and Ho'ole'a Terrace

Kehalani a Master Planned Community

808-264-1016 cell or 808-986-0400 office

www.PIRealty.net

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1043

APR 1 3 2012

Ms. Barbara Kenrich
Pacific Island Realty
P. O. Box 2808
Wailuku, Hawaii 96793

Dear Ms. Kenrich:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your email correspondence received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION:**

1. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   With regard to your request for a sound wall along the entire stretch of the project corridor, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

**OKOLANI STREET:**

2. A stop light will be installed at the Okolani Street intersection as part of the highway widening improvements.





**DESIGN OF SOUND WALLS:**

3. Consideration will be given to a decorative wall, provided the design of the required sound walls meets FHWA and HDOT standards. However, due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, landscaping has not been incorporated in the project plans.

Your comments will be included in the Final Environmental Assessment (EA). Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Robin Knox Address: 728A Kupuku Dr. Kihei 96753

Phone: 281-6416 Email: WQCINC@hawaii.rr.com

**Comments:**

① I am opposed to widening, especially if blasting is required.

② What will be the increased ~~surface of~~ impervious surface area? How will increased ~~surface~~ impervious area impact sediment, ~~and~~ nutrient, bacteria, and toxic pollutant loadings to the watershed + the ocean (not rate of runoff but lbs/day pollutant load) How will you avoid adding to pollutant loads draining to impaired waters listed on Clean Water Act 303(d) list. ~~of~~

③ How much sand volume will be required to build the wall and roadway including curbs gutters + storm drains? Where will the sand source be located? What are the environmental impacts of mining the sand source?

④ Address cumulative impact of Makena Resort development, Wailea Buildout, Honoapiilani (Wailea 670)



⑤ For stormwater quality and quantity mitigation alternatives considered should be use of green infrastructure. The current drainage structures along Wailea Ike are impervious and expedite delivery of pollutant load to the ocean during storm events. Storm water filters, vegetated drainage underground infiltration vaults, capture and reuse and other measures to protect water quality should be considered in alternatives analysis

FOLD HERE

Place Postage Here

Return Address

Munekiyo & Hiraga, Inc.
**Attention: Colleen Suyama, Senior Associate**
305 High Street, Suite 104
Wailuku, Hawaii 96793

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1044

APR - 3 2012

Ms. Robin Knox
728A Kupuku Drive
Kihei, Hawaii 96753

Dear Ms. Knox:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**BLASTING:**

1. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**DRAINAGE:**

2. A drainage report was prepared for the project and is included as Appendix "J" of the Draft Environmental Assessment (EA). According to the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**SAND VOLUME:**

3. Until the construction plans are developed we are unable to address your comment regarding the sand volume for the project. As to the sand source, it will come from available suppliers on the island. We do not know who will be the supplier and are unable to address the environmental impacts of mining on the sand source.





**CUMULATIVE IMPACTS:**

4. Pursuant to Section 11-200-2 of the Hawaii Administrative Rules, Chapter 200, entitled Environmental Impact Statement Rules, the Final EA will be revised to include a more in depth analysis of cumulative impacts in relation to "reasonably foreseeable actions." Projects having relevance in this regard are the land use entitlements in the Kihei-Makena Community Plan region. The traffic report included as Appendix "I" of the Draft EA uses a growth rate of approximately 0.5 percent per year which is consistent with the average annual rate of change used in the 2030 General Plan Update. As such cumulative impacts from growth in the Kihei-Makena region are considered in the Draft EA.

**STORMWATER:**

5. As noted previously, your recommendation to consider stormwater alternatives have been considered by the design consultants. Subsurface retention basins are proposed to allow sediments and other pollutants to be retained and allowed to settle within the basin. The design consultants will consider other stormwater measures during preparation of the construction plans for the project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

**From:** Edward Manley [mayaed@verizon.net]
**Sent:** Monday, November 29, 2010 5:33 PM
**To:** Colleen Suyama
**Subject:** Piiliani Highway Widening (support)

Hi Colleen,

My wife and I have a home in Wailea Golf estates and are in favor of this project. However, we would still like to see the highway extended to Makena to alleviate the traffic that currently exists in the Wailea area.

Sincerely, Edward Manley



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1045

APR - 3 2012

***(via email mayaed@verizon.net)***
Mr. Edward Manley

Dear Mr. Manley:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received by email on November 29, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We appreciate your support of the project.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact the planning consultant for this project, Colleen Suyama of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: MEL MANWELL Address: 99 WALAKA ST #11 KIHEI HI 96753

Phone: 264 3621 Email: MMANWELL@HAWAII.RR.COM

**Comments:** Widen highway? what for? Are WE supposed to TAKE your word for it that WE NEED it? WHERE is the EIS? WHAT WE NEED is the power lines eliminated - FALLING utility poles ARE AN UNNECESSARY DANGER AS WELL AS AN EYESORE

SINCERELY
Mel Manwell



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1045

APR - 3 2012

Mr. Mel Manwell
99 Walaka Street, #11
Kihei, Hawaii 96753

Dear Mr. Manwell:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT NEED:**

1. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani

Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

3. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

plant the median

EIS

bury the powerlines.

better yet

Kill the project

FOLD HERE

06 DEC 2010 PM 2 L



Return Address
Sal Matarese
3374 Akala Dr
Kihei Hi 96753

Munekiyo & Hiraga, Inc.
**Attention: Colleen Suyama, Senior Associate**
305 High Street, Suite 104
Wailuku, Hawaii 96793



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1047

APR - 3 2012

Sal Matarese
3374 Akala Drive
Kihei, Hawaii 96753

Dear Sal Matarese:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**LANDSCAPE MEDIAN:**

2. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

3. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**PROJECT NEED:**

4. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the EA for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



**Re: DRAFT EA FOR PIILANI HIGHWAY WIDENING PROJECT**

**Prof. (Emeritus) Dick Mayer** dickmayer@earthlink.net
**1111 Lower Kimo Dr.**
**Kula, Maui, HI 96790** **December 6, 2010**

---

**Director Michael Formby** michael.formby@hawaii.gov
**Mr. Edwin H. Sniffen** edwin.h.sniffen@hawaii.gov
State Department of Transportation
869 Punchbowl Street
Honolulu, HI 96753

**Ms. Colleen Suyama** planning@mhplanning.com
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, HI 96793

**Director, Planning Department** kathleen.aoki@mauicounty.gov
County of Maui Kalana Pakui Building, Suite 200 planning@mauicounty.gov
250 High Street Wailuku, Hawaii 96793

**Hawaii State Office of Environmental Quality**
235 South Beretaina Street oeqc@doh.hawaii.gov
Honolulu, Hawaii, 96813-2419

I first wish to extend my sincere appreciation to the Department of Transportation for conducting a public informational meeting with the community. I believe the meeting gave residents a greater awareness of the project and its impacts. I also would like to thank the DOT for its extension of the deadline for the submittal of comments to this draft environmental assessment (DEA) until December 8, 2010. This extension will allow many members of the community to make useful comments. Mahalo.

Although I am the Vice-chair of the Maui Island General Plan Advisory Committee (GPAC), I am making the following comments privately, and not on behalf of GPAC.

## Comments on Draft EA for Piilani Highway Widening Project (Honua'ula + A&B Wailea + ATC Makena + Keaka)

At the Kihei meeting held on December 1, 2010, the Department of Transportation representative stated that the DOT was very much in favor of this project because it would be at no expense to the taxpayers; it would be entirely financed by private developers. Seemingly, the DOT thinks that this highway widening project is a free gift, and therefore should be welcomed without asking too many questions. That would be incorrect.

I have two types of concerns regarding the Piilani Highway Widening Project Draft Environmental Assessment (DEA):

A. My first concern is the LEGAL REQUIREMENT, -- the improper use of an Environmental Assessment when an EIS is clearly warranted. It would be wrong to accept this EA with a "Finding Of No Significant Impact" (FONSI). My concern is supported by the totally incorrect statement found on the middle of page 32:

> **Potential Impacts and Mitigation Measures**
> The proposed action is not anticipated to have significant adverse impacts on population. As an improvement to an existing roadway system there will be no increase in dwelling units that would generate population growth.

The words which I have underlined above demonstrate the total inadequacy of the analysis in the DEA. The authors of the DEA apparently do not understand or wish to hide the intimate relationship between this highway widening project and the proposed developments that will be constructed as soon as the highway widening is completed. This project is being paid for and being built by the developers only because they legally need this widening to build their projects. There will be thousands of units constructed and the population will grow considerably as a very direct result of this highway widening project.

B. My second set of concerns regards the actual content within this Draft Environmental Assessment.

## Legal Requirements concerning the Status of the Draft EA

The Piilani Highway Widening Project draft environmental assessment is inadequate in meeting the legal requirements of HRS 343 and/or Hawaii Administrative Rules (HAR) because of four factors/issues:

a) **Segmentation:** The DEA segments this project from several proposed development projects (both Honua'ula and ATC Makena Resort) which are legally dependent on and entirely rely on this highway widening, as a prerequisite to their implementation;

b) **Secondary impacts**: The DEA does not adequately address numerous **secondary impacts** of the project that lie outside the very narrow highway widening corridor;

c) **Cumulative impacts:** The DEA inadequately addresses the **cumulative impacts** from this highway widening project and its closely related projects; and

d) **Out-dated EIS:** This proposed highway widening project is intimately tied to the EIS for the Makena Resort project. Unfortunately, the Makena Resort EIS is extremely out-dated (35+ years old) and does not include Piilani Highway impacts since it was prepared considerably earlier than the construction of the Piilani Highway itself. The Makena Resort EIS should be updated with a supplement, or perhaps more legally appropriate, the Piilani Highway widening project must include a supplemented Makena Resort EIS as part of its own EIS.





The verbiage on page 50 dealing with cumulative and secondary impacts is a whitewash of reality. The second paragraph concludes with the false statement that, "There are no other infrastructure projects anticipated within the project context." And the last paragraph concludes with an equally misleading statement, "In this regard, there are no secondary impacts associated with the Piilani Highway widening project which are considered adverse in the context of regulatory and statutory requirements, and common practice mitigation measures."

Because of these issues, the Department of Transportation should immediately require the applicants to prepare an EIS that meets the requirements of HRS 343 and HAR. Without a comprehensive EIS that avoids segmentation, includes secondary and cumulative impacts, and discusses information that was not included in outdated EIS documents, I believe that this highway widening project will be unnecessarily delayed because of potential court challenges.

---

## Specific Comments on the Piilani Highway Widening Project Draft EA

I will keep my comments relatively brief since I believe that an EIS must be conducted and because I believe that a proper set of scoping meetings will need to be conducted in preparation for that EIS. However I do wish to be helpful and will indicate some of my concerns regarding the present Draft EA.

1. The dates selected for the traffic counts were on off-peak and not typical dates. At the end of June school is out of session and the heavy tourist season has yet to begin. Traffic counts should be conducted both on school days when congestion is greatest and in July/August when the tourist season is at a peak.

2. Traffic counts and impacts need to be considered not only for the three intersections along the widening project, but also to the north of this project at the major intersections of Piilani Highway as it passes through South Maui and also to the south of this project as the traffic passes through both Wailea and Makena. The need to conduct these additional traffic counts is necessary because this 1.4 mile widening project will be the "trigger" that allows for the additional construction of 3,150 new units plus over 300,000 ft.$^2$ of commercial space (See the table on page 5.). The intersections beyond the 1.4 mile segment will be severely impacted by the completion of this highway widening project.

3. Furthermore, it will be necessary to evaluate the effects of the additional traffic on the entire length of Piilani Highway which already is operating at reduced speed limits, which cannot be physically widened, and which will be sorely strained by the additional vehicles coming from and going to the four developments represented by this widening project's four applicants. These are "secondary impacts" which were not evaluated in the Draft EA.

4. To evaluate the cumulative impacts resulting from this project, it is necessary to consider not only the units being constructed by the four applicants but the thousands of other units that will be constructed in South Maui during the time frame which the document is examining. Although these additional units are not under the control of the applicants, the residents of those units will be utilizing the Piilani Highway along its entire length. Because this highway cannot be widened, we certainly do not want to see this highway turning into a "long parking lot"!
You may easily get a list of the other South Maui projects and their unit counts on the Maui County Planning Department's website. See:
**http://www.co.maui.hi.us/documents/Planning/Long%20Range%20Division/GIS%20Maps/Web_DevProj20100615_SouthMaui.JPG**

5. One alternative to the proposed highway widening would be consideration of an improved transit system within the four properties being proposed for development and along the entire length of Piilani Highway. A properly conducted EIS, as opposed to an EA, would consider this alternative; the EIS may even come to the conclusion that it would be far cheaper to develop a proper transit system (probably buses) than to continue highway widening.

6. The proposed median strip will be landscaped. Because this is a very dry area with existing water shortages, where will the water come from to maintain the landscaping? From Maui County sources? Or from the four developers' own sources?

**The presently proposed Piilani Highway widening project may not be a financial gift to the State, but a potential problem for the State because of all of the traffic that will be added to the remainder of Piilani Highway. Therefore, I look forward to well-publicized EIS scoping meetings that will examine the non-segmented cumulative and secondary impacts from this Piilani Highway widening project in combination with the multi-unit developments represented by the four applicants, or alternatively from a potential transit alternative.**





**PROPOSED DEVELOPMENT -- SOUTH OF KILOHANA STREET**

| | | RESIDENTIAL UNITS | RESORT UNITS | COMMERCIAL SQ. FT. |
|---|---|---|---|---|
| HONUA'ULA (Wailea 670) | By 2016 | 400 | 0 | 100,000 |
| | 2016 - 2022 | 750 | 0 | 0 |
| | TOTAL | 1,150 | 0 | 100,000 |
| WAILEA RESORT | By 2016 | 1,050 | 640 | 138,390 |
| | 2016 - 2022 | 100 | 0 | 90,000 |
| | TOTAL | 1,150 | 640 | 228,390 |
| MAKENA RESORT | By 2016 | 400 | 0 | ?? |
| | 2016 - 2022 | 450 | 0 | ?? |
| | TOTAL | 850 | 0 | ?? |
| **GRAND TOTAL** | **By 2016** | **1,850** | **640** | **238,000 +** |
| | **2016 - 2022** | **1,300** | **0** | **90,000 +** |
| | **TOTAL** | **3,150** | **640** | **328,000 +** |

Source: Piilani Highway Draft EA - Appendix I PDF Pages 373-378

Submitted by: Prof. (Ret'd.) Dick Mayer dickmayer@earthlink.net

These calculations do not include additional houses or ohanas that may be built in Makena area or in Maui Meadows, nor by Keaka LLC.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1048

APR - 3 2012

Mr. Dick Mayer
1111 Lower Kimo Drive
Kula, Hawaii 96790

Dear Mr. Mayer:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 6, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. Before proceeding with our point-by-point responses to the comments provided, we believe it beneficial to clarify and set proper context for the proposed highway widening action. The explanation which follows addresses issues relating to segmentation and cumulative impacts, which we agree, are important themes to address as part of the Chapter 343, Hawaii Revised Statutes (HRS) process.

The State of Hawaii, Department of Transportation's (HDOT) perspective however, differs in that we view the Pi'ilani Highway widening project as a stand-alone project, not a component of other proposed private development actions such as the Honua`ula project, Makena Resort project, or any other project occurring in the Kihei-Makena Community Plan region.

The fundamental premise for the HDOT, in undertaking all of its regional highway improvements projects, is that HDOT facilities improvements shall be based on sound planning and programming which considers opportunities, where available, for private-public partnerships. It is important to recognize that the Pi'ilani Highway Widening project is a part of our long range transportation plans, and not a component of any private development project which may contribute traffic to this important South Maui highway. For instance, if the HDOT did not have the planned widening project programmed, or if HDOT was not in a position to implement the widening project at this time, private development entities would then be obligated to identify and implement alternative solutions, independent of HDOT's capital improvements program and long range plans.





The improvements are the last segment of the widening of Pi'ilani Highway from Mokulele Highway to Wailea Ike Drive recommended in the long range transportation plans. As noted in the traffic study the improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region.

With this in mind, the scope of Chapter 343, HRS EA for the Pi'ilani Highway widening project should not reach into the realm of projects being undertaken by others in the Kihei-Makena region. The connection between the Honua'ula and Makena projects, as you have noted, are the conditions requiring private entities to participate in cost sharing for the project. The HDOT views the conditions imposed as beneficial in establishing an alternative funding source to the Statewide Transportation Improvement Program through a private-public partnership, as the developers' contributions will help to mitigate impacts of not only their projects but anticipated growth within the Kihei-Makena region.

Importantly, this highway widening project would have proceeded irrespective of the zoning conditions, based on anticipated highway capacity constraints calculated. As a HDOT project implementing our long-range transportation plans, we do not believe that mitigative conditions imposed through the County land entitlement process are a basis for concluding that the Honua'ula and Makena Resort projects must be analyzed as part of the Chapter 343, HRS process. In particular, if a State and County traffic impact fee system was in place at the time the zoning conditions were imposed, our recommendation for the funding contribution conditions for the Honua'ula and Makena projects would not have been suggested as the cost of this regional improvement would have been borne by all development projects having potential trip contributions to Pi'ilani Highway.

To summarize, the HDOT has, throughout the State of Hawaii, regional transportation improvements scheduled or under construction, which are subject to similar circumstances. For the Lahaina Bypass project, as an example, we have suggested to discretionary authorities, that conditions of approval include participation in the construction of that regional roadway project. It has been our practice, in the absence of an implementable traffic impact fee system, to ask developers to participate in such improvements as a means of achieving a fair-share cost objective which is viewed as an appropriate means of project financing while recognizing potential mitigation value for projects proposed in the region. Thus, as a matter of public policy, the HDOT believes that the conditions imposed on projects for roadway participation are appropriate, and should not be considered a basis for defining segmentation or cumulative impact criteria pursuant to Chapter 343, HRS. In this instance, therefore, the scope of the Chapter 343, HRS EA for Pi'ilani Highway should not include the development proposals and related impacts of the Honua'ula, Makena Resort, or any other development proposal which may be asked to participate in the roadway widening project.

**A. LEGAL REQUIREMENTS CONCERNING THE STATUS OF THE DRAFT EA**

**1. Segmentation, Secondary Impacts and Cumulative Impacts:**

As noted at the onset of this letter, we view the issue of segmentation and its implications to secondary and cumulative impact analysis differently from that represented by the comments provided. To recap, all development projects in the South Maui region and beyond contribute to vehicle trips within the Pi'ilani Highway corridor. As a governmental agency we believe it is fair and appropriate to seek participation from projects to support the implementation of regional roadway improvements. We do not believe that participation in a regional roadway improvement implies the need for the HDOT to include the impacts of the individual developments themselves. Such an approach would make the public infrastructure and facilities development process unwieldy and beyond the scope and intent of Chapter 343, HRS. Therefore, just as there is no expectation that Chapter 343, HRS documents for a new public school address the direct impacts of those individual projects contributing to the development of a new school facility, there is no Chapter 343, HRS EA requirement for a roadway project to address the impacts of the individual projects contributing to the roadway improvement.

**2. Out-dated Environmental Impact Statement (EIS):**

As noted at the onset of this letter, the HDOT believes that the conditions imposed on projects for roadway participation are appropriate, and should not be considered a basis for defining segmentation or cumulative impact criteria pursuant to Chapter 343, HRS. In this instance, the scope of Chapter 343, HRS EA for Pi'ilani Highway should not include the development proposal and related impacts on Makena Resort or any other proposed development in the Kihei-Makena region. If Makena Resort initiates development that "triggers" compliance requirements with Chapter 343, HRS, then the appropriate accepting authority will determine whether an Environmental Impact Statement (EIS) or Supplemental EIS should be required for Makena Resort.

**B. SPECIFIC COMMENTS ON THE PI'ILANI HIGHWAY WIDENING PROJECT DRAFT EA:**

1. *The dates selected for the traffic counts were on off-peak and not typical dates.*

**Response:** The dates selected for the traffic counts were coordinated with the Wailea Community Association to coincide with the peak tourist season. The Wailea area is a resort community more heavily influenced by visitor arrivals rather than the typical school traffic in the greater part of Kihei.





2. *Traffic counts and impacts need to be considered not only for the three intersections along the widening project, but also to the north of this project at the major intersections of Pi'ilani Highway as it passes through South Maui and also to the south of this project as the traffic passes through both Wailea and Makena.*

**Response:** The Pi'ilani Highway Widening is implementation of the last segment of the highway in accordance with the long range plans of HDOT and the County. Traffic considerations north of this project were addressed during previous improvements to Pi'ilani Highway.

3. *Evaluate the effects of the additional traffic on the entire length of Pi'ilani Highway which already is operating at reduced speed limits, which cannot be physically widened, and which will be sorely strained by the additional vehicles coming from and going to the four developments represented by this widening project's four applications. These are "secondary impacts" which were not evaluated in the Draft EA.*

**Response:** As previously noted at the onset of this letter, participation in roadway improvements by private development should not be considered a basis for defining cumulative or secondary impacts pursuant to Chapter 343, HRS. As a roadway improvement, cumulative impacts were reviewed in the context of incremental improvements to the roadway system which includes improvements to the North-South Collector Roadway (aka Liloa Drive) which was intended to provide an alternate parallel route to Pi'ilani Highway and improvements to South Kihei Road as a four lane roadway.

The improved transportation system will result in the removal of an impediment to the future implementation of land uses for Honua'ula and Makena Resort as a secondary impact. The Final EA will be revised to address these secondary impacts in more detail.

4. *To evaluate the cumulative impacts resulting from this project, it is necessary to consider not only the units being constructed by the four applicants but the thousands of other units that will be constructed in South Maui during the time frame which the document is examining.*

**Response:** As previously noted, as a roadway improvement the cumulative impacts were reviewed in the context of incremental improvements to the roadway system which may result in secondary impacts due

to the removal of an impediment to development in the region. For your information the HDOT is in the process of updating the Maui Travel Forecasting Model and the Long Range Land Transportation Plan which will address not only the transportation needs of the region but for the entire island.

5. *One alternative to the proposed highway widening would be consideration of an improved transit system within the four properties being proposed for development and along the entire length of Pi'ilani Highway.*

**Response:** As stated previously, although the Pi'ilani Highway widening project is being designed, constructed and permitted through private developers, this is an independent roadway implementing the long range transportation plans of the HDOT and County. The HDOT does not have any jurisdiction over transit systems which is a function of the County. The implementation of a transit system by these private developers will need to be addressed through the permitting requirements of the County for those projects.

6. *The proposed median strip will be landscaped. Because this is a very dry area with existing water shortages, where will water come from to maintain the landscaping? From Maui County sources? Or from the four developers' own sources?*

**Response:** Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



**From:** Molly [mailto:mollyinmaui@hotmail.com]
**Sent:** Monday, December 06, 2010 10:08 AM
**To:** General eMail
**Subject:** Piilani Highway Road Widening

December 7, 2010

Ms. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High St. #104
Wailuku, HI 96793

**RE: Piilani Highway Road Widening**

Dear Ms. Suyama,

I am a renter writing this letter on behalf of the homeowner, four adult tenants, and myself, as well as my three children. We live on the Piilani side of
Akala Dr. in Maui Meadows. First of all I feel this project is completely unnecessary. The traffic does not seem to need four lanes of highway running through this area.
The only time traffic could even seem to be an issue is at "rush hour" around 4:30 ~ 5:00 pm and even then It moves through quite fast. No long wait even though the small
wait we have now is due to the traffic light on Mapu and Kilohana. I am sure this project would include another traffic light on Okilani and Piilani Hwy. This would seem to insure
quite a long wait due to two traffic lights in such a small area. The road is just fine now with the turn lanes we have. Would we have four lanes and turn lanes on the
highway at the intersections I mentioned above? If so would we have 5 lanes in areas plus a median? We already have a bike path, and as far as sidewalks go,
in the ten years I have lived at my current address I have hardly ever seen anyone walking down the highway in this area. There is no sidewalks on the rest of the Piilani, why do we need these?
Where will this extra 80 plus feet come from? Will it come from both sides of the highway? Will we have a property easement still? If we will not have an

easement how is that fair to the people who bought property here twenty to thirty years ago. Now thirty years later you change the property. This road is already running through a residential area and is already a concern for us with our pets and children. If they have 30 million the spend un-necessarily, then why don't they spend it on speed bumps on Akala Dr. There are plenty of people that are to impatient to wait at the one traffic light now. I can only imagine how great it will be when there are two lights not to mention when there is a traffic accident or road work and all the traffic is diverted down Akala Dr. Then Akala becomes the temporary Piilani Hwy. My part of the road is a long straight stretch of road that very few people drive the twenty mile an hour speed limit on. So with the extra congestion this project is going to create for Akala residents are they willing to buy us speed bumps? Do we have a choice in this matter or is it just to late and going to happen anyway? As I mentioned before I am speaking for myself and eight others that we are not for this project. Could you please advise me as to where I can get more information or answers to the above questions. And lastly who are you representing?

Thank you,
Molly McIntosh
3374 Akala Drive.
Kihei, HI 96753



NEIL ABERCROMBIE
GOVERNOR



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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1049

APR - 3 2012

Ms. Molly McIntosh
3374 Akala Drive
Kihei, Hawaii 96753

Dear Ms. McIntosh:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

In response to your specific questions, please be informed as follows:

1. *Would we have four lanes and turn lanes on the highway at the intersections I mentioned above? (Mapu/Kilohana and Okolani/Piilani Highway)*

   **Response:** There will be four (4) lanes and right- and left-turn lanes at the Mapu/Kilohana intersection. The Okolani/Pi'ilani Highway intersection will be signalized and include four (4) lanes of traffic with left turning lanes. The right lanes in each direction will be a through and right turn lanes allowing both through and right turn traffic movements.

2. *There are no sidewalks on the rest of Piilani, why do we need these?*

   **Response:** Current Federal Highways Administration and Hawaii Department of Transportation (HDOT) design standards for urban arterial roadways require sidewalks and medians.

3. *Where will this extra 80 plus feet come from? Will it come from both sides of the highway?*

   **Response:** The 80 feet is located within the existing right-of-way and will not require land acquisition from the adjoining property owners.

4. *Will we have property easements still?*

**Response:** The highway right-of-way extends to the adjoining property lines in the Maui Meadows subdivision. As stated previously, the improvements are limited to within the highway right-of-way, as such, any easements located on the Maui Meadows properties will not be affected by the proposed improvements.

Regarding your other comments, we are providing the following information:

**PROJECT NEED:**

5. The widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**AKALA DRIVE:**

6. Akala Drive will not be used for traffic diversion during lane closures. At least two (2) lanes of traffic will be open on Pi'ilani Highway during construction. Any unanticipated traffic closures will be coordinated with the Maui Police Department.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Melissa Mendoza Address: 3211 Akala Dr. Kihei, HI 96753

Phone: (808) 936-6997 Email: Mlgrevstad@gmail.com

**Comments:** Please do the study to make sure that the impact will not devastate the existing water ways and the environment!



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1392

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

APR - 3 2012

Ms. Melissa Mendoza
3211 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Mendoza:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**DRAINAGE:**

A drainage report was prepared for the project and is included as Appendix "J" of the Draft Environmental Assessment (EA). As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi'ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Jerome Metcalfe Address: 3395 A-AKALA

Phone: 808-344-3918 Email: Jerome V. Metcalfe

Comments: No Way to, No Environmental Study- Get Real, To Public Avoidance Try - Democracy Thats Public Forum Where the News Paper Coverage ! You Guys Are Try-n To Slide By I SAY NO! Jerome Kahuli Ale Hoose Remember I Say No ! I Have Witnesses !

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NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1050

APR - 3 2012

Mr. Jerome Metcalfe
3395-A Akala Drive
Kihei, Hawaii 96753

Dear Mr. Metcalfe:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEWS COVERAGE:**

2. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

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Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



**From:** Dave Moe [mailto:davemoe@hawaii.rr.com]
**Sent:** Monday, December 06, 2010 7:39 AM
**To:** General eMail
**Cc:** Bud Pikrone; atahnl@atahawaii.com
**Subject:** Pi'ilani widening project comments

Upon reviewing the proposed drawings at the meeting on Dec. 1st at Kihei School, it is apparent there is a grave mistake that will create an unsafe and dangerous driving condition. When traveling towards Makena, there is no right hand turning lane from Pi'ilani Hwy turning right onto Okolani. With a speed limit of 45 mph, when a vehicle tries to turn in the midst of an ongoing lane of traffic, it will create a chain reaction of the cars behind the one turning to slow down and as this will happen rather abruptly, the chances of a rear end collision become apparent. This situation is an accident waiting to happen. This is the same situation that happened at Keonikai Rd. In that situation, Pi'ilani was widened without the benefit and safety of a turning lane. Accidents happened....at a cost to vehicles and human beings. We do not need to learn this lesson again. Eventually, the turning lane at Keonikai, was built...but at no doubt a higher cost to the County of Maui, then had it been done that way in the first place. The NO RIGHT HAND TURNING LANE did not work there and it will not work at Okolani either. I understand the need for the road, but we need to make it safe from the beginning, and not wait till there is an accident to correct something that could have been made safe from the start. Whatever is required to make this turning lane onto Okolani needs to be done and the developer needs to pay for it. Why would the Dept. of Transportation allow a road to widened unsafely?

I would also like to know what is the contract/bid price of the developer for this project.

Also, at the last Pualani Estates Homeowner's Association meeting, a representative for A&B spoke about sound walls for the Wailea Pualani side of the road and that the County of Maui was asking for this. However at the meeting on Dec. 1st, there is only mention of 2 sound walls. Please clarify this for me.

Dave Moe, Homeowner at Wailea Pualani Estates. Residence Address: 377 Kualono Place, Wailea, HI 96753

Dave Moe, General Contractor
David Moe Construction
PO Box 2056-
Kihei, HI 96753
CELL 808-269-1240
FAX 808-874-8068
davemoe@hawaii.rr.com
http://www.davidmoeconstruction.com

Delivered via facsimile:
Hawaii DOT, Maui Office 873-3544
Hawaii DOT, Director's Office 587-2167
Hawaii DOT Planning Office 587-2362, 831-7995
Maui County Mayor's Office 270-7870



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1130

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

APR - 3 2012

Mr. Dave Moe
David Moe Construction
P. O. Box 2056
Kihei, Hawaii 96753

Dear Mr. Moe:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the community meeting on December 1, 2010, and your comments received by email on December 6, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information, in response to your comments:

**PI'ILANI HIGHWAY/OKOLANI STREET/MIKIOI PLACE INTERSECTION:**

1. With regard to your personal observations of traffic in the area, based on the traffic study for the project included as Appendix I in the Draft Environmental Assessment (EA), a dedicated right-turning lane is not warranted. Further, a dedicated right-turn lane will require additional right-of-way from the adjacent landowners.

**CONTRACT/BID PRICE:**

2. Regarding your request for the contract/bid price, for your information, the construction bid process for the highway improvements will be through the four (4) entities who have agreed to fund, design, and construct the improvements. As such, we are unable to provide the information you are requesting.

**SOUND WALLS:**

3. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

HWY-PA
2.1130

With regard to your request for a sound wall, we are unable to accommodate your request since the Wailea Pualani boundary along the highway does not meet the criteria, as provided in our Policy for installation of sound walls.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





**From:** David Mogilefsky [mauisun@hawaiiantel.net]
**Sent:** Thursday, December 02, 2010 12:43 PM
**To:** michael.formby@hawaii.gov
**Cc:** darrell.young@hawaii.gov; General eMail; kathleen.aoki@mauicounty.gov; oeqc@doh.hawaii.gov
**Subject:** Proposed widening of Piilani Highway, Maui

December 2, 2010

Interim Director Michael Formby
State of Hawaii
Department of Transportation
-and-
Highways Division, Planning Branch
869 Punchbowl Street, Room 301
Honolulu, HI 96813

Re: Proposed widening of Piilani Highway, Maui

Dear Mr. Formby, and Planners of the Hawaii Department of Transportation:

I attended the DOT public meeting in Kihei on December 1, 2010 in regard to the subject road widening project, and I have familiarized myself with the Draft Environmental Assessment (DEA). I have concluded that the DEA finding of no significant impact is self-serving on the part of the private developers seeking to create this project. A full Environmental Impact Statement should be required. I offer the following comments in support of this position:

1. The DOT planner at the Kihei meeting portrayed this project as a gift to the state because it is to be paid for by private developers. Nothing could be farther from the truth. The private developers have been directed by County Ordinances to widen Piilani Highway at this location if they wish to build nearly 3,000 dwelling units in South Maui. The road widening is a condition of rezoning that the Maui County Council placed upon starting the Wailea 670/Honua'ula Project and the Makena Resort Project.

This road widening is not needed under present traffic flows. The DOT planner stated at the Kihei meeting that if it were not for the private developments, this road project would not be considered by the State for at least 20 years. It is apparent that if HDOT itself were to spend any money on this project at this time, it would amount to an unlawful expenditure of public funds.

2. An EA/EIS that covers only the road widening project, and not the two development projects that it directly enables, would be meaningless. The EIS for Wailea 670/Honua'ula is 22 years old and the EIS for Makena Resort is 36 years old. Both of these outdated EISs need to be supplemented under HAR Sec. 11-200-26 and the recent Supreme Court ruling in Unite Here! Local 5 v. City & County of Honolulu, ("The Turtle Bay Case"), before any government agency approvals may take place. This would include any approval of the road widening project by the DOT.

3. Separate EISs for the proposed road widening and the two land development projects would be a violation of HAR 11-200- 7 prohibiting "segmenting" of projects by doing separate EISs, none of which show the true environmental effects of the total undertaking. Section 11-200-7 is as follows:

"§11-200-7 Multiple or Phased Applicant or Agency Actions
A group of actions proposed by an agency or an applicant shall be treated as a single action when:

A. The component actions are phases or increments of a larger total undertaking;
B. An individual project is a necessary precedent for a larger project;
C. An individual project represents a commitment to a larger project; or
D. The actions in question are essentially identical and a single statement will adequately address the impacts of each individual action and those of the group of actions as a whole.
[Eff 12/6/85; comp AUG 31 1996] (Auth: HRS §343-5, 343-6) (Imp: HRS §343-6)"

4. The comments on Page 75 of the DEA that "(N)o significant population changes are anticipated as a result of the proposed project", and at Page 32 that "the proposed action is not anticipated to have significant impacts on population" are falsehoods. The road widening will lead directly to the creation of neary 3,000 dwelling units in South Maui and the people, cars, and effluent that such development will bring.

5. The road design presented at the Kihei meeting indicated widening from two lanes to four lanes, plus sidewalks and bikepath, but no shoulders. This means that a disabled vehicle will have no way to get off the road, raising the prospect of cruel accidents, traffic gridlock, and liability on the part of the State for negligent highway design. It was explained at the Kihei meeting that the proponents do not want to make the road wide enough for shoulders because it would entail the acquisition of private property along the existing right-of-way, and they do not wish to spend the money.

Please do not approve this project unless and until a legal and thorough EIS has been prepared and accepted, and a safe highway design has been proposed.

Very truly yours,

David Mogilefsky
2751 Kauhale Street
Kihei, Hawaii 96753

808-891-1602
mauisun@hawaiiantel.net



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1051

APR - 3 2012

Mr. David Mogilefsky
2751 Kauhale Street
Kihei, Hawaii 96753

Dear Mr. Mogilefsky:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments dated December 2, 2010, to the consulting firm of Munekiyo & Hiraga, Inc.

Before proceeding with our point-by-point responses to the comments provided, we believe it is beneficial to clarify and set proper context for the proposed highway widening action. The explanation which follows addresses issues relating to segmentation and cumulative impacts, which we agree, are important themes to address as part of the Chapter 343, Hawaii Revised Statutes (HRS) process.

The State of Hawaii, Department of Transportation's (HDOT) perspective however, differs in that we view the Pi'ilani Highway widening project as a stand-alone project, not a component of other proposed private development actions such as the Honua`ula project, Makena Resort project, or any other project occurring in the Kihei-Makena Community Plan region.

The fundamental premise for the HDOT, in undertaking all of its regional highway improvements projects, is that HDOT facilities improvements shall be based on sound planning and programming which considers opportunities, where available, for private-public partnerships. It is important to recognize that the Pi'ilani Highway Widening project is a part of our long range transportation plans, and not a component of any private development project which may contribute traffic to this important South Maui highway. For instance, if the HDOT did not have the planned widening project programmed, or if HDOT was not in a position to implement the widening project at this time, private development entities would then be obligated to identify and implement alternative solutions, independent of HDOT's capital improvements program and long range plans.

The improvements are the last segment of the widening of Pi'ilani Highway from Mokulele Highway to Wailea Ike Drive recommended in the long range transportation plans. As noted in

the traffic study the improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region.

With this in mind, the scope of Chapter 343, HRS EA for the Pi'ilani Highway widening project should not reach into the realm of projects being undertaken by others in the Kihei-Makena region. The connection between the Honua'ula and Makena projects, as you have noted, are the conditions requiring private entities to participate in cost sharing for the project. The HDOT views the conditions imposed as beneficial in establishing an alternative funding source to the State Transportation Improvement Program (STIP) through a private-public partnership, as the developers' contributions will help to mitigate impacts of not only their projects but anticipated growth within the Kihei-Makena region.

Importantly, this highway widening project would have proceeded irrespective of the zoning conditions, based on anticipated highway capacity constraints calculated. As a HDOT project implementing our long-range transportation plans, we do not believe that mitigative conditions imposed through the County land entitlement process are a basis for concluding that the Honua'ula and Makena Resort projects must be analyzed as part of the Chapter 343, HRS process. In particular, if a State and County traffic impact fee system was in place at the time the zoning conditions were imposed, our recommendation for the funding contribution conditions for the Honua'ula and Makena projects would not have been suggested as the cost of this regional improvement would have been borne by all development projects having potential trip contributions to Pi'ilani Highway.

To summarize, the HDOT has, throughout the State of Hawaii, regional transportation improvements scheduled or under construction, which are subject to similar circumstances. For the Lahaina Bypass project, as an example, we have suggested to discretionary authorities, that conditions of approval include participation in the construction of that regional roadway project. It has been our practice, in the absence of an implementable traffic impact fee system, to ask developers to participate in such improvements as a means of achieving a fair-share cost objective which is viewed as an appropriate means of project financing while recognizing potential mitigation value for projects proposed in the region. Thus, as a matter of public policy, the HDOT believes that the conditions imposed on projects for roadway participation are appropriate, and should not be considered a basis for defining segmentation or cumulative impact criteria pursuant to Chapter 343, HRS. In this instance, therefore, the scope of the Chapter 343, HRS EA for Pi'ilani Highway should not include the development proposals and related impacts of the Honua'ula, Makena Resort, or any other development proposal which may be asked to participate in the roadway widening project.

To address specific concerns raised in your comments, the following responses are provided:

1. **Project Need:** *This road widening is not needed under present traffic flows.*





**Response:** As stated previously, we are aware that in response to the HDOT's recommendation, the County of Maui required private developers to widen Pi'ilani Highway as a condition of zoning. However, the widening of Pi'ilani Highway is part of the long range transportation plans of HDOT and the County of Maui (County), as identified in the following studies:

a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
c. Kihei-Makena Community Plan, 1998 (County); and
d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, the traffic report analyzed the expected traffic growth in the Kihei-Makena region and confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016.

To clarify comments made at the community meeting, the state-wide competition for limited state funding through the STIP is an annual challenge for HDOT. As stated previously, in the absence of an implementable traffic impact fee system, asking developers to participate in roadway improvements as a fair-share cost objective is viewed as an appropriate means of project financing. Without such an option it may take 20 years before this project can be included in the STIP.

2. **Supplemental EIS:** *The EIS for Wailea 670/Honua'ula is 22 years old and the EIS for Makena Resort is 36 years old. Both of these outdated EISs need to be supplemented under HAR Sec. 11-200-26 and the recent Supreme Court ruling in Unite Here! Local 5 v. City & County of Honolulu, ("The Turtle Bay Case") before any government agency approvals may take place. This would include any approval of the road widening project by the DOT.*

**Response:** The Hawaii Supreme Court ruling in *Unite Here! Local 5 v. City & County of Honolulu* does not apply to the Pi'ilani Highway Widening project, as the facts associated with the Pi'ilani Highway Widening project differ from the Turtle Bay case. In the case of Turtle Bay, the City and County of Honolulu relied on the 1985 Environmental Impact Statement

(EIS) and did not require preparation of a Supplemental EIS to address significant changes to the anticipated environmental impacts resulting from the changes in the region over time. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is being reviewed under a new Environmental Assessment (EA) and does not rely on the previous EAs for Pi'ilani Highway.

3. **SEGMENTATION:** *Separate EISs for the proposed road widening and the two land development projects would be a violation of HAR 11-200-7 prohibiting "segmenting" of projects by doing separate EISs, none of which show the true environmental effects of the total undertaking.*

**Response:** As noted at the onset of this letter, we view the issue of segmentation differently from that represented by the comments provided. To recap, all development projects in the South Maui region and beyond contribute to vehicle trips within the Pi'ilani Highway corridor. As a governmental agency we believe it is fair and appropriate to seek participation from projects to support the implementation of regional roadway improvements. We do not believe that participation in a regional roadway improvement implies the need for the HDOT to include the impacts of the individual developments themselves. Such an approach would make the public infrastructure and facilities development process unwieldy and beyond the scope and intent of Chapter 343, HRS. Therefore, just as there is no expectation that Chapter 343, HRS documents for a new public school address the direct impacts of those individual projects contributing to the development of a new school facility, there is no Chapter 343, HRS EA requirement for a roadway project to address the impacts of the individual projects contributing to the roadway improvement.

4. **Population:** *The comments on Page 75 of the DEA that "(N)o significant population changes are anticipated as a result of the proposed project", and at Page 32 that "the proposed action is not anticipated to have significant impacts on population" are falsehoods. The road widening will lead directly to the creation of neary 3,000 dwelling units in South Maui and the people, cars, and effluent that such development will bring.*

**Response:** As stated previously, the Pi'ilani Highway improvements are not sourced to the Honua'ula and Makena Resort projects. It is the implementation of the long range transportation plans of the HDOT and County that provides the basis for project need. These improvements will be required by 2016 in order to keep pace with population growth in the Kihei-Makena region even if Honua'ula is not built and there is no further expansion of Makena Resort.





As with other regional transportation improvements, the completion of the Pi'ilani Highway Widening project does serve as a mitigation measure for other private development actions in the Kihei-Makena region and, therefore, removes a potential impediment to development. The Final EA will, therefore, include additional analysis relating to the secondary impacts of project completion, referencing both the Honua'ula and Makena Resort projects.

Population growth will result from the land use decisions of the Land Use Commission and County of Maui and other factors which designate future urban growth areas and not because the roadway will be widened. The zoning conditions placed on Honua'ula for its 1,400 units and Makena Resort for its additional 800 units by the County of Maui were to ensure that roadway infrastructure kept pace with the expected population growth in the Kihei-Makena region and to ensure these new developments did not create unacceptable traffic conditions.

5. **Highway Design:** *The road design presented at the Kihei meeting indicated widening from two lanes to four lanes, plus sidewalks and bikepath, but no shoulders. This means that a disabled vehicle will have no way to get off road.*

**Response:** The highway is classified as an "urban principal arterial" and the design meets the standards of the Federal Highway Administration and HDOT for this classification. For the occasional disabled vehicle on the highway, there will be at least one (1) travel lane open in which vehicles will be able to maneuver around the stalled vehicle until it can be towed away.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: STEVE MUTH Address: 3170 AKALA DR

Phone: 808-879-4403 Email: STEVEMUTH@HOTMAIL.COM

CELL: 808-298-4403

**Comments:**

OUR POOL IS ABOUT 15' FROM PROPERTY LINE & SITS ON BLUE ROCK.

WHO WOULD I CALL FOR DAMAGE TO POOL OR HOUSE. AND HOW WOULD ONE BE REIMBURSED FOR DAMAGES.

* WERE A LEGAL BED & BREAKFAST IF I HAVE GUEST COMPLAINTS OR CANCELLATIONS DUE TO CONSTRUCTION OF HWY. HOW WILL I BE REIMBURSED ??? FOR LOST INCOME... AND BAD REVIEWS.

WITH PAST PROJECTS IN WAILEA THE LARGE DUMP TRUCKS ALWAYS USE THERE AIR BREAKS WHILE APPROACHING MAPU & KILOHANA STOP LIGHT. COULD THIS BE ADDRESSED. THE SOUND ~~IS~~ INCREASES BETWEEN THE 17 FOOT ROCK WALLS ON THE PILANI.



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1052

APR - 3 2012

Mr. Steve Muth
3170 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Muth:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 1, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**COMPLAINTS AND DAMAGES:**

1. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**COMPENSATION:**

2. Although every effort will be made to include mitigation measures to address construction-related impacts we cannot establish a compensation program for such inconveniences or loss of rental income.

**AIR BRAKES:**

3. Regarding your concern associated with noise from the use of air brakes by large trucks, the Hawaii Department of Transportation will evaluate the possible installation of 'no engine breaking' signs along the highway.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: SONJA NOWAK Address: 3476 AKALA DR. A
MAUI MEADOWS, KIHEI, HI 96753

Phone: 891 1082 Email: SONJA NOWAK @ GMAIL. COM

**Comments:** MY PROPERTY is FACING PILANI HWY,
TMK: 2-1-013-005-0000. I ENJOY FULL OCEAN VIEW
FROM THE COTTAGE AND THE MAIN HOUSE.
I'M VERY CONCERNED ABOUT THE SOUND PANELS,
I DON'T WANT TO LOSE THE VIEW. ALSO, HOW SOLID
WILL THE RETAINING WALL BE? THERE ARE SOME
VERY BIG, HEAVY TRUCKS DRIVING ON THIS PORTION
OF THE PILANI HWY. WITH THE PLANNED DEVELOPMENT
OF HONUA'ULA THERE WILL BE EVEN MORE HEAVY
VEHICLES ON THIS SECTION OF PILANI HWY. THAT
MEANS SHAKING AND RATTLING THE ROCKS & SOIL
ALONG THE PILANI HWY.
PLEASE, AGAIN, I WANT NO SOUND WALLS ON
MY PROPERTY!
A RETAINING WALL DOESN'T SEEM SOLID ENOUGH
TO HOLD UP! I'M WORRIED ABOUT STRUCTURAL DAMAGE
TO MY HOMES AND PROPERTY DUE TO THE SHAKING
GROUND, TREES TOPPING, SHAKING WINDOWS, VIBRATING
DECEMBER 1, 2010 STRUCTURES. WHO IS LIABLE FOR
ANY DAMAGES?

P.S.: COULD THE RESIDENTS LIVING ALONG THE PILANI RECEIVE A PERSONAL PROGRESS REPORT VIA E-MAIL?
ALSO: THE POWER LINES SHOULD BE PUT UNDERGROUND AT THIS TIME !!!

**From:** Sonja Nowak [mailto:sonjanowak@hawaii.rr.com]
**Sent:** Friday, December 03, 2010 12:29 PM
**To:** Colleen Suyama
**Cc:** sonjanowak@gmail.com
**Subject:** Re: Proposed Piilani Widening

Hi Colleen,

As an added note and comment to my letter below I'd like to propose a vote of all the homeowners DIRECTLY involved in the Piilani road widening. Just the guys right on on the highway, on Akala makai side! Let's see who likes this idea!!!

Let me know, aloha!

Sonja Nowak
---
e-mail: sonjanowak@gmail.com
tel: + 808-891-1082

**From:** Sonja Nowak
**Sent:** Friday, December 03, 2010 12:23 PM
**To:** colleen@mhplanning.com
**Cc:** sonjanowak@gmail.com
**Subject:** Proposed Piilani Widening

Aloha Colleen,

I attended the meeting on December 1, 2010 regarding the Piilani road widening.

Please note that I am fervently opposed to the widening of the Piilani highway! No satisfactory information and explanation was provided as a valid reason for it. Actually, a lot of it was omitted, such as the really explainable and "valid", greedy reason for it. See below.

http://hawaii.sierraclub.org/maui/Wailea670EISComments.html

One chapter reads:
This appears to be what is happening with a number of actions connected to the Honua'ula project. Widening of Piilani Hwy from Kilohana to Wailea Ike St. is a required condition of rezoning, as are improvements to Wailea Ike and other intersections. Environmental review for these actions has been done separately and is not included in any meaningful way in the project's DEIS.

Please inform me of any further development but know that I will NOT support the widening for such selfish corporate reasons.

Sonja Nowak
---
e-mail: sonjanowak@gmail.com
tel: + 808-891-1082



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1053

APR - 3 2012

Ms. Sonja Nowak
3476 Akala Drive A
Kihei, Hawaii 96753

Dear Ms. Nowak:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the community meeting on December 1, 2010, and your comments received at the meeting and by emails on December 3, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. In response to your comments, please be advised as follows:

**SOUND WALLS AND VIEWS:**

1. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   Your property did not meet the criteria of HDOT's Policy, therefore, views from your property will not be obstructed by a sound wall.

**RETAINING WALL:**

2. The retaining walls required for the project will be designed by a licensed structural engineer.

**COMPLAINTS:**

3. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available

24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**PROGRESS REPORTS:**

4. Every effort will be made to inform the public of the progress of the project. In the Transportation Management Plan (TMP) for the project, the transportation coordinator will implement a public information and outreach program consisting of the following:

   a. Publicize construction schedules, roadway use, alternative routes, and alternative modes of transportation via a web site or written notice;

   b. Notify motorist of lane or road closures giving them time to plan ahead and use different routes;

   c. Establish a hotline for inquiries, construction activities and complaints;

   d. Conduct regular information meetings with surrounding neighborhoods;

   e. Coordinate delivery schedules and roadway construction schedules with other projects in the area;

   f. Coordinate with unions and construction companies; and

   g. Consider a quarterly newsletter for the public.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

5. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**PROJECT NEED:**

6. The widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);





   c. Kihei-Makena Community Plan, 1998 (County); and

   d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**FUTURE CONSTRUCTION TRAFFIC:**

7. With regards to your concerns resulting from future construction traffic from the proposed highway widening and the Honua'ula project, both projects will implement a construction TMP to include the following strategies to reduce construction worker-related traffic which will be included in the EA:

   a. Hire a transportation coordinator to coordinate with contractors, administrators, employees, officials and the general public to implement transportation initiatives and programs; coordinate with construction managers and employees to establish work shifts during off-peak hours; and monitor surrounding residential areas to ensure construction workers are not parking in these areas;

   b. Off peak hour arrivals and departures of construction workers and suppliers;

   c. Implementation of ride sharing, car pooling and van pooling programs;

   d. Create park and ride facilities outside of the construction zone;

   e. Implement a guarantee ride home program to ensure workers a ride home for emergencies, sickness or unexpected situations in order to encourage use of car pooling programs;

f. Create employee parking areas; and

g. Develop an emergency evacuation plan for workers.

Further, to reduce the potential for rocks and soil falling on the highway, materials in construction vehicles will be appropriately covered, as required by law.

**ENVIRONMENTAL IMPACT STATEMENT:**

8. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: BRIAN OSTBERG Address: 3495 AKALA DR.

Phone: 214-5713 Email:

Comments: NO EIS? Shame on you!
Why is there nothing in the Maui News about this?
Building 2 more lanes & not burying the powerlines — not acceptable.
DOT calls $30 million in developer money a gift? no — its an investment.
so let them invest in the community.
How about a planted median they maintain?

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

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

IN REPLY REFER TO:

HWY-PA
2.1054

APR - 3 2012

Mr. Brian Ostberg
3495 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Ostberg:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 9, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEWS COVERAGE:**

2. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.





**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

3. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**PROJECT NEED:**

4. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)

   The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the EA for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

   Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**LANDSCAPING:**

5. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: ELIAS PACUBAS Address: 3120 AKALA DRIVE KIHEI, HI. 96753

Phone: 891-9253 Email: ASIAN GLASSMAUI@HAWAIIANTEL.NET

Comments: I WOULD REALY LIKE TO SEE A FULL DIVIDED ROAD, SEPARATING TRAFFIC GOING IN OPPOSITE DIRECTIONS, SIMILAR TO MOKULELE HWY. THIS DIVIDED ROADWAY SHOULD BE CARRIED ALL ALONG PIILANI TO AVOID HEAD ON COLLISIONS.
SOUND DEADENING AND RETAINING WALLS WILL BE GREATLY APPRECIATED.
CONTACT NUMBERS SHOULD BE MONITORED AT ALL HOURS, AND INSPECTIONS TO DAMAGED AREAS NEED TO BE DONE RIGHT AWAY.
NOTICE OF BLASTING SHOULD BE DONE.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1055

APR - 3 2012

Mr. Elias Pacubas
3120 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Pacubas:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**PROJECT DESIGN:**

1. An eight-foot wide median will be provided to separate traffic. Due to the highway right-of-way constraints and the adjacent developed properties we are unable to design a highway similar to that of Mokulele Highway.

**NOISE MITIGATION AND SOUND WALLS:**

2. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

**COMPLAINTS:**

3. A pre-construction meeting with residents will be held to explain the contact information for complaints and protocol to be followed. There will be a single contact line available 24 hours a day, 7 days a week for all construction-related complaints. In addition, pre- and post-construction on and offsite conditions of properties will be documented. Any





claims for damages will be compared against the established record. All claims will be evaluated on their individual merit.

**BLASTING:**

4. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please do not hesitate to contact Ms. Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: Melanie Platt Address: 3516 Akala Dr, Kihei

Phone: 702-612-7322 Email: cynn3338@yahoo.com

Comments: Don't even think we'll put up with NO E.I.S.
Vague promises + obvious lies will not cut it.
Even without newspaper coverage there is growing awareness of what's going on and what's being covered up.

202

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1056

APR - 3 2012

Ms. Melanie Platt
3516 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Platt:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEWS COVERAGE:**

2. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

203

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 0 6 2010

## COMMENT FORM

### PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE DRIVE)

Name: Karen Riddick
Bob Talcott

Home Address: 1639 Halama Street, Kihei
Property Address: 384 Pualoa Nani, Wailea

Phone: (909) 557-0150

E-Mail: sandyfeetinc@hawaii.rr.com

**Comments:**

After attending the community meeting at the Kihei Elementary School on December 1st, we are deeply concerned about the negative impact that the widening project of the Pi'ilani Highway will create.

First, it is our understanding that any alternative to the proposed widening is not fiscally feasible. Of course, we plea to the goodness of the developers of the Wailea Project to revisit ALL available alternatives before settling on this disrupting option. Yes, land acquisition is a timely and costly process; however, looking into alternative routes that would not disrupt so many lives should be considered.

As a property owner that is immediately adjacent to the Pi'ilani Highway, we are requesting that the following issues be resolved prior to any commencement of this project.

1. We are not satisfied with the creation of additional noise that the widening project will cause. As an owner of a house that relies on natural ventilation, a deviation from the federal "noise threshold standards" should be addressed. An acceptable quality of life should not be made to tolerate noise that equates to attending a rock concert.

It is our understanding that $35,000 per lot has been allocated by the developer for a sound wall. We adamantly demand that a sound wall be constructed adjacent to our property. It is our understanding that the Wailea Community Association agrees and will support the construction on this sound wall. Without a sound wall,

our quality of life will be totally destroyed.

2. Unbearable noise for 8 hours a day, the unsettling feeling as blasting occurs, the constant hum of generators, the glare from construction lights, the agitation from the constant drilling, and the breathing problems associated with the dust...these were just a few of the voiced concerns. Community members described the "nightmare" that they endured during past freeway construction.

Subjecting a tenant to these unlivable conditions is inconceivable. It is apparent that we will lose rental income during the proposed 18 months of construction. Reliance of this income is crucial for our well being. We, therefore, propose that we reach a fiscal agreement (prior to construction) regarding compensation for any rental loss.

3. Since trees act as a sound barrier, we request that mature trees and substantial shrubbery be added to the median strip. We believe that the addition of landscaping will encourage speed reduction. The illusion of entering an urban area versus speeding down a freeway will hopefully be accomplished with this scenic median. It is our hope that the developers of this project will finance this much-needed improvement.

4. Most importantly, we believe the following actions need to be taken and concerns need to be addressed prior to any approval of the commencement of this project: (a) a full EIS be completed; (b) all promises by the DOT be included as conditions of the project and project permits; (c) the project must include secondary impacts; and (d) the project constitutes a segmenting violation.

We await your response to our concerns.



NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1057

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

APR - 3 2012

Ms. Karen Riddick
Mr. Bob Talcott
1639 Halama Street
Kihei, Hawaii 96753

Dear Ms. Riddick and Mr. Talcott:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the community meeting on December 1, 2010, and your comments received on December 6, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc.

Pages 69 through 70 of the Draft Environmental Assessment (EA) identified the alternatives considered. The preferred alternative of the Hawaii Department of Transportation (HDOT) is widening of Pi'ilani Highway within the existing right-of-way. Overall, it was deemed to be the least disruptive to property owners in the area as well as meeting the objective to complete the roadway improvements by 2016 when population growth in Kihei will warrant the improvements. Due to the developed condition of the Maui Meadows subdivision on the mauka side of the highway any re-alignment of the highway will need to occur on the makai side. This will require land acquisition from the makai property owners and shifts the impacts of the highway construction to the makai property owners.

We offer the following information, in response to your comments:

**NOISE MITIGATION:**

1. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regard to your request for a sound wall, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

**CONSTRUCTION MITIGATION AND COMPENSATION:**

2. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

   c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

   Although every effort will be made to minimize construction-related impacts we are unable to establish a compensation program for your inconveniences or loss of your rental income.

**LANDSCAPING:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**ENVIRONMENTAL IMPACT STATEMENT:**

4. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.





**CONDITIONS:**

5. The HDOT is limited in its ability to set conditions; however, every effort will be taken to ensure that representations made in the EA are fulfilled.

**SEGMENTATION:**

6. Although development in the Kihei-Makena region may benefit from the widening of Pi'ilani Highway, the widening remains a HDOT project separate from these other developments. The HDOT and the developers have a common goal to build Pi'ilani Highway as a four-lane arterial roadway and completing the last segment of the highway. The widening of Pi'ilani Highway is a long standing transportation need identified in the various transportation plans of the HDOT and County of Maui. The highway widening is being designed in accordance with FHWA and HDOT requirements. The opportunity to utilize private funding with the HDOT overseeing the design, permitting and construction will allow the improvements to be built prior to 2016 when the roadway improvements will be required to accommodate the growth rate of the Kihei region. The use of state lands triggers agency compliance with Chapter 343, HRS, and is being initiated precedent to development.

   Segmentation occurs when projects are broken into smaller segments of the same project to avoid the environmental review process and public scrutiny. This has not occurred in this situation. The project is undergoing the environmental review process similar to previous reviews for improvements to Pi'ilani Highway and the public has been given the opportunity to comment on the project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: HUGH RILEY Address: 3449 AKALA

Phone: 283-7360 Email: hugh.hoke@gmail.

**Comments:** COMMUNITY IS VERY UPSET!
WE WANT A IV EIS.
WE WANT POWERLINES BURIED
NOT 4 LANES!



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1058

APR - 3 2012

Mr. Hugh Riley
3449 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Riley:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Mr. Hugh Riley
Page 2
APR - 3 2012

HWY-PA
2.1058

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: JOHN ROGERS Address: 35 LUANAI'KI Place Kihei 96753

Phone: 633-4205 Email: M00050@AOL.COM

**Comments:**

DO a FULL - EIS
NO WIDENING -
NO DEVELOPMENT
TOO MANY HOUSES Empty & in FORECLOSURE - ALREADY - NOW!
NO MORE Empty Houses in KIHEI
THEY ARE A PUBLIC DANGER

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1059

APR - 3 2012

Mr. John Rogers
35 Luanaiki Place
Kihei, Hawaii 96753

Dear Mr. Rogers:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

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**PROJECT NEED:**

2. For your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)





The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the EA for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

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Name: Melinda Roth Address: 3464 Akala Dr. Kihei, HI

Phone: _____ Email: hermes315@msn.com

**Comments:** Need environmental assessment for flood. Need to establish buffer zone for sand/runoff. EA not adequate



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1060

APR - 3 2012

Ms. Melinda Roth
3464 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Roth:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**DRAINAGE:**

1. A drainage report was prepared for the project and is included as Appendix "J" of the Draft Environmental Assessment (EA). According to the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**BUFFER ZONE:**

2. As discussed above, drainage is being accommodated with the proposed construction of surface and subsurface retention basins within the highway right-of-way (ROW). The proposed improvements are located in the existing ROW adjacent to unimproved land. As such, drainage buffer zones will not be required. In response to your comment pertaining to sand, the project is located a significant distance from the nearest sand resource which is the Kihei-Wailea shoreline. As such, a buffer zone for sand is not considered to be appropriate in this instance.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



**From:** Dick Sargent [mailto:dickj@aloha.net]
**Sent:** Friday, December 03, 2010 5:09 PM
**To:** General eMail
**Subject:** COMMENT Planned highway expansion in So. Maui

Just one question.....what are these developers getting in return for this "freebie"? Aloha, Dick

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1061

APR - 3 2012

*(via e-mail dickj@aloha.net)*
Mr. Dick Sargeant

Dear Mr. Sargeant:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your email comment received on December 3, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information, in response to your comments:

The department has not granted any compensation to the developers for their design and construction of the proposed improvements to Pi'ilani Highway. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

Your comment will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 10 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Janet Schoenhaus Address: 101 E. Waipuilani Rd

Phone: 2980092 Email:

**Comments:** Between the vog & the sugar cane toxic smoke, it seems important for the aina to keep it as good in quality of air as possible.

There's a tipping point. You build & build & the purity of the air is compromised. Soon all the children & seniors with chronic lung problems will die because you went past the place where the air is breathable & ok to needing masks for some to deal with the carbon monoxide.

This wearing of masks will not look so good to all of the advertisements, to the public relations.

So many developments have so many empty places.

Don't make native Hawaiians rollover in their graves more than they already are.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1062

APR - 3 2012

Ms. Janet Schoenhaus
101 E. Waipuilani Road
Kihei, Hawaii 96753

Dear Ms. Schoenhaus:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 10, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**AIR QUALITY:**

An air quality study identified as Appendix "E" in the Draft Environmental Assessment (EA) was prepared in accordance with Federal and State standards. The study addresses short-term or temporary construction-related impacts and long-term or operational related impacts of the highway. Temporary air quality impacts resulting from construction are proposed to be mitigated through Best Management Practices required by the County of Maui and State of Hawaii. These include actions such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens.

Further, the study indicated that with the roadway improvement air pollution emissions from vehicles in the project area is expected to result in a reduction due to the improved traffic flow and a reduction of vehicles idling at the roadway intersections.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 08 2010

**From:** Steve and Jo [mailto:josteve2002@yahoo.com]
**Sent:** Tuesday, December 07, 2010 6:28 PM
**To:** General eMail
**Subject:** Sound Barrier

Please consider putting up a sound barrier on the Piilani highway from Keonakai road south as part of this expansion. The increased traffic along this highway has significantly raised sound and dust levels generated by highway traffic. If not the entire lenght at least the areas where housing is closest to the highway.

Steve Schroeder, Kihei

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1063

APR - 3 2012

Mr. Steve Schroeder
2817 Panepoo Street
Kihei, Hawaii 96753

Dear Mr. Schroeder:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your email correspondence dated on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**NOISE MITIGATION AND SOUND WALLS:**

The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regards to your request for a sound wall from Keonekai Road to Kilohana Drive, we unable to accommodate your request. Besides not meeting the criteria as provided in our Policy for installation of sound walls, your request is north of Kilohana Drive and outside of the project limits.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: CHERYL SNOW Address: 3182 AKALA

Phone: 209-499-56[illegible] Email:

Comments: I'm very ill & am unwilling to accept the noise & dirt that will arise from this.
The absence of an EIS smacks of collusion with big business.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1064

APR - 3 2012

Ms. Cheryl Snow
3182 Akala Drive
Kihei, Hawaii 96753

Dear Ms. Snow:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

We thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**HEALTH CONCERNS:**

1. We note your concerns regarding the impacts noise and dust may have on residents in the area. We realize temporary construction impacts from noise and dust will be experienced by nearby residents. As much as may be practicable, mitigation measures noted in the Draft Environmental Assessment (EA) will be implemented which hopefully will address the health concerns of residents.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the EA in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT 9may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Chris Stinger Address: 3200 AKALA Dr

Phone: 874.6069 Email:

**Comments:** I think we need more time and info, who was mailed the letter on 11/19/10. Why not cut into the vacant Wailea side?* will the telephone lines be put under ground?

How will my property be protected when Construction/blasting occurs.

We don't need sidewalks on Highway - there are no sidewalks on Piilani now!

No Median or sidewalk - Keep Piilani the same the whole length of Highway.

Noise walls for everyone, not only 3 properties



DEC 06 2010

December 2, 2010

Ms. Colleen Suyama
Munekiyo & Hiraga, Inc.
305 High St. #104
Wailuku, HI 96793

Re: Piilani Highway Road Widening Project

Dear Ms. Suyama,

I am a homeowner on Akala Drive in Maui Meadows that will be directly impacted by the Piilani Highway project. I attended the meeting on December 1, 2010 at the Kihei Elementary School and have some questions and concerns that I would like to have addressed.

It is my understanding that the Piilani Highway is to be widened from the current 38 feet to almost 80 feet wide to accommodate 2 lanes in each direction, 8-foot median, bike path and sidewalk. It is my understanding that the inflated cost of 30 million will be paid for by the developer for the Honua'ula project.

1. Can you please define "urban area" and give an example to another "urban area" on Maui other than Wailea – "required to have median and sidewalks". I feel the sidewalk and median are unnecessary and inflate the costs.
2. The property easement from my back property line to the road is less than 20 feet. Will they be excavation/blasting to my property line with no easement?
3. How will my property be protected from dust and blasting?
4. Why will the only 1st three properties from Mapu - South only be receiving sound barriers? I think everyone should have a sound barrier, twice as much traffic = twice as much road noise!
5. What is the timeframe of the project?

At this time, I am not for or against this road-widening project. I think both parties involved should have a compromise. I propose that the telephone lines and poles on the Wailea side of the road be removed and placed underground. We will suffer significant road noise in all of Maui Meadows, the removal of the electrical lines may help ease our distress.

Sincerely,
Chris Stinger
3200 Akala Drive
Kihei, Hi 96753

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
HWY-PA
2.1065

APR - 3 2012

Mr. Chris Stinger
3200 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Stinger:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments dated on December 2, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**REALIGN HIGHWAY:**

1. We have reviewed the alignment of the highway further makai, however, we are unable to do so since it will require land acquisition from the makai property owners, additional permitting requirements and will cause delays to the roadway construction.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

2. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**BLASTING:**

3. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**SIDEWALKS AND MEDIANS:**

4. The current Federal Highways Administration (FHWA) and Hawaii Department of Transportation (HDOT) design standards for urban arterial roadways require sidewalks,





medians and bike lanes. As such, we are unable to accommodate your request to delete the sidewalks and medians in the project.

**SOUNDWALLS:**

5. The FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

   With regard to your request for a sound wall, we are unable to accommodate your request since it does not meet the criteria as provided in our Policy for installation of sound walls.

In response to your specific questions in your letter, we offer the following information:

1. *Can you please define "urban areas" and give an example to another "urban area" in Maui other than Wailea – "required to have median and sidewalks". I feel the sidewalk and median are unnecessary and inflate the costs.*

   The State Land Use Commission in establishing the various land use districts define urban areas as being generally characterized as "city-like concentrations of people, structures, streets, urban level of services and other related land uses." In addition, to the Kihei area the towns of Wailuku and Kahului would be defined as urban areas. As requested, in the Wailuku-Kahului area the State owned highway, Kaahumanu Avenue, is an urban roadway with landscaped medians, sidewalks and bike lanes on both sides of the highway. The HDOT's design criteria for state roadways include provisions for medians, sidewalks and bike lanes.

2. *The property easement from my back property line to the road is less that 20 feet. Will they be excavation/blasting to my property line with no easement?*

   All work is proposed to be conducted within the State right-of-way and no easements are required. When construction plans are developed in the next phase of the project we will have a better understanding of the excavation and areas where blasting may be necessary.

3. *How will my property be protected from dust and blasting?*

   The following mitigation measures are proposed to address dust and blasting:

   **Dust:** Construction-related impacts from dust will be addressed by Best Management Practices (BMPs) required by the County of Maui and State of Hawaii. BMPs such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

**Blasting:** As stated previously, due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

4. *Why will the only 1st three properties from Mapu – South only be receiving sound barriers? I think everyone should have a sound barrier, twice as much traffic = twice as much road noise!*

As stated previously, the FHWA Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

With regard to your request that everyone should have a sound barrier, we are unable to accommodate your request since it does not meet the criteria as provided in our policy for installation of sound walls.

*What is the timeframe of the project?*

Once construction is initiated and there are no unforeseen delays it is anticipated to take approximately 18 months to complete. Initiation of construction is anticipated to start in early 2012.

Your comments will be included in the Final Environmental Assessment. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: CRAIG STRUBLE Address: 825 KUMULANI

Phone: 3445322 Email: _____

**Comments:** Hello? Yaire going to do what? Rip up the highway + not bury the powerlines.

I'm offended by 2 things. One, the obvious attempt to sweep this under the radar and two, the obvious complicity of the maui news in this effort.

The damage to property values during + after what you propose will be far from temporary.

People will lose honest businesses + nothing but lies, whitewashing + deceit are offered.

I think not doing an EIS is not only illegal I think it is evil. The entire neighborhood agrees. I have not talked to one person who is not demanding an EIS.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1066

APR - 3 2012

Mr. Craig Struble
825 Kumulani Drive
Kihei, Hawaii 96753

Dear Mr. Struble:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

1. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**NEWS COVERAGE:**

2. Pursuant to Chapter 343, Hawaii Revised Statutes, public notice of an Environmental Assessment (EA) is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the Hawaii Department of Transportation (HDOT) to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

**PROPERTY VALUES:**

3. Pi'ilani Highway is an urban arterial roadway master planned as an eventual four-lane roadway within the existing right-of-way. The proposed improvement between Kilohana





Drive and Wailea Ike Drive is the last segment of this four-lane roadway to be completed. Various State and County of Maui traffic impact studies conducted over the years and policy statements within the Kihei/Makena Community plan call for this widening project. We are not able to assess the impact, if any, to your or anyone else's property values as a result of the implementation of these studies or the community plan.

**ENVIRONMENTAL IMPACT STATEMENT:**

4. As the Accepting Authority, the HDOT will evaluate the EA in accordance with the requirements of Chapter 343, HRS in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

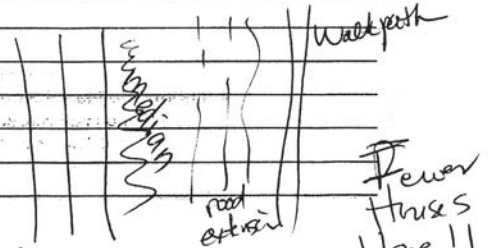
Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Aurthur Swapaia Address: 3340 Akala Drive
Kihei, Hawaii 96753

Phone: 269-0600 Email: N/A

**Comments:** — When i was 2 years old i remember going to my grandma's house for noon naps because the road constnstion was so loud for a while by my house. Now it is going to happen again. Just
— I would like a noise barrier to be put up and some nice trees planted for future traffic noise
— Please make the walkway and road extension on the Ocean side Makai & not Mauka side Mountain Side




Power Lines Here!!

236

DEC 08 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

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Name: Richard Swapaia Address: 3340 Akala Drive
Kihei, Maui, HI 96753.

Phone: 879-9189 Email: kulakeaua@Hawaiian Tel. net

**Comments:** My concern is why there has not been an E.I.S. Done for this Highway Project!!
Remember what happened to the Superferry ?!?!

This project is going ahead too fast and will probably Run into Problems.

Please bury the Power Lines leave the 2 lanes as are and only extend on highway Side facing Makai or the ocean.

Make sure that there are Highway Noise buffers & Native Hawaiian trees planted in Median.

Mahalo

237

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1068

APR - 3 2012

Messrs. Aurthur and Richard Suapaia
3340 Akala Drive
Kihei, Hawaii 96753

Dear Messrs. Suapaia:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**NEED FOR PROJECT:**

2. The widening of Pi'ilani Highway has been part of the long range transportation plans of the HDOT and County of Maui (County), as identified in the following studies:

   a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
   b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
   c. Kihei-Makena Community Plan, 1998 (County); and
   d. Kihei Traffic Master Plan Study, September 2003 (County)





The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the EA for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

3. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**REALIGN HIGHWAY:**

4. We have reviewed the alignment of the highway further makai, however, we are unable to do so since it will require land acquisition from the makai property owners, additional permitting requirements and will cause delays to the roadway construction.

**NOISE MITIGATION AND SOUND WALLS:**

5. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls. Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

**CONSTRUCTION RELATED MITIGATION MEASURES:**

6. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**PROJECT DESIGN:**

7. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, landscaping has not been incorporated in the project plans.

8. The current FHWA and HDOT design standards for urban arterial roadways require sidewalks, medians and bike lanes. As such, we are unable to accommodate your request to delete the sidewalks and medians in the project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Rachelle Swink Address: 75 Halili Lane # 9f

Phone: 344-5158 Email: rachelleswink@gmail.com

**Comments:** Aloha,
i think that they should not build in Makena it will ruin our land and our native plants & fauna. Makena is a place for families to come together and hang out to get away from society. Makena is not for building. Makena is one of the only places that is left on Maui. One Oahu is enough.

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1069

APR - 3 2012

Ms. Rachelle Swink
75 Halili Lane, #9F
Kihei, Hawaii 96753

Dear Ms. Swink:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting. We note your opposition to development in Makena. However, for your information, the widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
c. Kihei-Makena Community Plan, 1998 (County); and
d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.





Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 0 6 2010

December 3rd, 2010

Ms. Colleen Suyama
Munekiyo and Hiraga Inc.
305 High St #104
Wailuku, Hi. 96793

Re: Piilani Road Widening

Aloha Ms. Suyama,

I am a home/business owner located at 3170 Akala Dr. in Maui Meadows. I am concerned that I will be directly impacted by the widening of the Piilani Hwy. While I understand the need to widen the Hwy, I would like the environmental assessment to address my concerns.

I have a legal, licensed B&B located directly mauka of the Piilani Hwy. If you look at the map that was provided at the public information meeting on Dec 1st at the Kihei school, my property is the closest to the widening project. My swimming pool sits just 15 feet from the back property line. I am very worried about damage to my property as a result of construction. My pool sits directly on a blue rock vein. When there was blasting at Kanani Wailea and Wailea Papali, my home and pool shook. I can only imagine what will happen when they are blasting 15 feet from my pool. I request that representatives of the contractor come by and verify the condition of my pool prior to any blasting and accept liability for any damages resulting from blasting.

My home is located about 17 feet above the Piilani Hwy. As things are today, I can hear some traffic noise from the highway. However, I am concerned that the traffic noise will only get worse when the Hwy is widened. Our B&B is known for the view and the peaceful tranquility of our pool, hot tub and gardens. Additional traffic noise will adversely affect my business.

My biggest concern is for what is going to happen during construction? Will my view be blocked by a dust fence? Will the construction noise and dust stop anyone from having quiet enjoyment of the hot tub, pool and gardens? I realize the construction will not go on forever but the impression my guest have of my B&B will go on forever! If conditions during construction are such that my guests cannot find peace and quiet, they may write negative reviews on numerous travel websites. This may affect my business for many years to come.

Will there be any funds set aside for these types of damages? Not only the physical damages, but long term damages from a ruined reputation that could last a very long time. If I have to relocate guests due to excessive construction noise and dust, who will pay these expenses?



One solution might be to buy out my property while construction is going on. I would not expect the contractor to buy out the whole property for the entire 18 months the project is expected to go on, maybe only during the period when construction is taking place adjacent to my property.

Another mitigation to limit possible damage to our pool would be to take land on the makai side of the Piilani Hwy. This was brought up at the information meeting on Dec 1st. One of the gentlemen at the meeting said this might be a possibility. He mentioned that at this point of the Hwy, there might be enough land to bend the Hwy a little to avoid blasting near my pool. If this is a possibility, I wish you would consider this.

The widening of the Hwy will provide a significant benefit to the developers and the South Maui Community as a whole but we will be stuck with more noise, dust and pollution, especially those of us whose property backs up to the Hwy. Those of us most affected, should be duly compensated for our real financial losses and for the nuisances created by our loss of peaceful homes.

Another concern is the use of air brakes by the large trucks on the Hwy. As a result of the widening, we will have many more trucks driving on the Hwy. These trucks use their air brakes when they see the lights at Mapu turn red. This is an extremely loud noise that could easily be avoided by posting no engine breaking signs along the Hwy. Is this something you would be willing to do?

Maybe as a thank you for the inconvenience and property devaluation, we could get the contractor to bury the MECO power lines on the makai side of the Piilani. This would improve our view and possibly offset our lost property value as a result of the increased noise, dust and pollution from this project.

Please contact me if you have any questions. I would appreciate it if you would inform me when the final draft EA is available.

Thank you very much for your time!

Aloha,

Mark Warner
3170 Akala Dr.
Kihei, HI. 96753
808-298-4403

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1070

APR - 3 2012

Mr. Mark Warner
3170 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Warner:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010, community meeting and your comments received on December 3, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**SWIMMING POOL:**

1. The contractor will be informed of the location of your swimming pool. The contractor will contact you prior to construction to document pre- and post-construction conditions on your property. Any claims for damages will be compared against the established record and will be evaluated on their individual merit.

**BLASTING:**

2. The existing geologic conditions may allow the contractor to utilize construction equipment to remove the rock. However, blasting may be necessary for the project. When blasting is necessary, the contractor will notify the Homeowners Associations and nearby property owners of the date and time blasting will occur. Further, noise associated with construction activities will comply with the Department of Health noise regulations.

**NOISE:**

3. The U.S. Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and Hawaii Department of Transportation (HDOT) noise abatement criteria were used to evaluate noise impacts from the project. The HDOT has a Policy, applicable to all State roadways, on reasonable noise abatement which is limited to providing sound walls.





Based on this Policy, three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement.

**CONSTRUCTION FENCING:**

4. Until the construction plans are finalized we are unable to address your comment regarding the location of dust fencing in relation to your property boundary. However, if necessary, the contractor will work with you regarding the placement of the dust fencing along your property boundary.

**CONSTRUCTION IMPACTS:**

5. As stated in your letter, the improvements will provide a significant benefit to the South Maui Community as a whole. Unfortunately, due to this public benefit you will experience temporary construction-related impacts when construction occurs near your property. As much as may be practicable, we will coordinate the construction schedule to be the least disruptive to you and ask for your understanding. For your specific situation, we cannot determine at this time whether construction noise and dust will prevent the use of your outdoor amenities. However, the following mitigation measures to minimize construction-related impacts will be included in the Environmental Assessment (EA):

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

   c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**COMPENSATION:**

6. Although every effort will be made to include mitigation measures to address construction-related impacts we cannot establish a compensation program for such inconveniences or loss of rental income.

APR - 3 2012

**REALIGN HIGHWAY:**

7. We have reviewed the alignment of the highway further makai, however, we are unable to do so since it will require land acquisition from the makai property owners, additional permitting requirements and will cause delays to the roadway construction.

**AIR BRAKES:**

8. Regarding your concern associated with noise from the use of air brakes by large trucks, the HDOT will evaluate the possible installation of 'no engine breaking' signs along the highway.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

9. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: Mark Wayne Address: 1993 S Kihei #607
Kinei Hi. 96153

Phone: 891 9010 Email: _____

**Comments:**

If developers want to pay for widening the highway let them bury the power lines.

This highway is no gift. Let them do something for the community. Remove the unsightly lines + poles which fall in the wind.

Where is the environmental impact statement?

What's with a concrete median? Ever hear of a tree? They have leaves.

No news coverage reeks of a cover up to me. Are we sliding this under the radar? What do you think?

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1071

APR - 3 2012

Mr. Mark Wayne
1993 S. Kihei Road, #607
Kihei, Hawaii 96753

Dear Mr. Wayne:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

1. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

**ENVIRONMENTAL IMPACT STATEMENT:**

2. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.





**LANDSCAPING:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

**NEWS COVERAGE:**

4. Pursuant to Chapter 343, HRS, public notice of an EA is made through publication of the assessment in the Environmental Notice published by the Office of Environmental Quality Control. As required, the Draft EA was published in the October 23, 2010 Environmental Notice. Although not required, every effort was made by the HDOT to notify the public of the highway project through the community meeting held on December 1, 2010. Notices to property owners adjacent to the highway and the various homeowners associations were provided by letter dated November 15, 2010. In addition a public meeting notice published in the Maui News on November 23, 2010 informed the public of this project.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

DEC 07 2010

## COMMENT FORM

### PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: ROD YADAO Address: 3317 Akala Dr Kihei 96753

Phone: _____ Email: _____

Comments: I have 4 children at home am concerned about the noise & dust construction will cause, But of paramount importance is the EIS I hear rumors you don't want to do. We had neighborhood flooding 3-4' deep. We need to know that drainage issues have been adequately addressed in the event of another deluge.

Not burying powerlines when the highway is widened is an issue for all of us who will suffer the inconvenience of construction.

If the developer will not foot the bill let DOT or MECO split it.

Also the issue of pollution + noise needs to be addressed. Studies need to reflect actual speeds not posted ones.

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NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1072

APR - 3 2012

Mr. Rod Yadao
3317 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Yadao:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 7, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**ENVIRONMENTAL IMPACT STATEMENT:**

1. As the Accepting Authority, the Hawaii Department of Transportation (HDOT) will evaluate the Environmental Assessment (EA) in accordance with the requirements of Chapter 343, Hawaii Revised Statutes in determining if an Environmental Impact Statement (EIS) is warranted.

   A Final EA will be prepared and transmitted to the HDOT for determination. The HDOT may determine that all environmental issues have been adequately addressed and issue a Finding of No Significant Impact and approve the Final EA or may determine that there are significant impacts and issue a notice to prepare an EIS.

**DRAINAGE:**

2. A drainage report was prepared for the project and is included as Appendix "J" of the Draft EA. As stated in the drainage report, the increase in stormwater runoff from the highway improvements will be entirely retained in the proposed surface and subsurface retention basins creating no increase in stormwater runoff into the existing drainageways. Further, the retention basins will allow sediments and pollutants to settle, creating no new impacts to nearshore waters.

**MAUI ELECTRIC COMPANY, LTD. (MECO) UTILITY LINES:**

3. Construction of underground utilities will increase construction impacts on adjacent property owners due to necessary excavation and trenching work requiring additional construction time. Furthermore, it would change the design criteria for the project, resulting in increased impacts on adjacent properties. As such, the current project design calls for overhead utilities.

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**CONSTRUCTION MITIGATION MEASURES:**

4. We recognize that there will be temporary construction-related inconveniences during the estimated 18-month construction period and ask for your understanding. With regards to your comments, the following mitigation measures will be included in the Final EA:

   a. Due to existing geologic conditions, minimal blasting is anticipated. The major rock removal will utilize construction equipment as much as possible. If blasting is deemed necessary, blasting activities will be kept to a minimum.

   b. Best Management Practices such as frequent watering, limiting areas disturbed, applying soil stabilizers, mulching, and wind screens shall be utilized for dust control.

   c. Work will be limited to Monday through Friday during daylight hours between 7:00 a.m. to 3:30 p.m., unless the County of Maui requires work, such as those involving connections to County infrastructure be done at other designated times. If infrastructure-related night work is required, measures shall be taken to reduce noise from generators and light spillage onto neighboring properties.

**NOISE STUDY:**

5. The noise study included as Appendix "F" of the Draft EA is based on the Federal Highway Administration (FHWA) Traffic Noise Model and the FHWA and HDOT noise abatement criteria. The study took into consideration that motorist do not drive at the posted speed limit and adjusted the speeds upward to 50 miles per hour (mph) for southbound traffic and 55 mph for northbound traffic.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.





**From:** mauiglenn@gmail.com [mailto:mauiglenn@gmail.com]
**Sent:** Wednesday, December 08, 2010 3:16 PM
**To:** Colleen Suyama
**Subject:** Piilani Highway Widening

Dear Ms. Suyama:

I am writing to express my opinion, as a resident of Kanani Wailea (one of the affected neighborhoods), on the proposed widening of Piilani Highway.

First off, I am opposed to widening of the highway and further opposed to the requirement of having the Developer pay for the entire cost of the widening. This does not serve the interest of the future homeowners of Honua Ula as any cost incurred in the widening will be passed on to the future homeowners.

However as this was a condition of the development moving forward, I would submit that the highway not include a median strip nor sidewalks. This serves no purpose other than an outdated transportation policy and waste of money. No one will benefit from these two requirements put on by Government.

In relation to the "sound walls" along the affected neighborhood (Kanani at Wailea) I would expect that the design standards meet the Wailea building specifications and further they be of natural materials (not manufactured like the ones in Lahaina). Further the sound walls should be of a height that significantly reduces the noise and not create a hollowing effect.

Thank you for the opportunity and look forward to a tasteful and sensible widening of Piilani Highway.

Sincerely,

Glenn H. Yamasaki

NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1073

APR - 3 2012

Mr. Glenn H. Yamasaki
119 Poailani Place
Kihei, Hawaii 96753

Dear Mr. Yamasaki:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for your comments received on December 8, 2010, submitted to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following for your information:

**PROJECT NEED:**

The widening of Pi'ilani Highway has been part of the long range transportation plans of the Hawaii Department of Transportation (HDOT) and County of Maui (County), as identified in the following studies:

a. Kihei Traffic Master Plan, October 1996 (HDOT and County);
b. County of Maui Long-Range Land Transportation Plan, February 1997 (HDOT and County);
c. Kihei-Makena Community Plan, 1998 (County); and
d. Kihei Traffic Master Plan Study, September 2003 (County)

The highway widening was identified as early as 1996 in the Kihei Traffic Master Plan. In order to meet the long range transportation plans, the Environmental Assessment (EA) for widening of Pi'ilani Highway is moving forward. The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive is the last segment of the highway to be completed.

Further, according to the traffic report included as Appendix "I" of the Draft EA, based on the expected growth rate consistent with the average annual rate of change used in the 2030 General Plan Update, the study confirmed the recommendations of the long range transportation plans that the Pi'ilani Highway improvements including the intersection improvements at the Pi'ilani Highway/Kilohana Drive/Mapu Place and Pi'ilani Highway/Okolani Drive/Mikioi Place, will be required to be in place by 2016. In order to keep pace with population growth, the funding of





this project by private entities is seen as an opportunity to meet a common community goal which is the widening of Pi'ilani Highway.

**SIDEWALKS AND MEDIANS:**

1. The current Federal Highways Administration (FHWA) and HDOT design standards for urban arterial roadways require sidewalks, medians and bike lanes. As such, we are unable to accommodate your request to delete the sidewalks and medians in the project.

**SOUND WALLS:**

2. Consideration will be given to a decorative sound wall meeting Wailea's building specifications, provided the design of the required sound walls meets FHWA and HDOT standards.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.

## COMMENT FORM

## PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DIRVE TO WAILEA IKE DRIVE)

Aloha! Welcome to the public meeting for the proposed Pi`ilani Highway Widening project. We encourage all interested individuals and organizations to comment on the project.

To submit this comment form at tonight's meeting, please deposit into the Comment Box. To submit this comment form by mail, please fold and staple, and affix proper postage (see reverse side for guide). We ask that written comments be submitted by December 8, 2010. For more information on the project, please contact Colleen Suyama at Munekiyo & Hiraga, Inc. by phone at (808) 244-2015, or by email at planning@mhplanning.com.

Name: ROBERT YAMAMOTO Address: 3066 AKALA DR.

Phone: 875-4678 Email: waileamaui@msn.com

**Comments:** WHAT WILL BE DONE TO ALLOW STORM WATER TO EXIT PROPERTIES ALONG MAUI MEADOWS. SUCH AS THE DECEMBER STORM THAT AFFECTED MAUI A FEW YEARS AGO. THE VOLUME OF STORM WATER EXITING MY PROPERTY FROM THE STORM WOULD FLOOD MY DWELLING ~~IF~~ IF A SOUND BARRIOR WALL WAS ERRECTED.

~~P~~ WHAT WILL BE DONE TO ERASE ROAD NOISE DURING EVENING HOURS ~~AFTER~~ LONG TERM. ARE TREES GOING TO BE PLANTED IN THE MEDIAN?



NEIL ABERCROMBIE
GOVERNOR

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

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

HWY-PA
2.1074

APR - 3 2012

Mr. Robert Yamamoto
3066 Akala Drive
Kihei, Hawaii 96753

Dear Mr. Yamamoto:

Subject: Pi'ilani Highway Widening Project
(Kilohana Drive to Wailea Ike Drive)
Wailea, Kihei, Maui, Hawaii

Thank you for attending the December 1, 2010 community meeting and for submitting your comments at the meeting to the consulting firm of Munekiyo & Hiraga, Inc. We offer the following information in response to your comments:

**DRAINAGE:**

1. A drainage report was prepared for the project and is included as Appendix "J" of the Draft Environmental Assessment (EA). As stated in the drainage report stormwater runoff from the mauka properties, including the Maui Meadows subdivisions, will continue to flow through the culverts under the highway. Three (3) properties at the Pi'ilani Highway/Kilohana Drive/Mapu Place intersection were identified as meeting the criteria for installation of sound walls to provide noise abatement. A retaining and sound wall is identified along your property boundary (TMK (2) 2-1-015-013). To address your concern regarding possible flooding of your dwelling, the engineering consultant for the project will work with you to mitigate drainage impacts to your property during development of the construction plans.

**LONG TERM NOISE:**

2. As stated previously, installation of a sound wall is proposed along your property boundary to provide noise abatement.

**LANDSCAPING IN MEDIAN:**

3. Due to the lack of a non-potable irrigation source in the area, traffic safety constraints in the existing right-of-way and long-term maintenance needs, a landscape median has not been incorporated in the project plans.

Your comments will be included in the Final EA. Your participation in the environmental review process is appreciated. If additional information or clarification is required, please contact Colleen Suyama of the consulting firm of Munekiyo & Hiraga, Inc. at 244-2015.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Charles Jencks, Honua'ula Partners, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A&B Wailea, LLC
Don Fujimoto, Keaka LLC
Colleen Suyama, Munekiyo & Hiraga, Inc.



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# XI. REFERENCES


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# VOLUME II OF II

# Final Environmental Assessment

## PI`ILANI HIGHWAY WIDENING PROJECT (KILOHANA DRIVE TO WAILEA IKE DRIVE)

**Prepared for:**

**Honua`ula Partners, LLC,**
**A&B Wailea LLC,**
**Keaka LLC, and ATC Makena Holdings LLC**

**for the**

**Agency/Accepting Authority:**

**State of Hawaii ,**
**Department of Transportation**

**May 2012**

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MUNEKIYO HIRAGA, INC.

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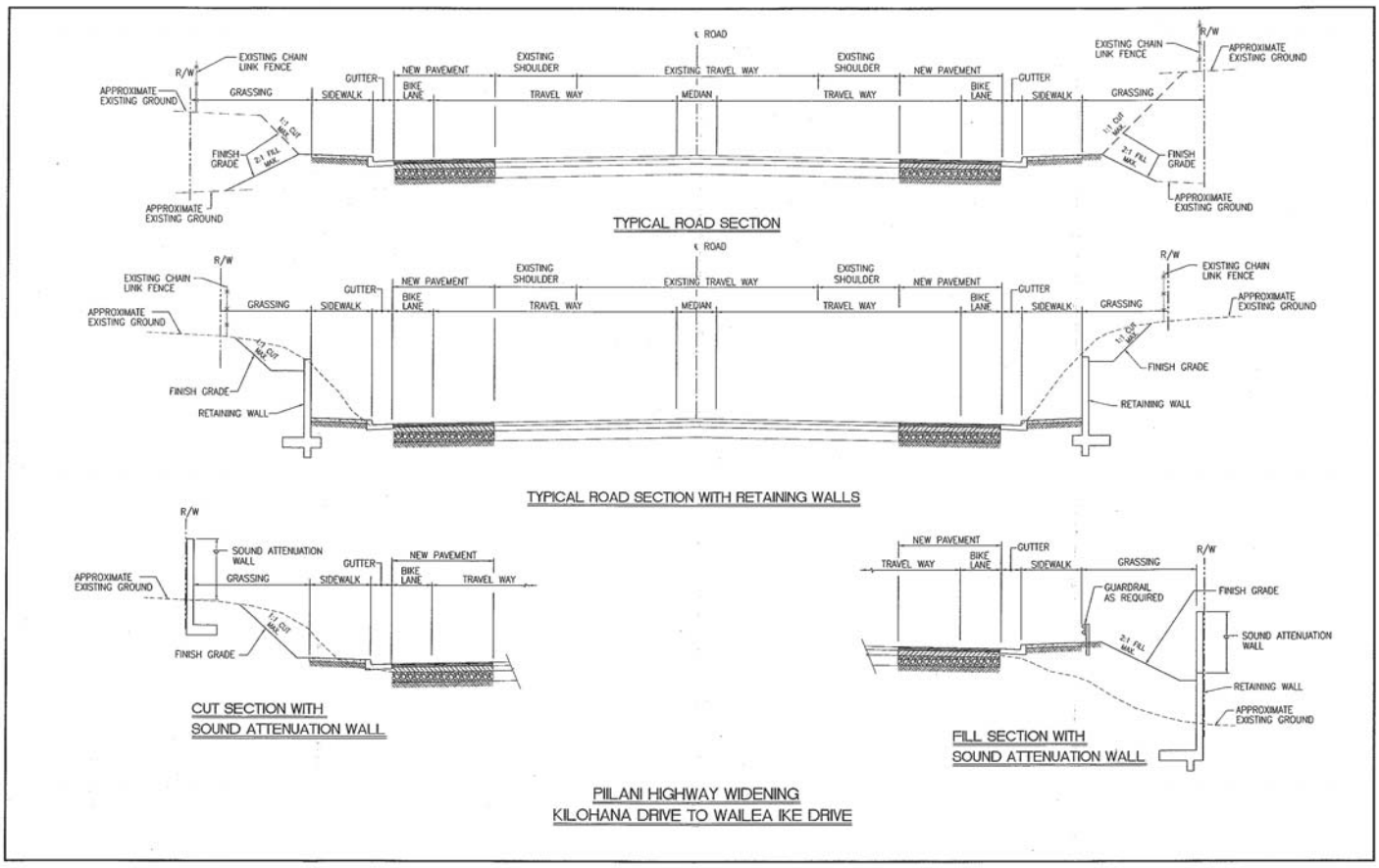
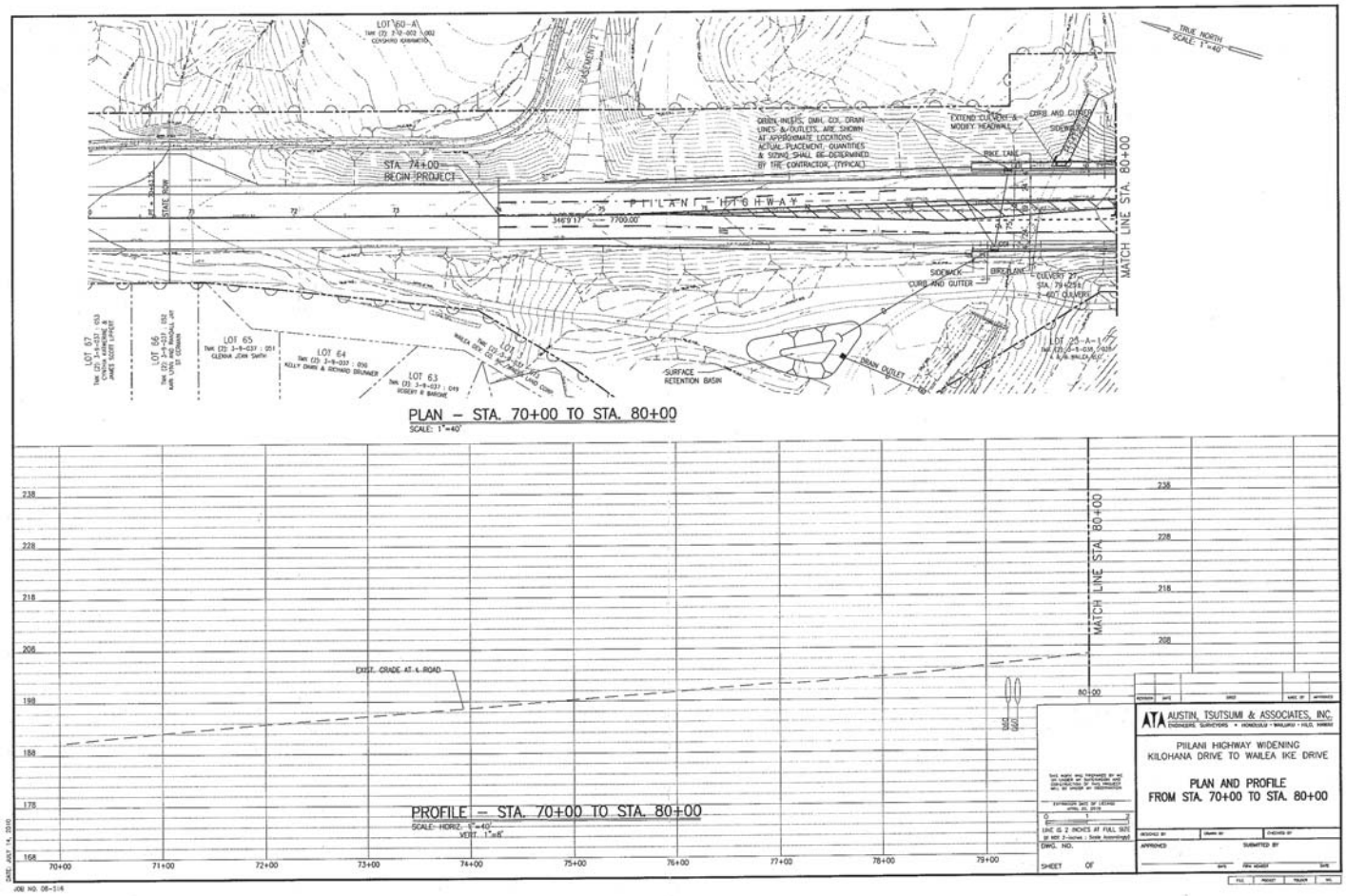



# APPENDIX A.

# Preliminary Engineering Plans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VERT. 1"=8'
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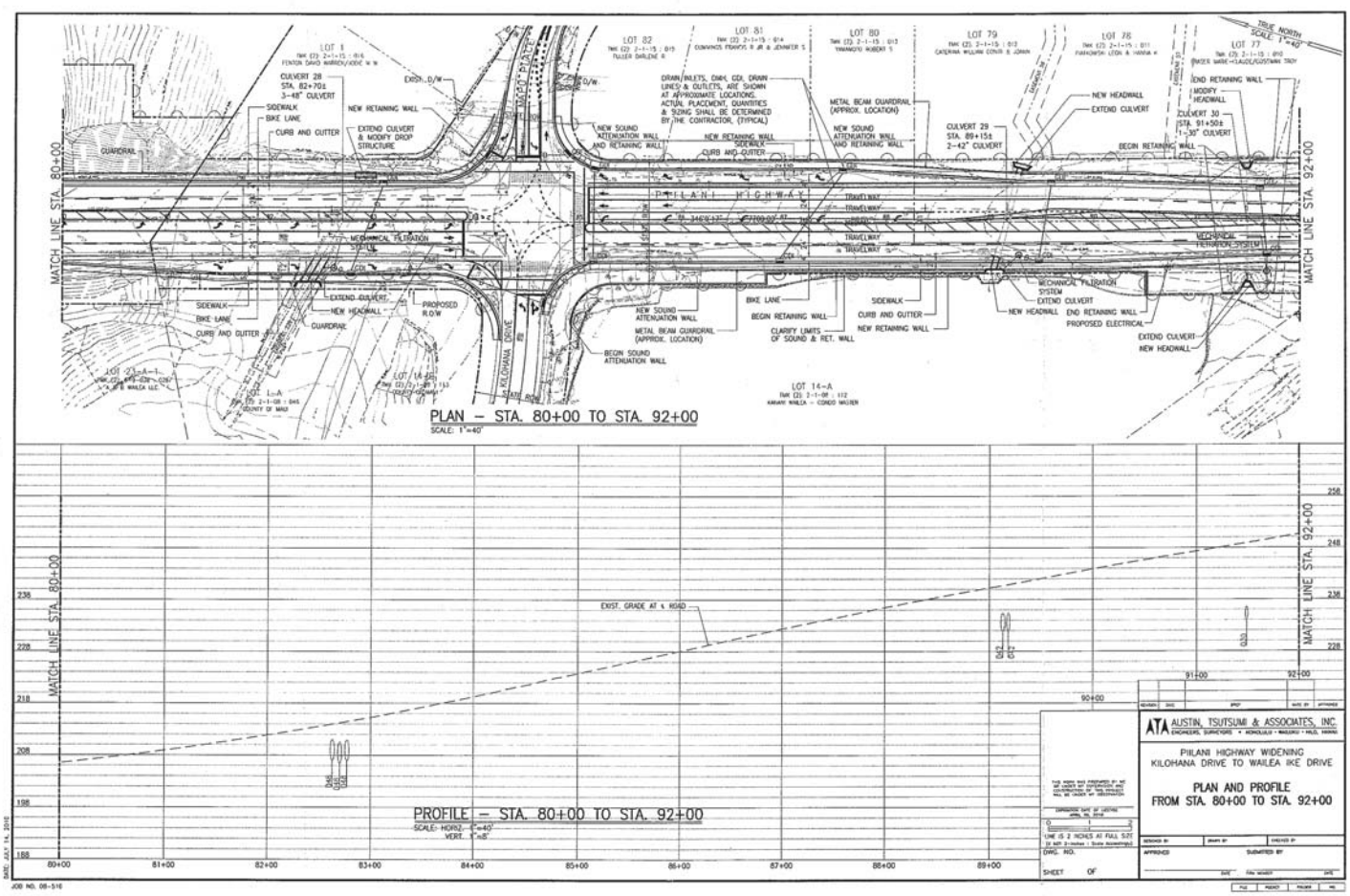
PIILANI HIGHWAY
MATCH LINE STA. 80+00
EXIST. GRADE AT ℄ ROAD
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
PLAN AND PROFILE
FROM STA. 70+00 TO STA. 80+00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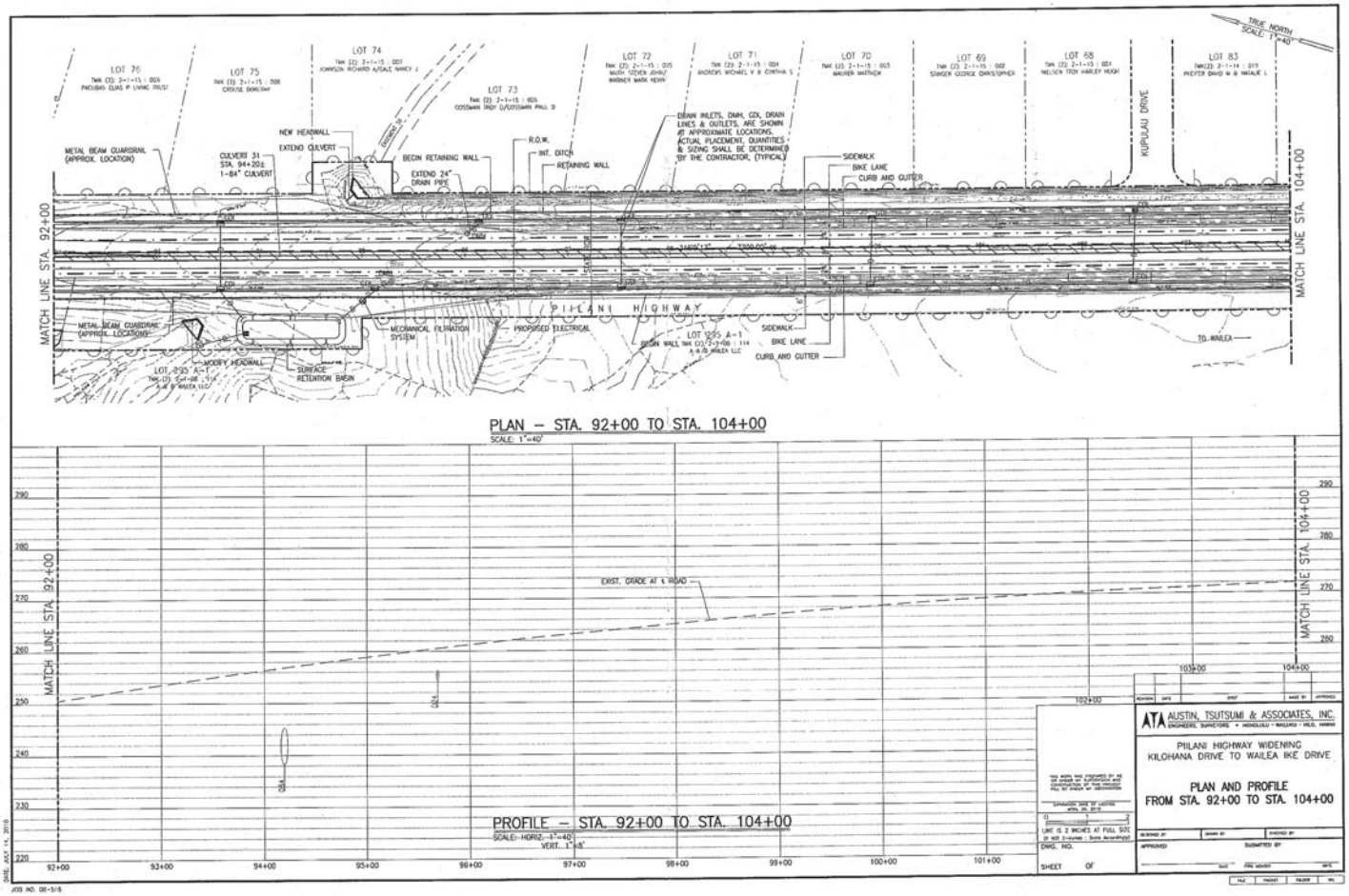
VERT. 1"=8'
MATCH LINE STA. 80+00
MATCH LINE STA. 92+00
PIILANI HIGHWAY
KILOHANA DRIVE
EXIST. GRADE AT ℄ ROAD
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
PLAN AND PROFILE
FROM STA. 80+00 TO STA. 92+00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MATCH LINE STA. 104+00
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KUPUUAU DRIVE
TO WAILEA
TRUE NORTH
SCALE: 1"=40'
LOT 76
LOT 75
LOT 74
LOT 73
LOT 72
LOT 71
LOT 70
LOT 69
LOT 68
LOT 83
LOT 295 A-1
METAL BEAM GUARDRAIL (APPROX. LOCATION)
CULVERT 31
STA. 94+20±
1-84" CULVERT
NEW HEADWALL
EXTEND CULVERT
EXTEND 24" DRAIN PIPE
BEGIN RETAINING WALL
R.O.W.
INT. DITCH
RETAINING WALL
DRAIN INLETS, DMH, CDI, DRAIN LINES & OUTLETS, ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL PLACEMENT, QUANTITIES & SIZING SHALL BE DETERMINED BY THE CONTRACTOR, (TYPICAL)
SIDEWALK
BIKE LANE
CURB AND GUTTER
MECHANICAL FILTRATION SYSTEM
PROPOSED ELECTRICAL
MODIFY HEADWALL
SURFACE RETENTION BASIN
BEGIN WALL
PLAN – STA. 92+00 TO STA. 104+00
SCALE: 1"=40'
EXIST. GRADE AT ℄ ROAD
PROFILE – STA. 92+00 TO STA. 104+00
SCALE- HORIZ. 1"=40'
VERT. 1"=8'
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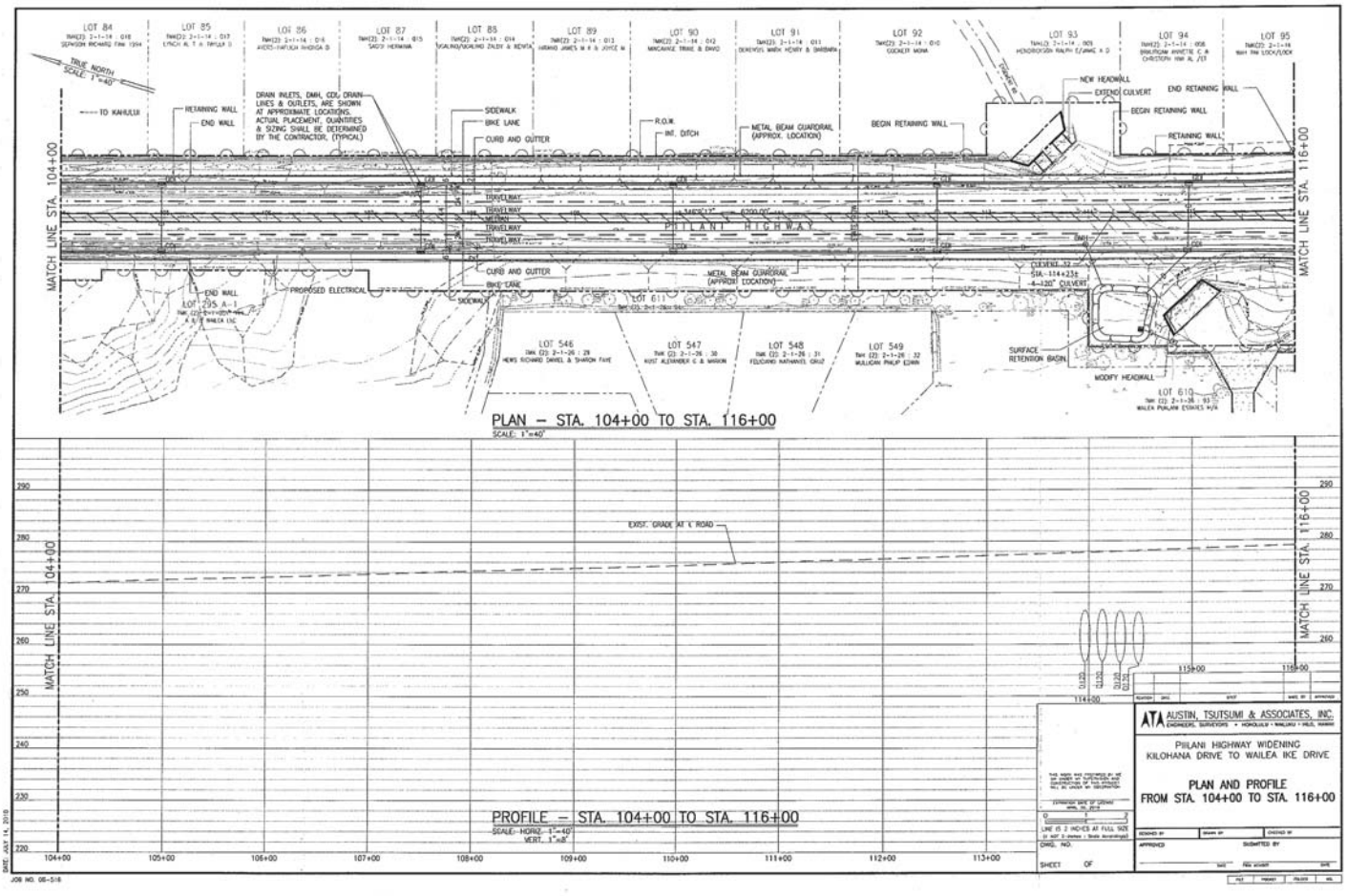
93+00
94+00
95+00
96+00
97+00
98+00
99+00
100+00
101+00
102+00
103+00
104+00
220
230
240
250
260
270
280
290
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU • WAILUKU • HILO, HAWAII
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
PLAN AND PROFILE
FROM STA. 92+00 TO STA. 104+00
DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED
SUBMITTED BY
DWG. NO.
SHEET OF
DATE: JULY 14, 2010
JOB NO. 08-516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MATCH LINE STA. 116+00
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TRUE NORTH
SCALE: 1"=40'
TO KAHULUI
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LOT 85
LOT 86
LOT 87
LOT 88
LOT 89
LOT 90
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LOT 92
LOT 93
LOT 94
LOT 95
LOT 295 A-1
LOT 611
LOT 546
LOT 547
LOT 548
LOT 549
LOT 610
RETAINING WALL
END WALL
DRAIN INLETS, DMH, CDI, DRAIN LINES & OUTLETS, ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL PLACEMENT, QUANTITIES & SIZING SHALL BE DETERMINED BY THE CONTRACTOR, (TYPICAL)
SIDEWALK
BIKE LANE
CURB AND GUTTER
R.O.W.
INT. DITCH
METAL BEAM GUARDRAIL (APPROX. LOCATION)
BEGIN RETAINING WALL
NEW HEADWALL
EXTEND CULVERT
END RETAINING WALL
RETAINING WALL
TRAVELWAY
MEDIAN
PROPOSED ELECTRICAL
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STA. 114+23±
4-120" CULVERT
SURFACE RETENSION BASIN
MODIFY HEADWALL
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PROFILE – STA. 104+00 TO STA. 116+00
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VERT. 1"=8'
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ENGINEERS, SURVEYORS • HONOLULU • WAILUKU • HILO, HAWAII
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
PLAN AND PROFILE
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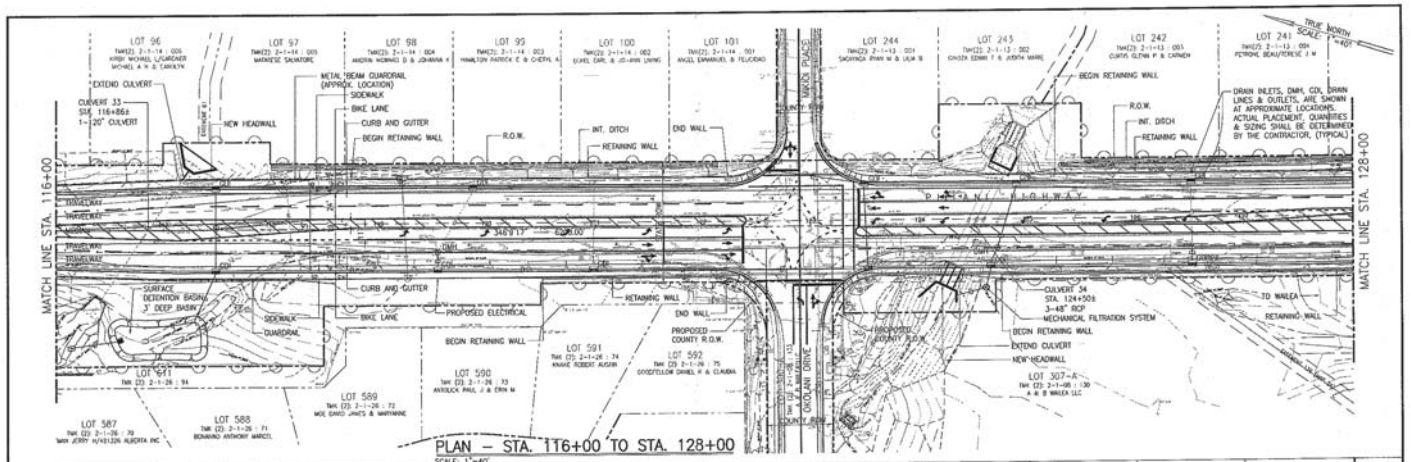


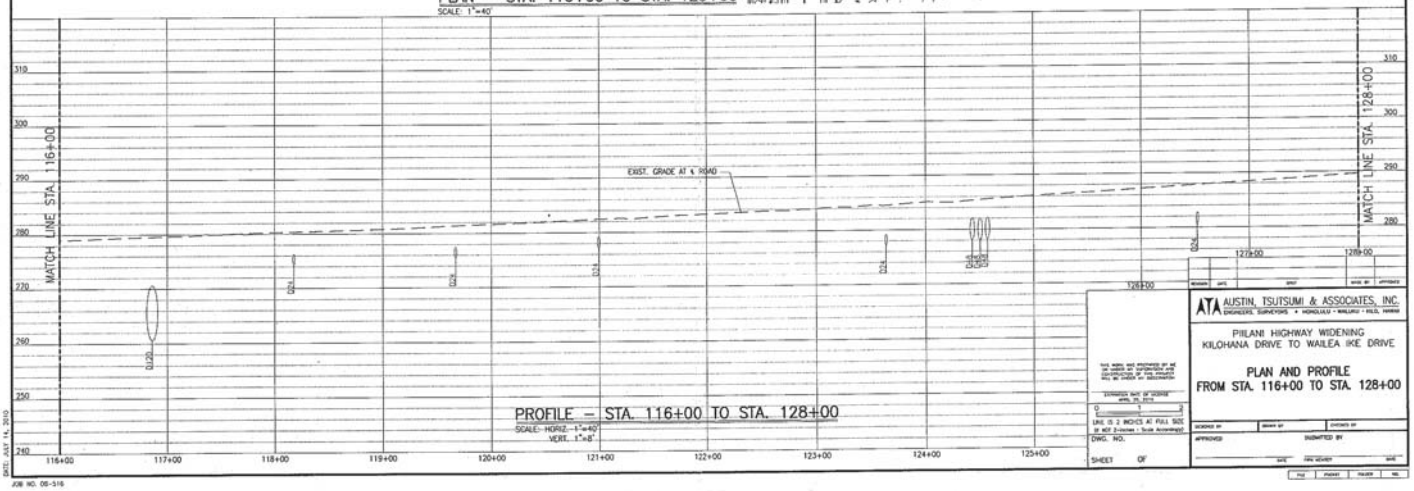


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ENGINEERS, SURVEYORS • HONOLULU • WAILUKU • HILO, HAWAII

PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

**PLAN AND PROFILE**
**FROM STA. 116+00 TO STA. 128+00**

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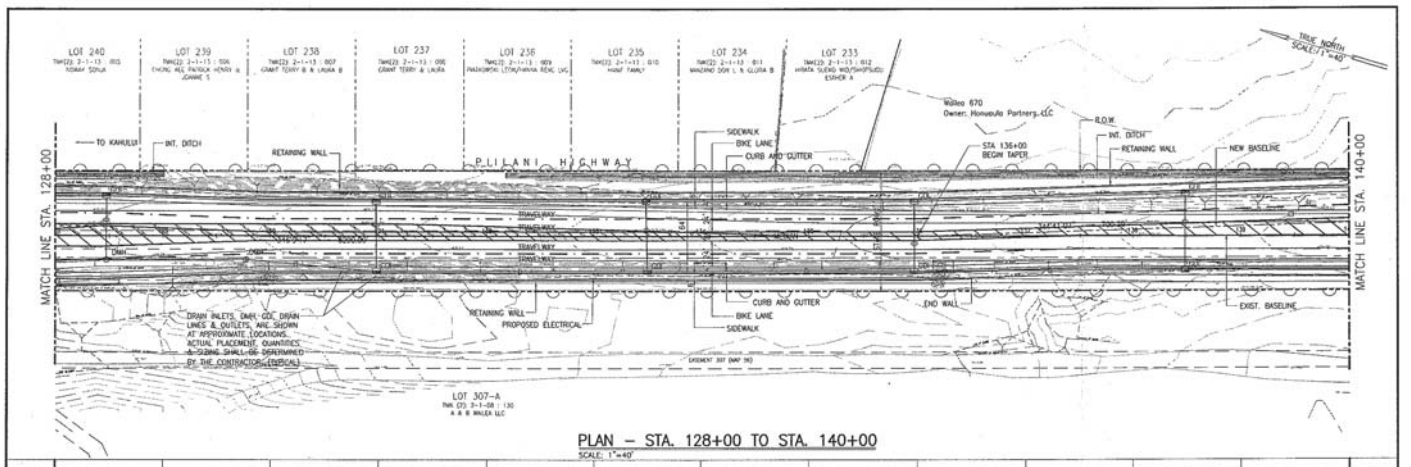


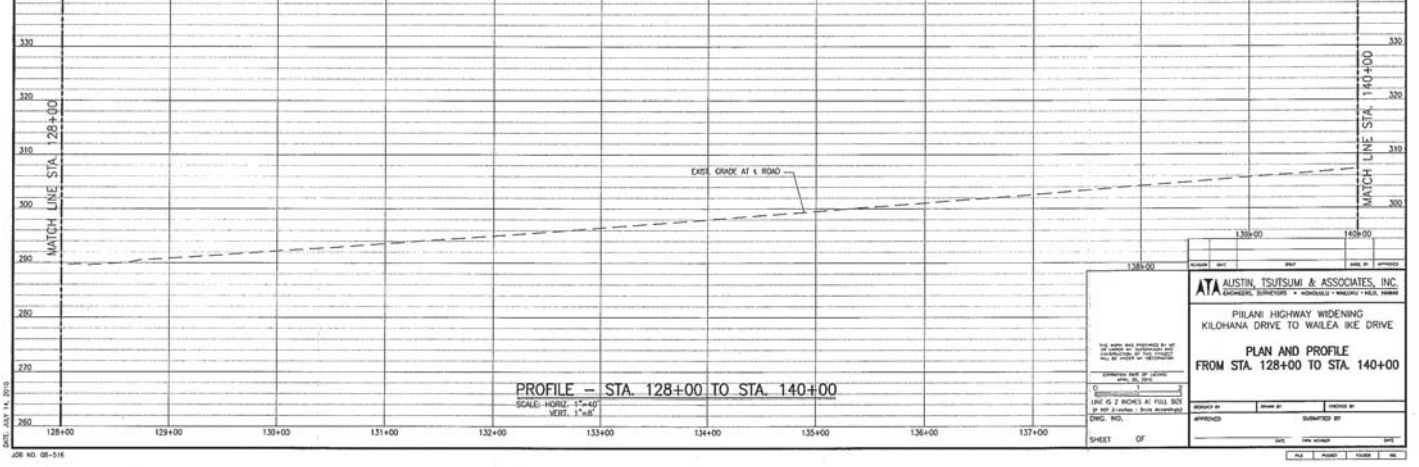


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ENGINEERS, SURVEYORS • HONOLULU • WAILUKU • HILO, HAWAII

PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

**PLAN AND PROFILE**
**FROM STA. 128+00 TO STA. 140+00**

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APPROVED | SUBMITTED BY

DWG. NO.
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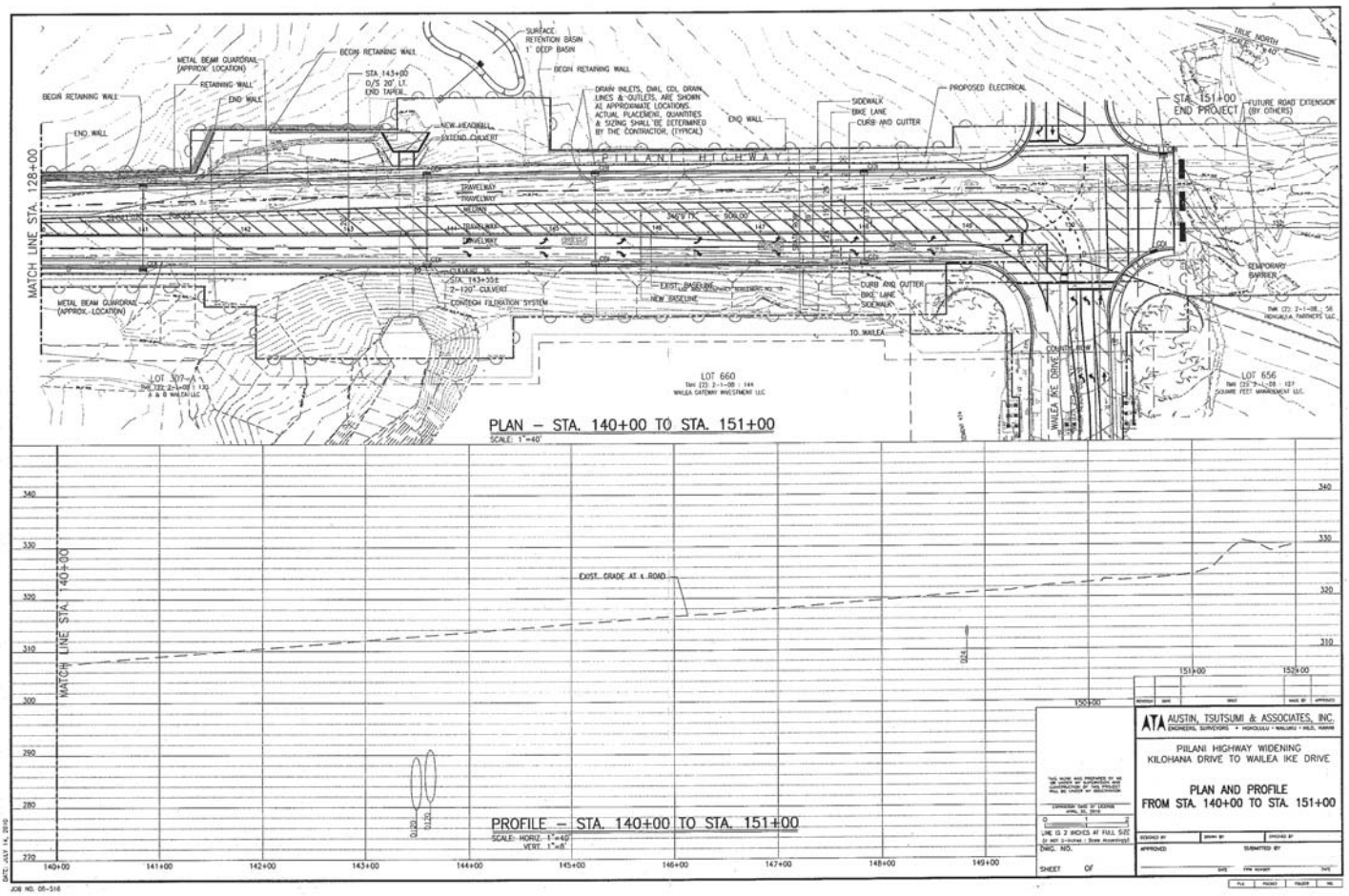
JOB NO. 08-516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VERT. 1"=8'
MATCH LINE STA. 128+00
MATCH LINE STA. 140+00
PIILANI HIGHWAY
EXIST. GRADE AT ℄ ROAD
BEGIN RETAINING WALL
END WALL
METAL BEAM GUARDRAIL (APPROX. LOCATION)
SURFACE RETENTION BASIN 1' DEEP BASIN
DRAIN INLETS, DMH, CDI, DRAIN LINES & OUTLETS, ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL PLACEMENT, QUANTITIES & SIZING SHALL BE DETERMINED BY THE CONTRACTOR. (TYPICAL)
PROPOSED ELECTRICAL
SIDEWALK
BIKE LANE
CURB AND GUTTER
STA. 151+00 END PROJECT
FUTURE ROAD EXTENSION (BY OTHERS)
TRUE NORTH
SCALE: 1"=40'
TEMPORARY BARRIER
LOT 660
LOT 656
LOT 307-A
WAILEA IKE DRIVE
TO WAILEA
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
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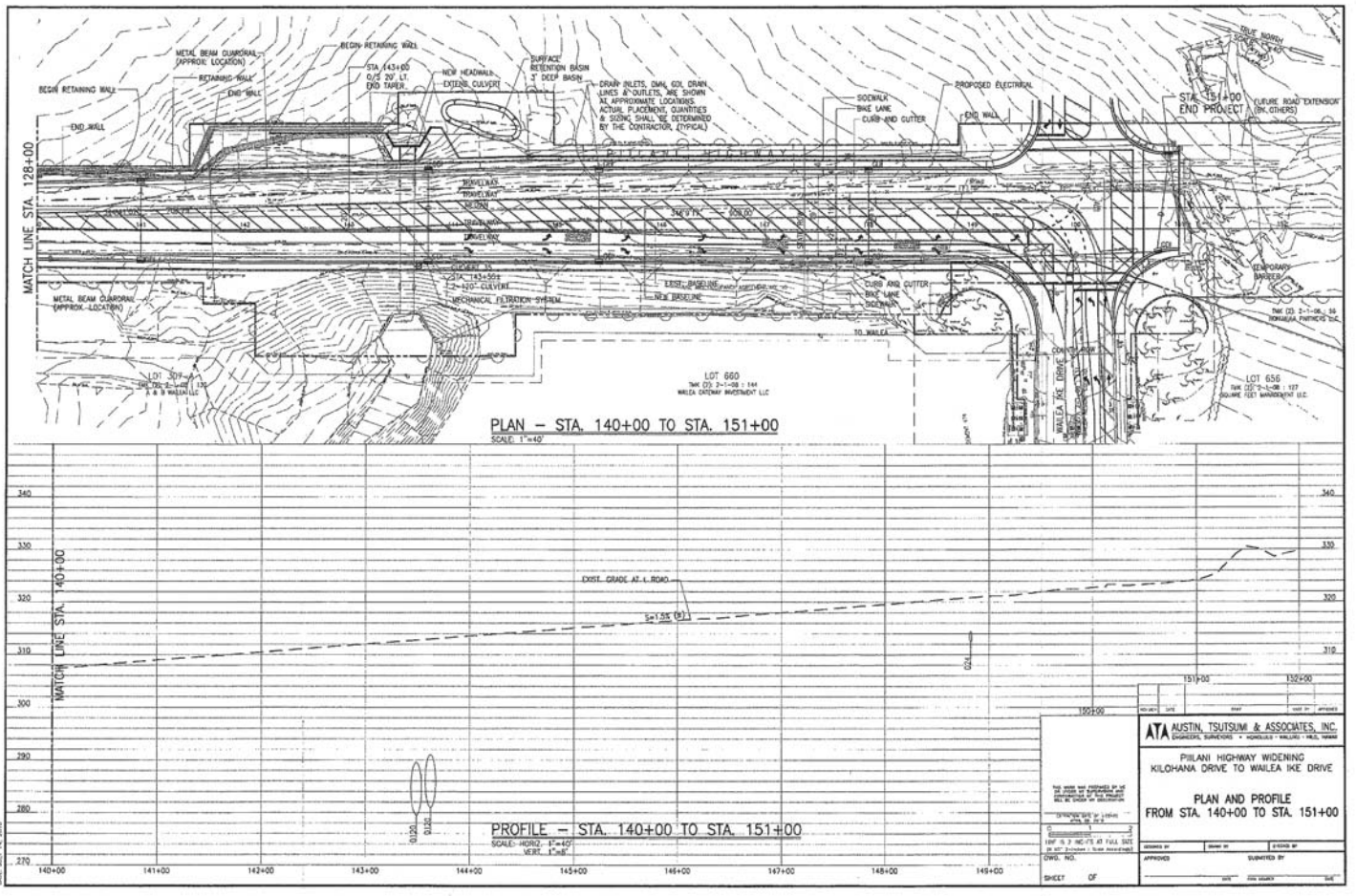
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BEGIN RETAINING WALL
END WALL
METAL BEAM GUARDRAIL (APPROX. LOCATION)
SURFACE RETENTION BASIN 3' DEEP BASIN
DRAIN INLETS, DMH, CDI, DRAIN LINES & OUTLETS, ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL PLACEMENT, QUANTITIES & SIZING SHALL BE DETERMINED BY THE CONTRACTOR. (TYPICAL)
PROPOSED ELECTRICAL
SIDEWALK
BIKE LANE
CURB AND GUTTER
STA. 151+00 END PROJECT
FUTURE ROAD EXTENSION (BY OTHERS)
TRUE NORTH
SCALE: 1"=40'
TEMPORARY BARRIER
LOT 660
LOT 656
LOT 307-A
WAILEA IKE DRIVE
TO WAILEA
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU • WAILUKU • HILO, HAWAII
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
PLAN AND PROFILE
FROM STA. 140+00 TO STA. 151+00

# APPENDIX B.

# Hirata & Associates, Inc.
# Letter Dated March 30, 2009

Hirata & Associates, Inc.

March 30, 2009
W.O. 09-4715

Mr. Charles Jencks
Honua`ula Partners LLC
P.O. Box 220
Kihei, Hawaii96753

Dear Mr. Jencks:

**Re: Geotechnical Consultation Services**
**Pi`ilani Highway Widening - Revised Letter**
**Kilohana Street to Wailea Ike Drive**
**Wailea, Maui, Hawaii**

This letter presents our geotechnical findings and opinions in support of the preparation of the Environmental Assessment for the above referenced project. Our findings and opinions are based on a review of available in-house information pertinent to the site, a visual reconnaissance of the site, our past experience in the project area, and a review of preliminary plans.

**Project Considerations**

The proposed Pi`ilani Highway widening will extend from Kilohana Street to Wailea Ike Drive, a length of approximately 6,610 feet. The existing highway is an AC paved roadway with one lane of traffic in each direction. The proposed widening will consist of creating two lanes of traffic in each direction. Based on the preliminary plans and the existing conditions of the site, it appears that grading will consist of both cuts and fills.

**Soils Information**

Based on a review of available in-house information, including past projects performed by our firm in the Wailea area, the surface soil in the project area is expected to consist predominantly of brown clayey silt with sand and gravel. Our past experience in the project area also indicates that the onsite clayey silt has a low to moderate expansion potential. Underlying the surface clayey silt at varying depths is weathered basalt ranging from a completely weathered condition to moderately weathered.

The Soil Survey, prepared by the US Soil Conservation Service, identifies the soils in the project area as Makena loam, stony complex, 3 to 15 percent slopes (MXC) and Keawakapu extremely stony silty clay loam, 3 to 25 percent slopes (KNXD). A Soils Map is presented on Plate B1.

Makena loam, stony complex, is generally found on the lower leeward slopes of Haleakala, between Makena and Kamaole, and consists of Makena loam and stony land. Stony land occurs on low ridges and makes up 30 to 60 percent of the complex. Makena loam is a dark brown to dark yellowish brown well drained soil, developed from volcanic ash, and is usually located between the low ridges of stony land. Makena loam is characterized by a relatively high permeability, and a low shrink-swell potential. Permeability on Stony land is very rapid.

Keawakapu extremely stony silty clay loam is generally found on upland areas on the island of Maui. These soils dark reddish brown in color and were developed in volcanic ash. Keawakapu extremely stony silty clay loam is characterized by moderate permeability, and a low shrink-swell potential.

Highly vesicular basalt with an irregular and spiny surface, referred to as *aa* lava, underlies both soil types at depths of usually less than about 5 feet. In some areas, outcrops of *aa* lava cover as much as 15 percent of the land.

**Visual Reconnaissance**

Our visual reconnaissance indicates that the in-situ soils consist of brown and grayish brown clayey silt with gravel. The existing roadway appears to be located on both fill and cut areas. The fill and cut areas alternate along the length of the proposed widening. Fill areas appear to consist of the onsite clayey silt, mixed with cobbles and boulders. Cut areas generally exposed moderately weathered basalt with occasional clinker layers. The basalt appeared to be in a hard condition.

Our visual reconnaissance generally confirms the Soil Survey and our past experience in the project area.



**Geotechnical Issues**

*Grading* - It is our opinion that excavations into the surface soils can be accomplished using conventional excavating equipment. However, excavations into basalt may require pneumatic equipment, especially for confined excavations such as trenching. Temporary excavations into the surface soils should stand at a 1H:1V gradient. However, localized sloughing can be expected as the exposed soil dries out. Temporary excavations into the basalt should stand at a near vertical gradient.

Permanent cut slopes exposing the surface soil, as well as fill slopes, should be designed for gradients of 2H:1V or flatter. Permanent cut slopes into the basalt should generally be stable at gradients of 1H:1V or flatter.

New fill slopes should be continually benched as the fill is brought up in lifts. Fill placed on slopes should be keyed and benched into the existing slope to provide stability for the new fill against sliding. Filling the slope with sliver fills should be avoided. To reduce the potential effects of erosion and weathering, slopes exposing the onsite soils or new fill should be planted as soon as practical.

The onsite soils should be acceptable for re-use in fills and backfills. However, the soil should be tested and its acceptability for re-use as backfill verified as part of the geotechnical investigation conducted during the design phase. We expect that excavated basalt will also be acceptable for use as backfill provided the material is processed or crushed to a well-graded consistency.

*Foundations* - We expect that conventional shallow foundations bearing directly on either the onsite soils, basalt, or new compacted fill will be allowed for support of new retaining walls and headwalls for drainage structures. Foundation design parameters will be determined upon completion of a geotechnical investigation conducted during the design phase.

**Limitations**

This letter was prepared specifically for Honua`ula Partners LLC and their consultants in support of the preparation of Environmental Assessment Report for the proposed Pi`ilani Highway Widening. The information and opinions presented in this report are for information purposes only.

The services performed for this project were performed in a manner consistent with that level of care, skill, and competence ordinarily exercised by members of the profession in good standing, currently practicing under similar conditions. We will not be responsible for the interpretation by others of the information developed. No warranty is made regarding the services performed under this agreement, either express or implied.

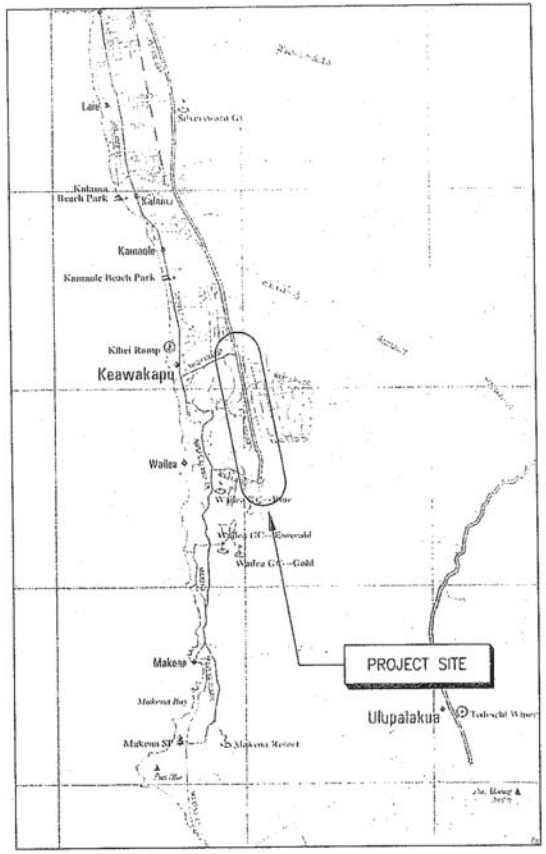
Respectfully submitted,

HIRATA & ASSOCIATES, INC.

Rick I. K. Yoshida, P.E.

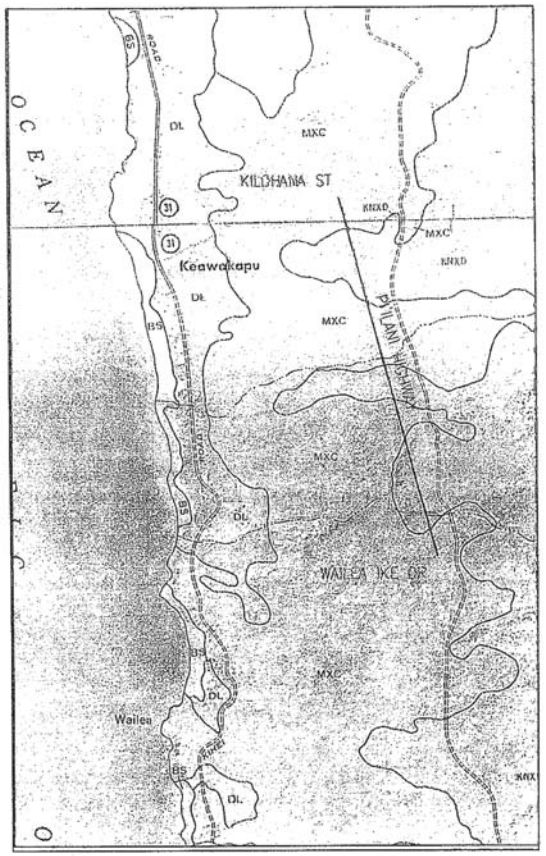
Attachments:

Location Map ..... Plate A
Soil Survey Map ..... Plate B




Reference: Hawaii Atlas & Gazetteer, Topo Maps of the Entire State by DeLorme (1999)

| W.O. 09-4715 | Pi'ilani Highway Widening - Kilohana Street to Wailea Ike Drive |
|---|---|
| Hirata & Associates, Inc. | LOCATION MAP<br>Plate A |

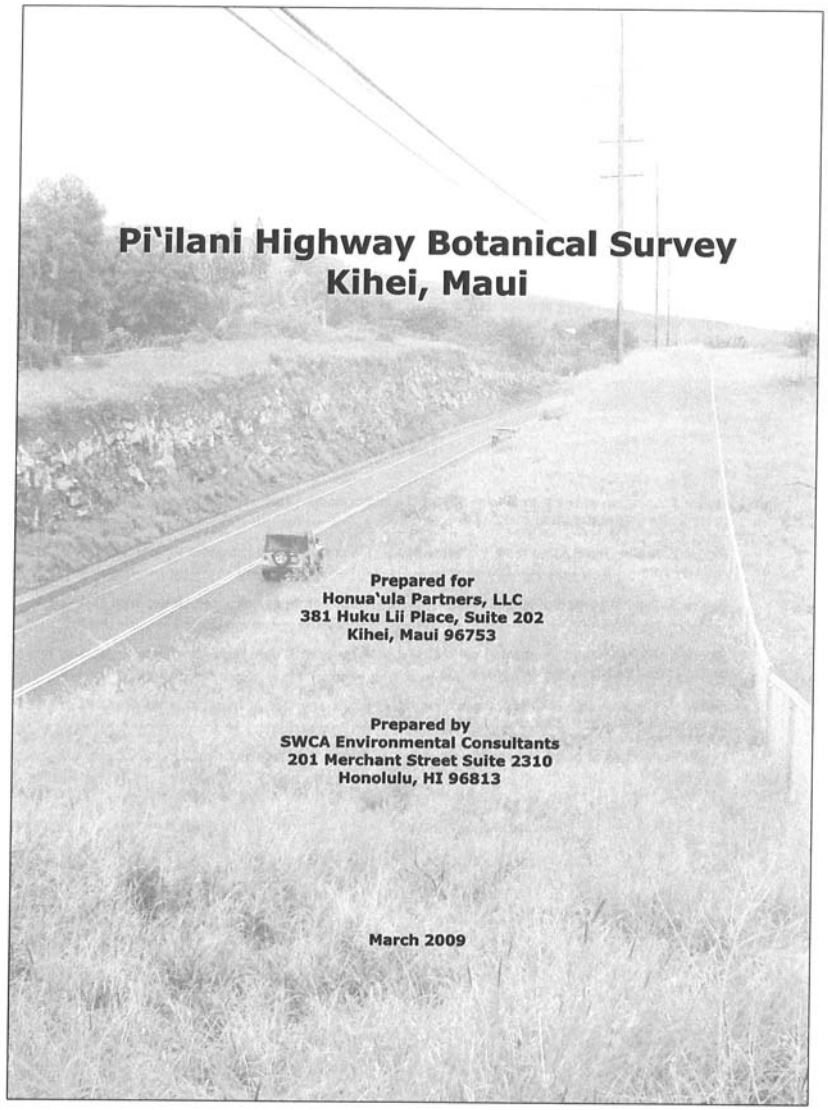



Reference: Soil Survey, Soil Conservation Service
August 1972

| | |
|---|---|
| W.O. 09-4715 | Pi'ilani Highway Widening - Kilohana Street to Wailea Ike Drive |
| Hirata & Associates, Inc. | SOIL SURVEY MAP<br>Plate B |

# APPENDIX C.

# Pi`ilani Highway Botanical Survey



# Pi'ilani Highway Botanical Survey
# Kihei, Maui

**Prepared for**
**Honua'ula Partners, LLC**
**381 Huku Lii Place, Suite 202**
**Kihei, Maui 96753**

**Prepared by**
**SWCA Environmental Consultants**
**201 Merchant Street Suite 2310**
**Honolulu, HI 96813**

**March 2009**

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## 1.0 Introduction

In January 2009, SWCA was tasked by Honua'ula Partners, LLC to conduct a botanical survey along a 2,000 m (6,560 ft) stretch along Pi'ilani Highway between Kilohana Drive and Wailea Ike Drive. The survey was prepared in support of an environmental assessment (EA) being prepared for the Pi'ilani Highway widening under Hawai'i Revised Statutes (HRS) Chapter 343 (Environmental Impact Statements) and Hawai'i Administrative Rules (HAR) Title 11, Chapter 200 (Environmental Impact Statement Rules). The highway widening project was mandated by the Maui County Council in the Phase I conditions for completion of the proposed Honua'ula development.

Pi'ilani Highway is the major north-south arterial road serving the Kihei-Makena area including Honua'ula. At present, Pi'ilani Highway is a two lane road between Kilohana Drive and Wailea Ike Drive and intersects Wailea Ike Drive in a T- intersection, with the highway forming the stem of the intersection. The future extension of Pi'ilani Highway will bisect the Project site (Figure 1).

This report summarizes the findings of a botanical survey conducted on February 5, 2009 along 2,000 m (6,560 ft) of Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive in Wailea, Maui. The objectives of the botanical survey along the Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive were:

1) To identify and document the vegetation type and all plant species which occur within the right-of-way (ROW) on either side of Pi'ilani Highway;
2) To document the relative abundance of the plant species which occur along the highway; and
3) To map any State or Federally listed candidate, threatened, or endangered plant species, species of concern and/ or rare (either locally or State-wide) plants on either side of the highway.

## 2.0 Methods

SWCA botanists Shahin Ansari, Ph.D. and Tiffany Thair (M.S. candidate) conducted a vegetation survey of the project area on February 5, 2009. The botanists walked the rights-of-way on either side of the highway within the areas identified for expansion, and identified and documented the plant species. On the eastern (mauka) side of the highway, the ROW was approximately 2 to 5 m (7-16 ft) wide with small sections that extended up to 18 m (59 ft) wide. On the western (makai) side of the highway, the ROW was approximately 5 to 8 m (16-26 ft) wide with several sections that extended up to 20 to 30 m (66-98 ft) wide. A Garmin GPS unit was employed together with a detailed topographic map (1:1,200) to map native species of interest. Approximately 38,445 sq m (413,819 sq ft) of ROW were surveyed along the Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive during this study.

## 3.0 Findings

No federally listed threatened, endangered, or candidate endangered plant species (USFWS 2009a, 2009b) were observed within the ROW on either side of Pi'ilani Highway. No rare native plant species were found during the survey along the highway. A total of 88 plant species were recorded of which three species are native. Two indigenous species, 'ilima (*Sida fallax*) (Figure 2) and uhaloa (*Waltheria indica*), were common along both sides of the highway. The third native species, milo (*Thespesia populnea*), was only found at one location adjacent to a home owner's backyard.

The terrain within the ROW on either side of Pi'ilani Highway varied. Parts of the ROW adjacent to the road primarily consisted of steep slopes while the other areas were flat to gently undulating. The soil was broken in most places with exposed rocks along the slopes (Figure 3). The vegetation along both sides of the highway consisted primarily of buffel grass grassland (Figure 4). Kiawe (*Prosopis juliflora*) trees and shrubs of koa haole (*Luceana leucocephala*), slender mimosa (*Desmanthus pernambucanus*) castor (*Ricinus communis*), fuzzy rattle pod (*Crotolaria incana*), hairy abutilon (*Abutilon grandifolium*) and tree tobacco (*Nicotiana glauca)*



were common along the highway ROW. Sow thistle (*Sonchus oleraceus*), golden crown beard (*Verbesina enceloides*) and spurge (*Chamaecyse hirta*) were some of the common herbaceous plants in the ROW. Hairy merremia (*Merremia aegyptia*) and wild bean (*Macroptilium lathyroides*) were vines commonly found on both sides of the highway. Compared to the east side (n= 40) the vegetation along the west side (n= 75) of the highway had a higher diversity of introduced weedy species. Monotypic stands of buffel grass (Figure 5) were found along stretches of the ROW on the east side of the highway. Evidence of fire damage to vegetation was found on the west side of Pi'ilani Highway (Figure 6).

## 4.0 Discussion and Recommendation

The proposed road widening on Pi'ilani Highway will not have a significant negative impact on the botanical resources in the ROW area between Wailea Ike Drive and Kilohana Drive. The majority (97%) of the plants observed within this area are introduced species. The native species found within the project area are common throughout Maui and the other islands within the state. The lower species diversity found on the eastern side of the highway ROW may be attributed to recent brushfires.

1. Non-native tree tobacco (*Nicotiana glauca*) trees found on the site are host plants for the listed endangered Blackburn sphinx moth (*Manduca blackburni*). *M. blackburni* has been found on tree tobacco plants elsewhere in Kihei and within the Honua'ula project site (SWCA 2009). To help insure against the accidental take of individual sphinx moths, each tree tobacco plant should first be screened by a qualified wildlife biologist prior to any land clearing. If sphinx moths or signs of sphinx moths (frass, cut stems or leaves, caterpillars, pupae, or adults) are found on any tree, that tree should be marked and protected against disturbance for the duration of the breeding season.

2. Landscaping following realignment construction should focus on the use of native plant species normally found in coastal dry shrubland habitats. Suitable species may include: 'ilima (*Sida fallax*) 'aki'aki (*Sporobolus virginicus*), pohinahina (*Vitex rotundifolia*), 'akia (*Wikstroemia uva-ursi*), and mau'u 'aki'aki (*Fimbristylus cymosa*). Seeds or seedlings for these native plants may be obtained from various native plant nurseries on Maui such as Ho'olawa Farms or Native Nursery LLC.

3. The use of plants within the Solenaceae (nightshade family) for ROW landscaping should be forbidden so as not to attract endangered Blackburn sphinx moths to the highway where they are at higher risk for injury or death.

## 5.0 Literature Cited

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Wagner W.L. and D.R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawaii, pg 1855-1918. In: Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the flowering plants of Hawaii. University of Hawaii Press and Bishop Museum Press. Honolulu.



**Figure 2. Native 'ilima (*Sida fallax*) (yellow flowers) was common throughout Pi'ilani Highway right-of-way.**



**Figure 3. Typical portion of Pi'ilani Highway right-of-way comprised of steep slopes with exposed rocks.**



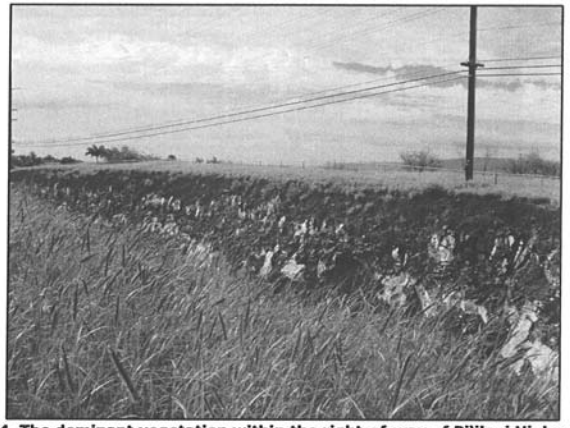


**Figure 4. The dominant vegetation within the right-of-way of Pi'ilani Highway mostly comprised of buffel grass (*Cenchrus ciliaris*) grassland.**



**Figure 5. The east side of Pi'ilani Highway right-of-way comprised of long stretches of monotypic stands of buffel grass (*Cenchrus ciliaris*).**



**Figure 6. Patches of burnt vegetation along the east side of Pi'ilani Highway.**



***Appendix 1.*** *List of plant species that occur within the right-of-way on either side of the Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive.*

The following checklist is an inventory of all the plant species observed along 2,000m (6,560 ft) of Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive. The plant names are arranged alphabetically by family and then by species into each of three groups: pterdiphytes (ferns), monocots and dicots. The taxonomy and nomenclature of the flowering plants, monocots and dicots, are in accordance with Wagner et al. (1990, 1999), Wagner and Herbst (1999), and Staples and Herbst (2005). Recent name changes are those recorded in the Hawaii Biological Survey series (Evenhuis and Eldredge, eds, 1999-2002).

For each species, the following name is provided:

Status:

1. Scientific name with author citation
2. Common English and/or Hawaiian name(s), when known
3. Biogeographic status. The following symbols are used:

E = endemic = native only to the Hawaiian Islands.

I = indigenous = native to the Hawaiian Islands and elsewhere.

Pol = introduced by Polynesians

X = introduced or alien = all those plants brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is Cook's arrival in the islands in 1778.

Side of the highway:

E = East or 'makai' side of Pi'ilani Highway

W = West or 'mauka' side of Pi'ilani Highway.

Relative Site Abundance:

Abundant = forming a major part of the vegetation within the project area.

Common = widely scattered throughout the area or locally abundant within a portion of it.

Uncommon = scattered sparsely throughout the area or occurring in a few small patches.

Rare = only a few isolated individuals within the project area.

| Family / Scientific Name | Common Name | Status | Side of Highway | Relative Site Abundance |
|---|---|---|---|---|
| **FERNS** | | | | |
| **Aspleniaceae** | | | | |
| *Nephrolepis multiflora* (Roxb.) F.M.Jarrett ex C.V.Morton | sword fern | X | W, E | Rare |
| *Pteris vittata* L. | ladder brake, cliff brake, Chinese brake | X | W | Rare |
| | | | | |
| MONOCOTS | | | | |
| **Aloeaceae (Asphodelaceae)** | | | | |
| *Aloe vera* (L.) N. L. Burman | aloe | X | W | Rare |
| | | | | |
| **Arecaceae** | | | | |
| *Cocus nucifera* L. | coconut, ololani, niu | X | W, E | Rare |
| *Phoenix roebelenii* O' Brien | dwarf date palm, pygmy date palm | X | E | Rare |
| | | | | |
| **Commelinaceae** | | | | |
| *Commelina diffusa* Burm.f. | honohono, blue day flower | X | W | Rare |
| | | | | |
| **Cyperaceae** | | | | |
| *Cyperus rotundus* L. | purple nut sedge, nut grass, kili'o'opu, mau'u mokae | X | W | Rare |
| | | | | |
| **Liliaceae** | | | | |
| *Ophiopogon japonicus* (Linnaeus filius) Ker Gawler | dwarf lilyturf, mondo grass | X | E | Rare |
| | | | | |
| **Poaceae** | | | | |
| *Cenchrus ciliaris* L. | buffel grass | X | W, E | Abundant |
| *Chloris gayana* Kunth | rhode grass | X | W, E | Abundant |
| *Chloris barbata* Sw. | Swollen finger grass | | | |
| *Eragrostis pectinacea* (Michx.) Nees | Carolina lovegrass | X | W | Common |
| *Melinis repens* (Wild.) Zizka | natal redtop | X | W, E | Abundant |
| *Panicum maximum* Jacq. | guinea grass | X | W, E | Common |
| | | | | |
| DICOTS | | | | |
| **Acanthaceae** | | | | |
| *Asystasia gangetica* (L.) T.Anderson | Chinese violet | X | W, E | Uncommon |
| | | | | |
| **Aizoaceae** | | | | |
| *Carpobrotus sp.* | ice plant | X | W | Rare |
| | | | | |
| **Amaranthaceae** | | | | |
| *Amaranthus spinosus* (L.) | spiny amaranth, pakai kukū | X | W, E | Uncommon |



| Family / Scientific Name | Common Name | Status | Side of Highway | Relative Site Abundance |
|---|---|---|---|---|
| | | | | |
| **Anacardiaceae** | | | | |
| *Schinus terebinthifolius* Raddi | Christmas berry | X | W | Rare |
| | | | | |
| **Apocynaceae** | | | | |
| *Nerium oleander* L. | oleander | X | E | Rare |
| *Thevetia peruviana* (Pers.) K.Schum. | be-still tree, yellow oleander, lucky nut, nohomālie | X | W, E | Rare |
| | | | | |
| **Araliaceae** | | | | |
| *Schefflera actinophylla* (Endl.) Harms | octopus tree | X | W, E | Rare |
| | | | | |
| **Asteraceae** | | | | |
| *Ageratum conyzoides* L. | maile hohono, maile honohono, maile kula | X | W | Rare |
| *Bidens pilosa* L. | Spanish needle, beggartick, kī, kī nehe, kī pipili, nehe | X | W, E | Uncommon |
| *Conyza bonariensis* (L.) Cronquist | hairy horseweed, ilioha, 'awī'awī, pua mana, | X | W | Rare |
| *Emilia fosbergii* Nicolson | pualele (Ni'ihau) | X | W, E | Uncommon |
| *Parthenium hysterophorus* L. | false ragweed, Santa Maria | X | W, E | Uncommon |
| *Pluchea carolinensis* (Jacq.) G.Don | sourbush, marsh fleabane | X | W | Uncommon |
| *Pluchea indica* (L.) Less | Indian fleabane, Indian pluchea, marsh fleabane | X | E | Rare |
| *Senecio madagascariensis* Poir. | fireweed | X | W | Uncommon |
| *Sonchus oleraceus* L. | sow thistle, pualele | X | W, E | Abundant |
| *Tridax procumbens* L. | coat buttons | X | W, E | Uncommon |
| *Sphagneticola trilobata* (L.) Pruski | wedelia | X | W | Rare |
| *Zinnia peruviana* L. | pua pihi | X | W | Rare |
| *Verbesina encelioides* (Cav.) Benth. & Hook. | golden crown-beard | X | W | Common |
| | | | | |
| **Bignoneaceae** | | | | |
| *Pyrostegia venusta* (Ker Gawler) Miers | orange trumpet vine, flame flower, huapala | X | W | Rare |
| *Spathodea campanulata* P. Beauv. | African tulip tree, fountain tree | X | W | Rare |
| | | | | |
| **Brassicaceae** | | | | |
| *Lepidium virginicum* L. | pepperwort, peppergrass | X | W | Uncommon |
| | | | | |
| **Buddlejaceae** | | | | |
| *Buddleja asiatica* Lour. | huelo 'ilio, dog tail | X | W | Rare |

| Family / Scientific Name | Common Name | Status | Side of Highway | Relative Site Abundance |
|---|---|---|---|---|
| **Capparaceae** | | | | |
| *Cleome gynandra* L. | wild spider flower, spider wisp, honohina, 'ili'ohu | X | W | Uncommon |
| | | | | |
| **Casuarinaceae** | | | | |
| *Casuarina equisetifolia* L. | common ironwood, paina | X | W | Rare |
| **Chenopodiaceae** | | | | |
| *Chenopodium carinatum* R.Br. | goosefoot, pigweed, lamb's quarters | X | W | Uncommon |
| *Chenopodium murale* L. | goosefoot, pigweed, lamb's quarters, 'āheahea | X | W | Rare |
| | | | | |
| **Convolvulaceae** | | | | |
| *Ipomoea triloba* L. | Little bell | X | W, E | Uncommon |
| *Ipomoea obscura* (L.) Ker Gawl. | morning glory | X | W | Rare |
| *Merremia aegyptia* (L.) Urb | hairy merremia, koali kua hulu, kuahulu | X | W, E | Common |
| *Merremia tuberosa* (L.) Rendle | wood rose, pilikai | X | W | Rare |
| | | | | |
| **Cucurbitaceae** | | | | |
| *Cucumis dipsaceus* Ehrenb. ex Spach | hedgehog gourd, teasel gourd | X | W | Uncommon |
| *Momordica charantia* L. | balsam pear, bitter melon | X | W | Uncommon |
| | | | | |
| **Euphorbiaceae** | | | | |
| *Chamaesyce hirta* (L.) Millsp. | hairy spurge, garden spurge, koko kahiki | X | W, E | Uncommon |
| *Chamaesyce hypericifolia* (L.) Millsp. | graceful spurge | X | W, E | Common |
| *Codiaeum variegatum* (Linnaeus) Blume | croton | X | E | Rare |
| *Euphorbia heterophylla* L. | kaliko, spurge | X | E | Rare |
| *Ricinus communis* L. | castor bean, pā'aila, ka'apehā, kamākou, koli, lā'au 'aila | X | W, E | Common |
| | | | | |
| **Fabaceae** | | | | |
| *Bauhinia x blakeana* Dunn | Hong Kong orchid tree | X | E | Rare |
| *Caesalpinia pulcherrima* (L.) Swartz | dwarf Poinciana, pride-of-Barbados, Barbados flower-fence | X | W | Rare |
| *Chamaecrista nictitans* subsp. patellaria var. glabrata (Vogel) H.S.Irwin & Barneby | partridge pea, laukī | X | W, E | Uncommon |
| *Crotalaria assamica* Benth. | rattlepod | X | W | Rare |
| *Crotalaria incana* L. | Fuzzy rattlepod, kūkaehoki, kolomona | X | W, E | Common |



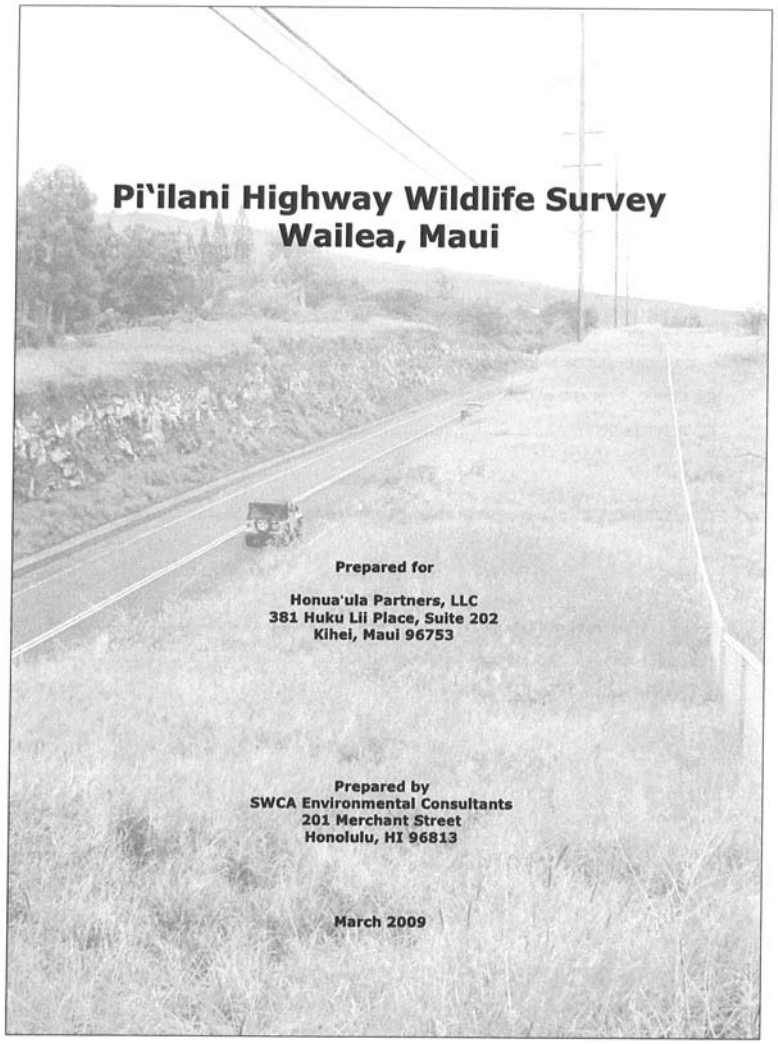
| Family / Scientific Name | Common Name | Status | Side of Highway | Relative Site Abundance |
|---|---|---|---|---|
| *Delonix regia* (Bojer ex Hook.) Raf. | royal poinciana, flame tree, flamboyant, 'ohai 'ula | X | W | Rare |
| *Desmanthus pernambucanus* (L.) Thell. | slender mimosa, virgate mimosa | X | W, E | Common |
| *Indigofera suffruticosa* Mill. | indigo, 'inikō, 'inikoa, kolū | X | W | Rare |
| *Leucaena leucocephala* (Lam.) de Wit | koa haole | X | W, E | Uncommon |
| *Macroptilium lathyroides* (L.) Urb. | wild bean, cow pea | X | W, E | Common |
| *Neonotonia wightii* (Wight & Arn.) Lackey | | X | W | Rare |
| *Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth | algaroba, mesquite, kiawe | X | W, E | Uncommon |
| *Samanea saman* (Jacq.) Merr. | monkeypod, rain tree, 'ohai, pū 'ohai | X | W | Rare |
| | | | | |
| **Lamiaceae** | | | | |
| *Leonotis nepetifolia* (L.) R.Br. | lion's ear | X | W | Uncommon |
| | | | | |
| **Malvaceae** | | | | |
| *Abelmoschus esculentus* (L.) Moench | okra, lady's finger | X | W | Rare |
| *Abutilon grandifolium* (Willd.) Sweet | hairy abutilon, ma'o | X | W, E | Common |
| *Hibiscus rosa-sinensis* L. | red hibiscus, Chinese hibiscus, aloalo | X | W | Rare |
| *Malva parviflora* L. | cheeseweed | X | W | Uncommon |
| *Sida acuta* subsp. carpinifolia (L.f.) Borss.Waalk. | | X | W | Rare |
| *Sida fallax* Walp. | 'ilima | I | W, E | Common |
| *Thespesia populnea* (L.) Sol. ex Corrêa | milo, portia tree | I | W | Rare |
| | | | | |
| **Nyctaginaceae** | | | | |
| *Boerhavia coccinea* Mill. | | X | W | Uncommon |
| *Bougainvillea* sp. | | X | W | Rare |
| | | | | |
| **Oxalidaceae** | | | | |
| *Oxalis corniculata* L. | yellow wood sorrel, 'ihi 'ai, 'ihi 'awa, 'ihi maka 'ula, 'ihi mākole | Pol? | E | Rare |
| | | | | |
| **Plumbaginaceae** | | | | |
| *Plumbago auriculata* Lam. | | X | W | Rare |
| | | | | |
| **Portulacaceae** | | | | |
| *Portulaca oleracea* L. | pigweed, 'ākulikuli kula, 'ākulikuli lau li'i, 'ihi | X | W, E | Uncommon |

| Family / Scientific Name | Common Name | Status | Side of Highway | Relative Site Abundance |
|---|---|---|---|---|
| **Solanaceae** | | | | |
| *Datura stramonium* L. | jimson weed | X | W | Uncommon |
| *Nicandra physalodes* (L.) Gaertn. | apple of Peru | X | W, E | Common |
| *Nicotiana glauca* Graham | tree tobacco, mustard tree, mākāhala, paka | X | W, E | Common |
| *Solanum lycopersicum* var. cerasiforme (Dunal) Spooner, G.J.Anderson & R.K.Jansen | tomato, ʻōhiʻa lomi, kamako, ʻōhiʻa, ʻōhiʻa haole | X | W | Rare |
| | | | | |
| **Sterculiaceae** | | | | |
| *Waltheria indica* (L.) | ʻuhaloa, ʻalaʻala pū loa, hala ʻuhaloa, hiʻaloa, kanakaloa | I | W, E | Common |



# APPENDIX D.

# Pi`ilani Highway Wildlife Survey



# Pi`ilani Highway Wildlife Survey
# Wailea, Maui

**Prepared for**

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**March 2009**



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## 1.0 INTRODUCTION

In January 2009, SWCA was tasked by Honua'ula Partners, LLC to conduct a wildlife and botanical survey along a 2,000 m (6,560 ft) stretch along Pi'ilani Highway between Kilohana Drive and Wailea Ike Drive. The survey was prepared in support of an environmental assessment (EA) being prepared for the Pi'ilani Highway widening under Hawai'i Revised Statutes (HRS) Chapter 343 (Environmental Impact Statements) and Hawai'i Administrative Rules (HAR) Title 11, Chapter 200 (Environmental Impact Statement Rules). The highway widening project was mandated by the Maui County Council in the Phase I conditions for completion of the proposed Honua'ula development.

Pi'ilani Highway is the major north-south arterial road serving the Kihei-Makena area including Honua'ula. At present, Pi'ilani Highway is a two lane road between Kilohana Drive and Wailea Ike Drive and intersects Wailea Ike Drive in a T- intersection, with the highway forming the stem of the intersection. The future extension of Pi'ilani Highway will bisect the Project site (Figure 1).

This report summarizes the findings of a wildlife survey conducted on February 5, 2009 along 2,000 m (6,560 ft) of Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive in Wailea, Maui. The objectives of the wildlife survey along the Pi'ilani Highway between Wailea Ike Drive and Kilohana Drive were:

1) To identify and document the presence and relative abundance of bird, mammal, amphibian, reptile, and invertebrate macrofauna which occur within the right-of-way (ROW) on either side of Pi'ilani Highway;
2) To map any State or Federally listed candidate, threatened, or endangered wildlife species, species of concern and/ or rare (either locally or State-wide) species on either side of the highway.

## 2.0 DESCRIPTION OF THE STUDY AREA

The terrain within the rights-of-way (ROW) on either side of Pi'ilani Highway varied from steeply sloping road cuts to flat or gently undulating lands. The vegetation along both sides of the highway is predominantly buffel grass. Kiawe (*Prosopis juliflora*) trees and shrubs of koa haole (*Luceana leucocephala*), slender mimosa (*Desmanthus pernambucanus*) castor (Ricinus communis), fuzzy rattle pod (*Crotolaria incana*), hairy abutilon (*Abutilon grandifolium*) and tree tobacco (*Nicotiana glauca)* were common along the highway ROW. SWCA prepared a separate botanical report for the Pi'ilani Highway ROW as a part of this study.

## 3.0 METHODS

### 3.1 Avian Survey Methods

Point count surveys were conducted by SWCA biologist Dr. Ling Ong and GIS Analyst Ryan Taira on March 5, 2009. 11 point count stations at least 162 m apart were placed on both sides of the ROW (Figure 2). The location of the observers at each point count site was confirmed in the field with a GPS receiver. Field observations of birds were recorded using 10 x 50 binoculars with a 6.5 degree field of vision. The observers also listened for vocalizations. The relative densities of species were estimated using five-minute 50 m radius point counts conducted during peak bird activity periods (0800 - 1100). However, since point counts were located along the side of a road, observations were confined to the same side of the highway that the point count was on. Observations were of five minute duration to maximize the likelihood of detecting new species during the survey (Lynch 1995).

Mammals, reptiles and invertebrates seen or heard during the point count surveys were also recorded as incidental sightings. Rare or previously unrecorded bird, mammal, reptile, or amphibian species seen between count stations were also noted.



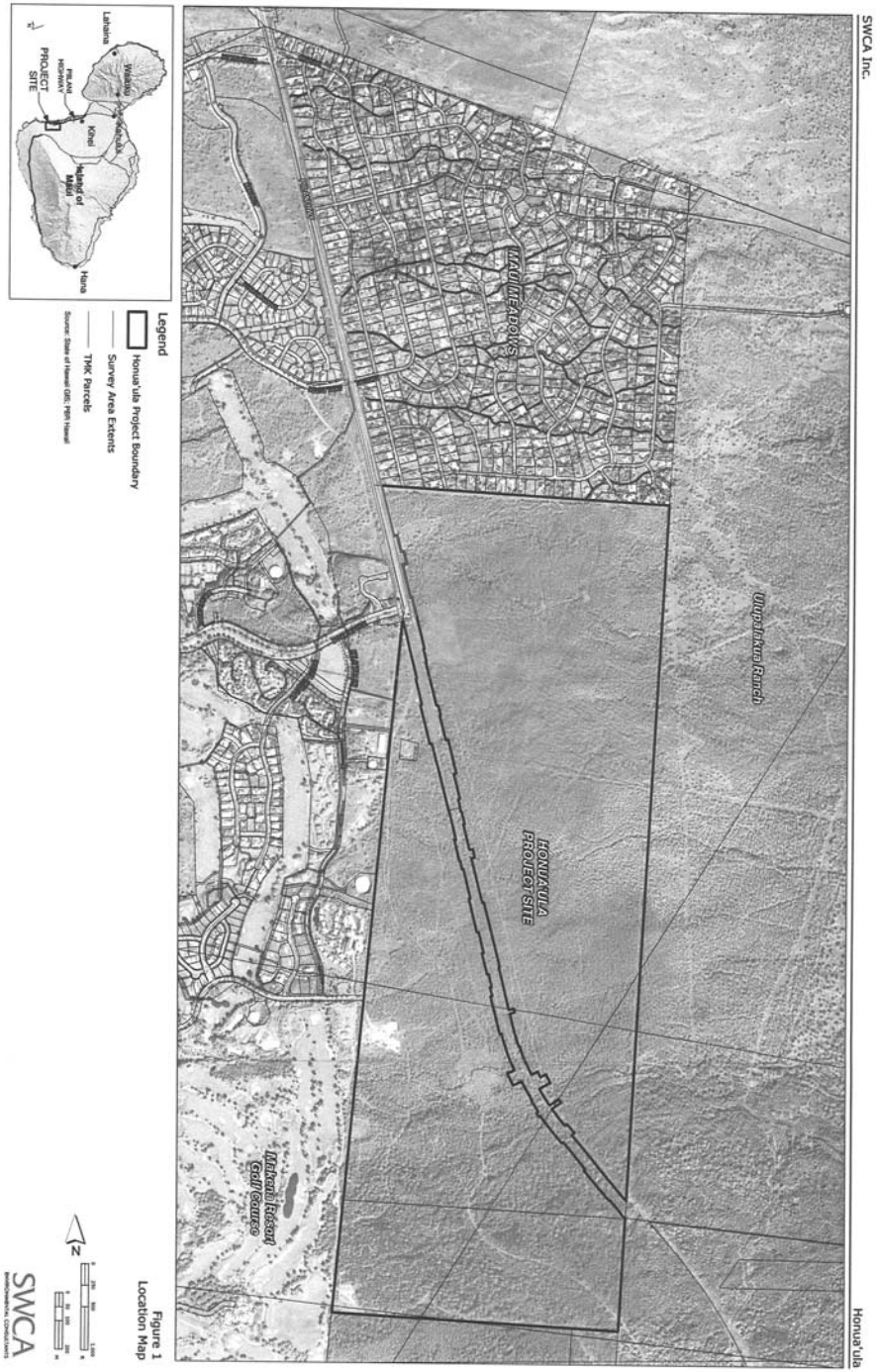


Figure 1
Location Map

### 3.2 Nocturnal Surveys for Hawaiian Hoary Bats

Surveys for endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*) were conducted at the project site between 1830 and 2030 on March 12, 2009 by SWCA biologists Dr. Ling Ong and Tiffany Thair. These surveys were conducted under ideal weather conditions using night vision goggles (Morovison PVS-7 Ultra).

Bat point count stations were established at 6 locations at least 317 m (1,040 ft) apart along the ROW and surveyed for ten minutes each (Figure 2). The detection distance for bats using night vision goggles was estimated to be 30 m radius at each point count station.

### 3.3 Surveys for the Blackburn's Sphinx Moth

Surveys for the Endangered Blackburn's sphinx moth were conducted within the project area on March 5, 2009 by SWCA biologist Dr. Ling Ong and GIS Analyst Ryan Taira. The surveys focused on host plants used by the various life stages of Blackburn's sphinx moth that are known to occur within the ROW. The only host plant observed within the ROW was the non-native tree tobacco (*Nicotiana glauca*), a known food plant for the caterpillar (USFWS 2005). Leaves and stems of tree tobacco plants within the ROW were examined carefully for the presence or sign of caterpillars, signs included frass (fecal matter), cut stems and leaves, and eggs.

## 4.0 RESULTS

### 4.1 Endangered Species

No federally or state endangered bird, mammal or insect species were found along the ROW. No caterpillars of the Blackburn Sphinx moth, other life stages or sign, were observed on the non-native tree tobacco plants in the ROW. No Hawaiian hoary bats were observed along the ROW in the evening and night.

### 4.2 Endemic or Native Species

No endemic or native birds or mammals were found along the ROW. It is possible that pueo (*Asio flammeus sandwichensis*) may hunt along the ROW at night. Pueo have been observed in Honua'ula Project site which is adjacent to the east end of the ROW (SWCA 2009).

### 4.3 Migratory Birds

Cattle egrets (*Bulbulcus ibis*) are common visitors to highway ROW throughout all the main Hawaiian Islands. A few cattle egrets were seen outside the point count stations during this survey. No other migratory birds were observed along the ROW even though the survey was conducted during the migratory season. Migratory birds, especially Pacific golden plover (*Pluvialis fulva*), which are the most common migrants in urban areas, are not expected to use the ROW as overwintering grounds. The dense stands of tall buffel grass present along the ROW represents unsuitable foraging habitat for the Pacific golden plover and other migratory shorebirds.

### 4.4 Introduced Birds

A total of 12 introduced bird species were recorded. House sparrow (*Passer domesticus*), zebra dove (*Geopelia striata*), common myna (*Acridotheres tristis*) and Japanese white-eye (*Zosterops japonicus*) were the most abundant (Table 1). Barn owls, while not observed, may hunt along the ROW at night and are found in Honua'ula Project site which is adjacent to the east end of the ROW (SWCA 2009).



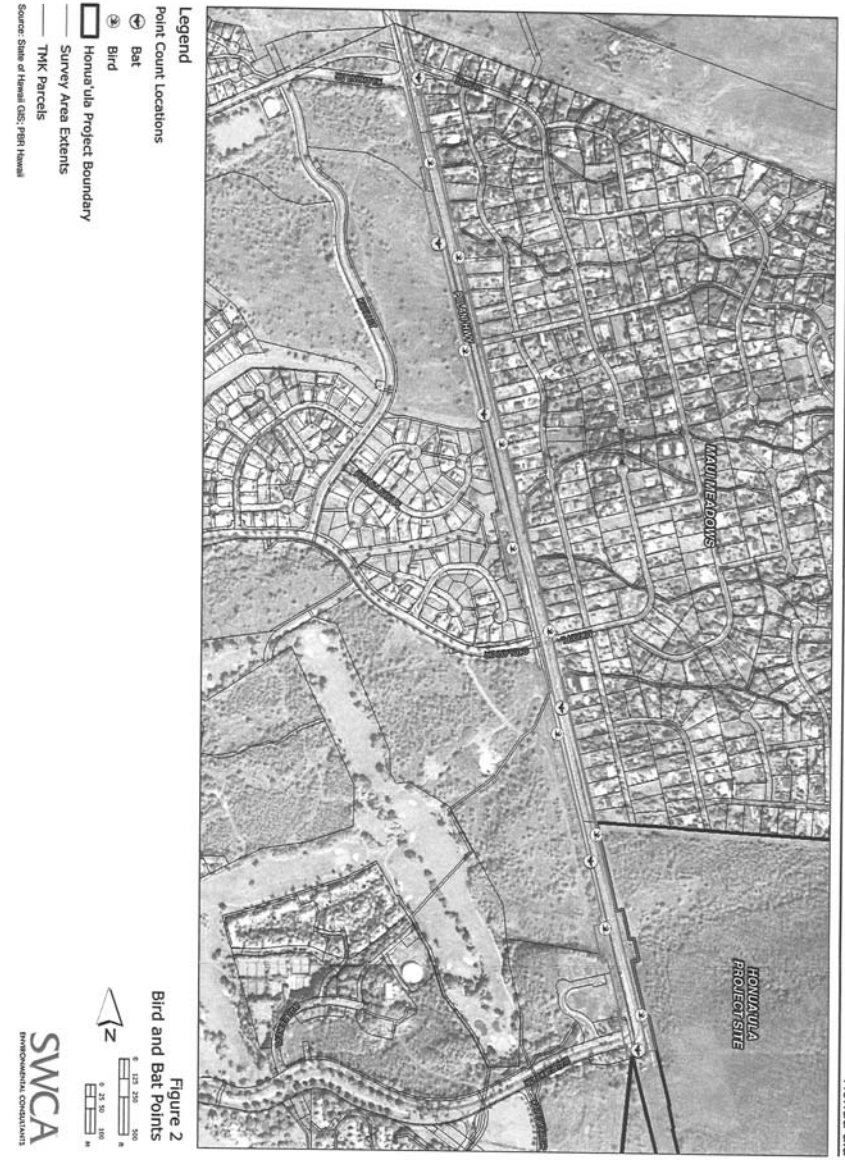


Figure 2
Bird and Bat Points

### 4.5 Mammals

Feral cats (*Felis catus*) and one juvenile axis deer (*Axis axis*) were observed during this study. Deer scat was also observed along the ROW, and mammals such as mongoose (*Herpestes javanicus*), rats (*Rattus* spp.) and mice can be expected to occur within the ROW.

### 4.6 Reptiles and Amphibians

There are no native reptiles or amphibians in Hawai'i (McKeown 1996). Skinks (Family: Scincidae) were observed during the morning survey. Geckos (Family: Gekkonidae) were heard during the nocturnal point counts for bats. One cane toad (*Bufo marinus*) was found dead along the road during the bird point count surveys.

### 4.7 Insects and Other Invertebrates

Introduced butterflies observed along the ROW consisted of the monarch butterfly (*Danaus plexippus*) and the cabbage white butterfly (*Artogeia rapae*). Other introduced insects observed within the ROW include the Garden spider (*Argiope appensa*) and the carpenter bee (*Xylocopa sonorina*).

## 5.0 CONCLUSION AND RECOMMENDATIONS

No endangered species were found or are likely to occur along the Pi'ilani Highway ROW. The wildlife species present with the ROW are found commonly throughout Maui and the main Hawaiian Islands.

Non-native tree tobacco (*Nicotiana glauca*) is present along the ROW. Caterpillars of the Blackburn's sphinx moth have been found on tree tobacco plants elsewhere in Kihei and within the adjacent Honua'ula project site (SWCA 2009). Therefore, to help insure against the accidental take of individual sphinx moths, each tree tobacco plant should first be screened by a qualified wildlife biologist prior to any land clearing. If sphinx moths or signs of sphinx moths (frass, cut stems or leaves, caterpillars, pupae, or adults) are found on any tree, that tree should be marked and protected against disturbance for the duration of the breeding season.

The use of plants within the Solenaceae (nightshade family) for ROW landscaping should be forbidden so as not to attract endangered Blackburn sphinx moths to the highway where they are at higher risk for injury or death.

## 6.0 REFERENCES


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USFWS (U.S. Fish and Wildlife Service). 2005. Recovery plan for the Blackburn's sphinx moth (*Manduca blackburni*). Portland, OR.




**Table 1. Relative abundance of birds observed during point counts.**
X = observed outside of point count stations

| Species name | Common Name | Status | Birds per point count (n=11) | Abundance Rank |
|---|---|---|---|---|
| *Bubulcus ibis* | Cattle egret | I | X | - |
| *Francolinus pondicerianus* | Gray francolin | I | 0.571 | 7 |
| *Streptopelia chinensis* | Spotted dove | I | 0.286 | 8 |
| *Geopelia striata* | Zebra dove | I | 1.929 | 2 |
| *Zosterops japonicus* | Japanese white-eye | I | 1.714 | 4 |
| *Acridotheres tristis* | Common myna | I | 1.786 | 3 |
| *Cardinalis cardinalis* | Northern cardinal | I | 0.643 | 6 |
| *Carpodacus mexicanus* | House finch | I | 0.929 | 5 |
| *Lonchura punctulata* | Nutmeg mannikin | I | 0.143 | 10 |
| *Passer domesticus* | House sparrow | I | 2.643 | 1 |
| *Padda oryzivora* | Java Sparrow | I | 0.071 | 11 |
| *Lonchura cantans* | African silverbill | I | 0.286 | 9 |

# APPENDIX E.

# Air Quality Study

**AIR QUALITY STUDY**

**FOR THE PROPOSED**

**PIILANI HIGHWAY WIDENING PROJECT**

**WAILEA, MAUI**

**Prepared for:**

**Honua'ula Partners, LLC**

**June 2009**


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## 1.0 SUMMARY

Honua'ula Partners, LLC is proposing highway improvements in the Wailea area on the island of Maui. These improvements involve widening Piilani Highway between Kilohana Drive and Wailea Ike Drive. The proposed improvements are needed to provide sufficient capacity to accommodate the projected increase in traffic volume at least through the year 2022.

This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed highway facilities. Mitigative measures are suggested where possible and appropriate to lessen any impacts from the project.

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

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the project area is very much affected by its elevation near sea level and by nearby mountains. Haleakala shelters the area from the northeast trade winds, and local winds (such as land/sea breezes and upslope/downslope winds) affect the wind flow in the area much of the time. Temperatures in the project area are generally very consistent and warm with average daily temperatures ranging from about 63°F to 86°F.



Rainfall in the project area is minimal with an average of only about 12 inches per year.

Except for periodic impacts from volcanic emissions (vog) and possibly occasional localized impacts from traffic congestion and local agricultural sources, the present air quality of the project area is believed to be relatively good. There is very little air quality monitoring data from the Department of Health for the project area, but the limited data that are available suggest that concentrations are generally well within state and national air quality standards.

If the proposed project is given the necessary approvals to proceed, it is inevitable that some short- and long-term impacts on air quality will unavoidably occur either directly or indirectly as a consequence of project construction and use. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment and from the disruption of traffic may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the project boundary. Hence, an effective dust control plan should be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Excess exhaust emissions from traffic disruption can be mitigated by moving construction equipment and workers to and from the project area during off-peak

traffic hours and by minimizing road closures during peak traffic periods.

To assess the potential long-term impact of emissions from vehicles operating within the project corridor, both mesoscale and microscale analyses were performed, and a qualitative assessment of mobile source air toxics was prepared. The mesoscale analysis was designed to provide estimates of air pollution emissions from traffic for the entire highway corridor, while the microscale analyses assessed ambient air quality impacts near selected intersections within the project study area. Both mesoscale and microscale analyses considered an existing (2008) case and three future scenarios. The future scenarios included 2016 without the project, 2016 with the project and 2022 with the project.

The mesoscale analysis indicated that in 2008 the totals of emissions from traffic using Piilani Highway within the study area were 383 lbs per day of carbon monoxide, 34 lbs per day of volatile organic compounds and 43 lbs per day of nitrogen oxides. These emission amounts are relatively small in comparison to island-wide emissions. Without the project in the year 2016, it was estimated that carbon monoxide emissions would increase by 57 percent, volatile organic compounds emissions would increase by 50 percent and nitrogen oxides emissions would remain unchanged. With the project in the year 2016 compared to without it, carbon monoxide emissions would decrease by 5 percent, volatile organic compounds emissions would decrease by about 11 percent, and nitrogen oxides emissions would decrease by 12 percent. Thus, the project would provide a net air quality benefit in terms of the estimated mesoscale emissions. In the year 2022 with the project, the emission estimates show a slight downward trend, and air quality can be expected to improve accordingly.



The microscale analyses performed for this project involved the use of computerized emission and atmospheric dispersion models to estimate current worst-case ambient concentrations of carbon monoxide during peak travel hours at three intersections in the project study area. The intersections studied included: Kilohana Drive at Piilani Highway, Okolani Drive at Piilani Highway and Wailea Ike Drive at Piilani Highway. The highest worst-case carbon monoxide concentration for 2008 was predicted to occur at the intersection of Kilohana Drive and Piilani Highway during the morning. The concentration at this location and time reached about 10 percent of the national standard and about 41 percent of the more stringent state standard. In the year 2016 without the project, the predicted worst-case concentrations in the project area increased by about 5 to 25 percent, but concentrations remained within the state and national standards. With the project in the year 2016 compared to without it, the intersection of Kilohana Drive and Piilani Highway would likely have slightly reduced carbon monoxide concentrations, while the intersections of Okolani Drive at Piilani Highway and Wailea Ike Drive at Piilani Highway would likely experience slightly higher concentrations. Concentrations in the year 2016 would remain well within the state and federal standards with or without the project. In the year 2022 with the project, concentrations would remain largely unchanged compared to 2016 with the project. Based on the microscale analysis, the project would have a slight negative air quality impact in the vicinity of Okolani Drive and Wailea Ike Drive and a small positive impact near Kilohana Drive.

A qualitative assessment of the potential impacts from mobile source air toxics (MSATs) indicated that the project would not likely result in higher MSAT emissions. This is based on the fact that the project is not expected to affect the volume of traffic using the project roadway.

Based on the results of the analyses of the potential long-term effects of the project, it may be concluded that the proposed highway widening project would likely have an overall positive impact on the air quality of the area. Although options are available to mitigate long-term traffic-related air quality impacts, requiring these to be implemented is probably unnecessary and unwarranted in this case.

## 2.0 INTRODUCTION

Honua'ula Partners, LLC is proposing to widen Piilani Highway on the island of Hawaii between Kilohana Drive and Wailea Ike Drive (see Figure 1 for general project location). The proposed project would involve the construction of additional northbound and southbound lanes so that Piilani Highway would provide two lanes for through traffic in each direction. The proposed improvements are needed to provide sufficient capacity to accommodate the projected increase in future traffic volumes through the year 2022. The proposed project is expected to be completed by 2016.

The purpose of this study was to evaluate the potential air quality impacts of the proposed project and recommend mitigative measures, if possible and appropriate, to reduce or eliminate any project-related degradation of air quality in the area. Before examining the potential impacts of the project, a discussion of ambient air quality standards is presented and background information concerning the regional and local climatology and the present air quality of the project area is provided.



## 3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the

case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. The U.S. Environmental Protection Agency (EPA) is currently working on a plan to phase out the national 1-hour ozone standard in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards were challenged in federal court. A Supreme Court ruling was issued during February 2001, and as a result, the new standards for particulate were finally implemented during 2005. To date, the Hawaii Department of Health has not updated the state particulate standards. In September 2001, the state vacated the state 1-hour standard for ozone and an 8-hour standard was adopted.

During the latter part of 2008, EPA revised the standard for lead making the standard more stringent. So far, the Hawaii Department of Health has not revised the corresponding state standard for lead.



## 4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

The topography of Maui is dominated by the great volcanic masses of Haleakala (10,023 feet) and the West Maui Mountains (5,788 feet). The island consists entirely of the slopes of these mountains and of a connecting isthmus. Haleakala is still considered to be an active volcano and last erupted about 1790. The project site is located along the lower western slope of Haleakala at an elevation of about 300 feet.

Maui lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. Because the project area is located on the lower western slope of Haleakala, it is sheltered much of the time from the northeast trade winds. Local winds such as land/sea breezes and/or upslope/downslope winds also influence the wind pattern for the area. During the daytime, winds can typically be expected to move onshore because of seabreeze and/or upslope effects or because of the aerodynamic cavity caused by the trade winds flowing around Haleakala. At night, winds are often drainage winds that move downslope and out to sea. During winter, occasional strong winds from the south or southwest occur in association with the passage of winter storm systems.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depends to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The project site's lower elevation and leeward location results in warmer temperatures compared with many other parts of the island. At Puunene, which is a few miles to the north of the project area and at an elevation of about 130 feet, average daily minimum and maximum temperatures are 63°F and 86°F, respectively [1]. Temperatures at the project site can be expected to be similar to this or slightly cooler due to the slightly higher elevation.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 is the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Pukualani area, stability classes 5 or 6 typically occur during the nighttime or early morning hours when temperature inversions form due to radiational cooling or to drainage flow from the nearby mountains. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.



Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3,000 feet (1,000 meters).

Rainfall can have a beneficial affect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The climate of the project area is relatively dry due to the leeward location. Historical records from Kihei, a few miles to the north, show that this area of Maui averages about only 12 inches of precipitation per year with the summer months being the driest [1].

## 5.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural and/or agricultural sources. Table 2 presents an air pollutant emission summary for the island of Maui for calendar year 1993. This is the most recent year for which an island-wide emission inventory is

available. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, most of the manmade particulate and sulfur oxides emissions on Maui originate from point sources, such as power plants and other fuel-burning industries. Nitrogen oxides emissions are roughly equally divided between point sources and area sources (mostly motor vehicle traffic). The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic and sugar cane burning), while hydrocarbons are emitted mainly from point sources. Emissions today are probably higher than those shown in the table, but the proportional relationships are likely about the same.

The largest sources of air pollution in the immediate project area are most likely agricultural operations and automobile traffic using local roadways. Emissions from these sources consist primarily of particulate, carbon monoxide and nitrogen oxides. Power plants burning diesel fuel are located several miles away. These sources mostly emit sulfur dioxide, nitrogen oxides and particulate. Volcanic emissions from distant natural sources on the Big Island also affect the air quality at times during kona wind conditions. By the time the volcanic emissions reach the project area, they consist mostly of fine particulate sulfate.

The State Department of Health operates a network of air quality monitoring stations at various locations around the state, but only very limited data are available for Maui Island. The only air quality data for the project area consists of particulate measurements collected at Kihei, which is about 4 miles to the north. These data are probably at least semi-representative of the project area. Table 3 summarizes the data from the Kihei monitoring station. Annual second-highest 24-hour particulate concentrations (which are most relevant to the air quality standards) ranged from 63 to 119 $\mu g/m^3$ between 2002 and 2006.



Average annual concentrations ranged from 19 to 25 $\mu g/m^3$. One exceedance of the state standard was recorded during 2005. This was reported to be due to agricultural tilling operations in the area.

Given the limited air pollution sources in the area, it is likely that air pollution concentrations are near natural background levels most of the time, except possibly for locations adjacent to agricultural operations or near traffic-congested intersections. Present concentrations of carbon monoxide in the project area are estimated later in this study based on computer modeling of motor vehicle emissions.

## 6.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur during project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site and from the disruption of traffic due to road construction.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with land clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity

taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [2] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would likely be somewhere near this level or possibly lower due to the rocky nature of the soil in the area. In any case, State of Hawaii Air Pollution Control Regulations [3] prohibit visible emissions of fugitive dust from construction activities at the project boundary, and thus an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-



powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Indirectly, slow-moving construction vehicles on roadways leading to and from the project area could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, road closures during peak traffic periods should be avoided to the extent possible to minimize air pollution impacts from traffic disruption. Thus, with careful planning and attention to dust control, most potential short-term air quality impacts from project construction can be mitigated.

## 7.0 LONG-TERM IMPACTS OF PROJECT

After construction is completed, the proposed widened highway is expected to result in improved traffic flow in the project area. To evaluate the potential long-term, ambient air quality impact of the proposed project, both mesoscale and microscale analyses were performed for each of four scenarios. The four scenarios studied included:

- 2008 with present conditions
- 2016 without the project
- 2016 with the project
- 2022 with the project.

Without the project in the year 2016, Piilani Highway is assumed to remain as it presently exists with one lane for through traffic in each direction between Kilohana Drive and Wailea Ike Drive. With the project in the year 2016 or 2022, Piilani Highway is assumed to be widened to two lanes for through traffic in each direction between Kilohana Drive and Wailea Ike Drive. With the project in the year 2022, Piilani Highway is assumed to be extended southward at Wailea Ike Drive. The with- and without-project alternatives indicated above are described in further detail in the project traffic study [4]. The following subsections of this report describe in detail the air quality study methodologies and the results of these analyses.

### 7.1 Mesoscale Analysis

To evaluate the potential mesoscale impact of the proposed project, an analysis of daily and annual emissions from the roadway network in the project area was prepared. The mesoscale analysis was designed to quantify project-related emissions of carbon monoxide, nitrogen oxides and hydrocarbons occurring within the study area for the existing case and for the future with and without project scenarios.

The mesoscale emission estimates for each scenario were made by first obtaining the estimated daily southbound and northbound traffic volumes and average travel speeds for the section of highway under study from the project traffic analysis [4]. The length of the section of highway included in the project is approximately 0.9 mile. Vehicle-miles per day for each traffic direction were then calculated. Emission estimates were then prepared for each scenario based on the estimated vehicle-miles of travel, average travel speeds, and U.S. EPA emission factors obtained using the computer model MOBILE6.2 [5]. MOBILE6.2 is the most recently released version of the EPA mobile emission model.



Aside from vehicle speed, several other key inputs are required by the model. One of these is vehicle mix. Unless very detailed information is available, national average values are typically assumed, which is what was used for the present study. Based on national average vehicle mix figures, the present vehicle mix in the project area was estimated to be 38.0% light-duty gasoline-powered automobiles, 49.1% light-duty gasoline-powered trucks and vans, 3.6% heavy-duty gasoline-powered vehicles, 0.2% light-duty diesel-powered vehicles, 8.5% heavy-duty diesel-powered trucks and buses, and 0.6% motorcycles. For the future scenarios studied, the vehicle mix was estimated to change somewhat with fewer light-duty gasoline-powered automobiles and more light-duty gasoline-powered trucks and vans.

Another key input to MOBILE6.2 is ambient temperature. An average ambient temperature 68 degrees F was used for all of the mesoscale emission computations.

The resulting emission factors generated by MOBILE6.2 are given in terms of grams of volatile organic compounds (VOC), carbon monoxide (CO) and nitrogen oxides (NOx) emitted per vehicle mile. Within the speed range of interest, emission factors for carbon monoxide and nitrogen oxides are generally proportional to vehicle speed, while emission factors for VOC are inversely proportional to vehicle speed. It should also be noted that at a given vehicle speed emission factors are generally lower for future years due to the effects of older, more-polluting vehicles being retired.

Table 3 provides the details of the mesoscale analysis. A summary of the results is presented below:

| Scenario | Emissions (tons/year) | | |
|---|---|---|---|
| | CO | NOx | VOC |
| 2008 Existing | 70 | 8 | 6 |
| 2016 Without Project | 110 | 8 | 9 |
| 2016 With Project | 104 | 7 | 8 |
| 2022 With Project | 99 | 5 | 6 |

In comparison to the island-wide emissions given in Table 2, emissions in the year 2008 from traffic within the project area were relatively small, amounting to much less than 1 percent.

Without the project in the year 2016, carbon monoxide emissions within the project area were estimated to increase by about 57 percent compared to existing emissions, and VOC emissions were estimated to increase by about 50 percent. Nitrogen oxides emissions, on the other hand, were estimated to remain about the same. Even with the increases in carbon monoxide and VOC emissions, the emission amounts would remain small in comparison to island-wide emissions.

With the project in the year 2016, emissions of carbon monoxide, nitrogen oxides and VOC would decrease slightly compared to the without-project case. Emissions of carbon monoxide would continue to be higher compared to the existing emissions, while all emissions would be relatively small in comparison to island-wide emissions.

In the year 2022 with the project, despite slightly higher traffic volumes, emissions were estimated to decrease slightly compared to the 2016 with project case. This is due to the reduction in



emission factors with time. Carbon monoxide emissions would likely remain higher than the existing levels but low in comparison to island-wide emissions.

### 7.2 Microscale Analyses

In most traffic-related air quality assessments, roadway intersections are one of the primary concerns because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. To investigate potential air quality impacts near roadway intersections within the project area, microscale analyses were performed for selected locations using computerized emission and atmospheric dispersion models to estimate worst-case ambient carbon monoxide concentrations. Carbon monoxide was selected for the microscale analyses because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas other air pollutants most often are regional issues that cannot be addressed by a single highway improvement.

The selected locations for microscale analyses included three intersections along the project corridor. These included:

- Kilohana Drive at Piilani Highway
- Okolani Drive at Piilani Highway
- Wailea Iki Drive at Piilani Highway.

All three of these intersections currently exist, although Piilani Highway currently ends at Wailea Iki Drive.

The main objective of the microscale analyses was to estimate worst-case 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can be made. A comparison of the estimated values to the national and state AAQS will provide another measure of significance.

Traffic estimates for the project indicate that traffic volumes generally are or will be higher during the afternoon peak hour than during the morning peak period. However, worst-case emission and meteorological dispersion conditions typically occur during the morning hours at most locations. Thus, both morning and afternoon peak-traffic hours were examined to ensure that worst-case concentrations were identified.

As for the mesoscale emission burden analysis, the EPA computer model MOBILE6.2 was used to calculate vehicular emissions for each year/scenario studied in the microscale analyses. Vehicle mix and ambient temperatures, inputs to MOBILE6.2, were assumed to be the same as those used for the mesoscale emission estimates.

After computing vehicular carbon monoxide emissions through the use of MOBILE6.2, these data were then input to an atmospheric dispersion model. EPA air quality modeling guidelines [6] currently recommend that the computer model CAL3QHC [7] be used to assess carbon monoxide concentrations at roadway intersections, or in areas where its use has previously been established, CALINE4 [8] may be used. Until a few years ago, CALINE4 was used extensively in Hawaii to assess air quality impacts at roadway intersections. In December 1997, the California Department of Transportation recommended that the intersection mode of CALINE4 no longer be used because it was



thought the model had become outdated. Studies have shown that CALINE4 may tend to over-predict maximum concentrations in some situations. Therefore, CAL3QHC was used for the subject analysis.

CAL3QHC was developed for the U.S. EPA to simulate vehicular movement, vehicle queuing and atmospheric dispersion of vehicular emissions near roadway intersections. It is designed to predict 1-hour average pollutant concentrations near roadway intersections based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Although CAL3QHC is intended primarily for use in assessing atmospheric dispersion near signalized roadway intersections, it can also be used to evaluate unsignalized intersections. This is accomplished by manually estimating queue lengths and then applying the same techniques used by the model for signalized intersections. Currently, only one of the study intersections (Kilohana Drive at Piilani Highway) is signalized.

Input peak-hour traffic data were obtained from the traffic study cited previously. This included vehicle approach volumes, saturation capacity estimates, intersection laneage and signal timings (where applicable). All emission factors that were input to CAL3QHC for free-flow traffic on roadways were obtained from MOBILE6.2 based on assumed free-flow vehicle speeds corresponding to the posted speed limits.

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Concentrations predicted by air quality models generally are not considered valid within the roadway-mixing zone. The roadway-mixing zone is

usually taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of a cross street. Model receptor sites were thus located at the edges of the mixing zones near all intersections that were studied for all scenarios. This implies that pedestrian sidewalks or public walkways either already exist or are assumed to exist in the future (no sidewalks are planned along the new roadway section). All receptor heights were placed at 1.8 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is the atmospheric stability category. For these analyses, atmospheric stability category 6 was assumed for morning scenarios and stability category 4 was assumed for afternoon cases. These are the most conservative stability categories that are generally used for estimating pollutant dispersion at suburban locations for these time periods. For all cases, a surface roughness length of 100 cm was assumed and a mixing height of 300 meters was used. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. Concentration estimates were calculated at wind directions of every 5 degrees.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at relatively low levels. Hence, background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a small background concentration of 0.5 ppm to all predicted concentrations for 2008. Although at least moderate development and increased traffic are expected to occur within the project area within the next few years, background carbon monoxide concentrations may not change significantly since individual emissions from motor vehicles are



forecast to decrease with time. Hence, a background value of 0.5 ppm was assumed to persist for the future scenarios studied.

Predicted Worst-Case 1-Hour Concentrations

Table 4 summarizes the final results of the microscale modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations for 2008 and for each of the three future alternatives that were studied. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the highest estimated worst-case 1-hour concentration for the present (2008) scenario was 4.1 $mg/m^3$, and this occurred during the morning at the intersection of Kilohana Drive and Piilani Highway. Worst-case values for other locations and times ranged from 2.0 to 3.1 $mg/m^3$. These concentrations are within both the national AAQS of 40 $mg/m^3$ and the state standard of 10 $mg/m^3$.

In the year 2016 without the proposed project, the predicted highest worst-case 1-hour concentration occurred again during the morning at the intersection of Kilohana Drive and Piilani Highway with a value of 4.5 $mg/m^3$. Other concentrations for this scenario at other times and locations ranged between 2.2 and 3.3 $mg/m^3$. Without the project, carbon monoxide concentrations in the year 2016 were predicted to increase by about 5 to 25 percent in the project area compared to the existing case. Even with the increase, worst-case values would likely remain well within the state and federal standards for this scenario.

In the year 2016 with the proposed project, carbon monoxide concentrations were predicted to be about 15 percent lower than the without project scenario at the intersection of Kilohana Drive and Piilani Highway, but other locations would likely experience an increase of about 5 to 15 percent. Similar to the existing and 2016 without-project scenarios, the highest worst-case concentration with the project was predicted to occur during the morning at the intersection of Kilohana Drive and Piilani Highway. A worst-case 1-hour concentration of 3.9 $mg/m^3$ was predicted to occur at this location and time. Worst-case concentrations at other locations and times ranged between about 2.5 and 3.2 $mg/m^3$. Predicted worst-case 1-hour concentrations for the 2016 with-project alternative at all locations studied continued to remain well within both the national and state standards.

In the year 2022 with the proposed project, carbon monoxide concentrations were predicted to remain mostly unchanged compared to the 2016 with-project scenario. Compared to the existing case, worst-case concentrations were estimated to remain nearly unchanged at the intersection of Kilohana Drive and Piilani Highway, and increase moderately at other locations. The highest worst-case concentration with the project in the year 2022 was predicted to continue to occur during the morning at the intersection of Kilohana Drive and Piilani Highway. A worst-case 1-hour concentration of 4.1 $mg/m^3$ was predicted to occur at this location and time. Worst-case concentrations at other locations and times ranged between about 2.9 and 3.7 $mg/m^3$. Predicted worst-case 1-hour concentrations for the 2022 with-project alternative at all locations studied remained well within both the national and state standards.



Predicted Worst-Case 8-Hour Concentrations

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One recent study based on modeling [9] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from about 0.4 to 0.5. EPA guidelines [10] recommend using a value of 0.6 to 0.7 unless a locally derived persistence factor is available. Recent monitoring data for Honolulu reported by the Department of Health [11] suggest that this factor may range between about 0.35 and 0.55 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentrations. However, it should be noted that the 8-hour concentration estimates are generally less reliable than the 1-hour values due to the prediction methodology involved.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5. For the 2008 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the three locations studied ranged from 1.2 $mg/m^3$ to 2.0 $mg/m^3$, with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. The estimated worst-case concentrations for the existing case were well within both the national limit of 10 $mg/m^3$ and the state standard of 5 $mg/m^3$.

For the 2016 without project scenario in comparison to the existing case, worst-case concentrations increased by about 10 to 25 percent. Concentrations ranged from 1.4 mg/m$^3$ to 2.2 mg/m$^3$ with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. Despite the increase, all predicted 8-hour concentrations for this scenario were well within both the national and the state AAQS.

For the 2016 with-project scenario in comparison to the 2016 without-project case, worst-case concentrations decreased slightly at Kilohana Drive and increased slightly at Okolani Drive and at Wailea Ike Drive. Worst-case concentrations ranged from 1.6 mg/m$^3$ to 2.0 mg/m$^3$ with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. All predicted 8-hour concentrations for this scenario were well within both the national and the state AAQS.

With the project in the year 2022, worst-case carbon monoxide concentrations at the three locations studied would not change significantly compared to the 2016 with-project scenario. Worst-case concentrations ranged between 1.8 and 2.0 mg/m$^3$ with the highest concentration occurring at the intersection of Kilohana Drive and Piilani Highway. All predicted 8-hour concentrations for the 2022 with-project alternative were well within both the national and the state standards.

Conservativeness of Estimates

The results of this study reflect several assumptions that were made concerning both traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady



wind of 1 meter per second blowing from a single direction for an hour is extremely unlikely and may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above. The 8-hour estimates are also conservative in that it is unlikely that anyone would occupy the assumed receptor sites (within 3 m of the roadways) for a period of 8 hours.

### 7.3 Mobile Source Air Toxics Analysis

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources on March 29, 2001. This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor

vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, Federal Highway Administration (FHWA) projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent. As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of the Clean Air Act (CAA) Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

### 7.3.1 Unavailable Information for Project Specific MSAT Impact Analysis

This document includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not provide a means to predict the project-specific health impacts of the emission changes associated with the project alternatives. Due to these limitations, the following discussion is included in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information.

**Information that is Unavailable or Incomplete.** Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts



based on the estimated exposure. Each of these steps as outlined below is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

- **Emissions:** The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE6.2 is a trip-based model, and emission factors are projected based on a typical trip of 7.5 miles and on average speeds for this typical trip. This means that MOBILE6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of particulate matter under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis. These deficiencies compromise the capability of MOBILE6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

- **Dispersion.** The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the national ambient air quality standards. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program (NCHRP) is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the National Environmental Policy Act (NEPA) process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

- **Exposure Levels and Health Effects.** Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly



because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

***Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs.*** Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses. Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects

that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.



There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes, particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable one to perform a more comprehensive evaluation of the health impacts specific to this project.

***Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.*** Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools can be used to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete

information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

Within this document, a quantitative analysis of MSAT emissions relative to the various project alternatives cannot be provided, and it is acknowledged that the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

### 7.3.2 Qualitative Assessment of Project MSATs

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*.

For each project alternative, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each



alternative. For this project, as indicated in Table 3, the estimated daily VMT for each scenario were as follows:

| Scenario | VMT/day |
|---|---|
| 2008 Existing | 13,590 |
| 2016 Without Project | 28,926 |
| 2016 With Project | 28,926 |
| 2022 With Project | 30,330 |

Between 2008 and 2016, VMT within the project corridor are expected to more than double. In the year 2016, the estimated VMT with or without the project are the same, i.e., the proposed project is not expected to affect traffic volumes. Between 2016 and 2022, the VMT is projected to increase by about 5 percent.

Although the with-project alternative is not expected to affect VMT, the with-project alternative will provide for somewhat higher average travel speeds due to the improved traffic flow. The relationship between travel speed and MSAT emission rates has not been well established. If it is assumed that the average travel speed is not a factor and that the proposed project will not affect VMT, then the project would probably have no affect on the emission of MSATs.

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent from 2000 to 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions

is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future.

In sum, under the with-project alternative in the design year, it is expected MSAT emissions in the immediate area of the project would not change relative to the without project alternative based solely on VMT considerations. It is likely, however, that the improved traffic flow with the project would actually help to reduce MSAT emissions, but this cannot be quantified at the present time.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

### Existing Conditions

Although very little ambient air quality data are available to characterize existing conditions, it is likely that state and federal ambient air quality standards are currently being met in the project area, except perhaps for occasional exceedances of the stringent state carbon monoxide standards within small areas near traffic-congested locations. Locations adjacent to large-scale agricultural activities may also be occasionally affected by dust.

### Short-Term Impacts and Mitigation

The major potential short-term impact of the project on air quality will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall and other factors. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at



any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the project that have been disturbed could be controlled by mulching or chemical stabilization. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Establishment of landscaping early in the construction schedule will also help to control dust.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from the disruption of normal traffic flow. Increased vehicular emissions due to the disruption of traffic can be alleviated by minimizing road closures during peak traffic hours.

### Long-Term Mesoscale Impacts

Mesoscale emissions from the project are relatively small compared to island-wide emissions. Without the project by the year 2016, mesoscale analysis indicates that emissions of carbon monoxide and VOC from motor vehicles operating within the project study area would increase by about 50 percent or more compared to 2008 emissions while nitrogen oxides emissions would remain about the same. Even with these increases, emissions from traffic operating within the project area would remain relatively small compared to island-wide emissions. With the proposed project in the year 2016, emissions of carbon monoxide, nitrogen oxides and VOC would be slightly lower compared to the without-project case. Thus, air quality in the area will likely benefit from the project. Between 2016 and 2022, there would likely be a diminishing trend in emissions, despite a projected small increase in traffic volumes, and air quality would likely improve.

**Long-Term Microscale Impacts**

Without the project, microscale analysis of selected intersections in the project area for the year 2016 indicate that worst-case concentrations of carbon monoxide can be expected to increase by about 5 to 25 percent compared to existing concentrations, but concentrations would remain well within the standards. With the project in the year 2016, worst-case carbon monoxide concentrations would likely decrease at the intersection of Kilohana Drive and Piilani Highway by about 10 percent and increase by about 5 to 20 percent in the vicinity of Okolani Drive and Piilani Highway and at the intersection of Wailea Ike Drive and Piilani Highway. Even with the increased concentrations at some locations, the worst-case concentrations should remain well within the state and federal standards in the year 2016 with the project. With the project in the year 2022, carbon monoxide concentrations along Piilani Highway would remain about the same or decrease at the intersection of Kilohana Drive and remain about the same or increase slightly near the intersections of Okolani Drive and Wailea Ike Drive. Concentrations in the year 2022 with the project would remain well within the state and federal standards.

**Long-Term MSAT Impacts**

The analysis of potential long-term impacts due to mobile source air toxics (MSATs) is primarily a qualitative assessment based on the estimated vehicle miles of travel for each of the study scenarios. This analysis did not reveal any significant differences amongst the alternatives studied. Based on the higher traffic volumes that are expected, emissions of MSATs in the 2016-2022 timeframe may be about twice as high as existing emissions, with or without the project. However, the project itself would



not result in increased traffic volumes, and hence it should not result in increased emissions of MSATs. The improved traffic flow with the project may actually help to reduce MSAT emissions.

**Long-Term Mitigation**

Options available to mitigate long-term, traffic-related air pollution are generally to further improve roadways, to reduce traffic and/or to reduce individual vehicular emissions. Aside from providing added roadway improvements, air pollution impacts from vehicular emissions could conceivably be additionally mitigated by reducing traffic volumes through the promotion of bus service and car pooling in the project area and/or by adjusting local school and business hours to begin and end during off-peak times. This mitigation measure is generally considered only partially successful. Reduction of emissions from individual vehicles would have to be achieved through the promulgation of local, state or federal air pollution control regulations. For example, Hawaii currently does not require annual inspections of motor vehicle air pollution control equipment. However, at the present time there is no indication that the state is contemplating adopting such rules.

From a mesoscale viewpoint, the with-project alternative would result in reduced air pollution emissions in the project area. Thus, the project can be expected to provide a positive impact on air quality, and it does not appear that mitigation for long-term impacts is warranted based on the mesoscale analysis of the project.

Mitigation measures to address microscale impacts are similar to those for mesoscale impacts. An additional mitigation measure for microscale impacts might be to provide added buffer zones between

walkways and roadways, although technically, the public would have to somehow be excluded from the buffer zones. The predicted worst-case concentrations in this report are based on a separation distance of 3 m (10 ft) between walkways and roadways. Doubling this distance to about 6 m (20 ft) would reduce maximum concentrations by about 10 to 15 percent.

As indicated above, the analysis of microscale impacts indicated that the with-project alternative would result in higher carbon monoxide concentrations compared to the without-project scenario at some locations, but worst-case concentrations of carbon monoxide with the project would be well within the state and national standards through the design year (2022). Thus, mitigation of air quality impacts based on the microscale analysis does not appear to be warranted.

The analysis of MSAT impacts suggests that the increase in MSAT emissions will likely be minimal for the with-project alternative. Thus, mitigation based on the MSAT impact analysis does not appear to be warranted.



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# Figure 1 - Project Location

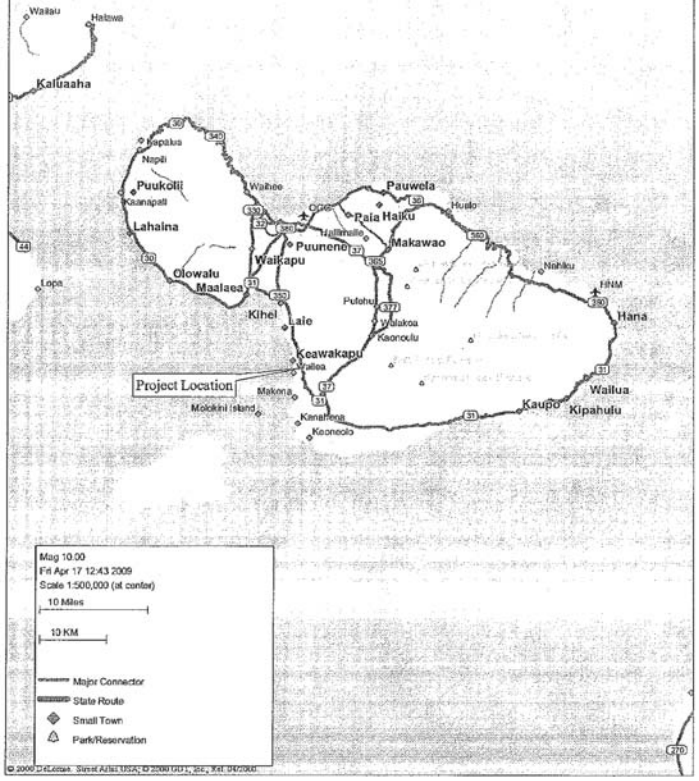


Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL
AMBIENT AIR QUALITY STANDARDS

| Pollutant | Units | Averaging Time | Maximum Allowable Concentration | | |
|---|---|---|---|---|---|
| | | | National Primary | National Secondary | State of Hawaii |
| Particulate Matter (<10 microns) | µg/m³ | Annual<br>24 Hours | -<br>150[a] | -<br>150[a] | 50<br>150[b] |
| Particulate Matter (<2.5 microns) | µg/m³ | Annual<br>24 Hours | 15[c]<br>35[d] | 15[c]<br>35[d] | -<br>- |
| Sulfur Dioxide | µg/m³ | Annual<br>24 Hours<br>3 Hours | 80<br>365[b]<br>- | -<br>-<br>1300[b] | 80<br>365[b]<br>1300[b] |
| Nitrogen Dioxide | µg/m³ | Annual | 100 | 100 | 70 |
| Carbon Monoxide | mg/m³ | 8 Hours<br>1 Hour | 10[b]<br>40[b] | -<br>- | 5[b]<br>10[b] |
| Ozone | µg/m³ | 8 Hours<br>1 Hour | 157[e]<br>235[f] | 157[e]<br>235[f] | 157[e]<br>- |
| Lead | µg/m³ | Calendar Quarter | 0.15[g] | 0.15[g] | 1.5 |
| Hydrogen Sulfide | µg/m³ | 1 Hour | - | - | 35[b] |

[a] Not to be exceeded more than once per year on average over three years.
[B] Not to be exceeded more than once per year.
[C] Three-year average of the weighted annual arithmetic mean.
[D] 98th percentile value averaged over three years.
[E] Three-year average of fourth-highest daily 8-hour maximum.
[F] Standard is attained when the expected number of exceedances is less than or equal to 1.
[G] Rolling 3-month average.

**Table 2**

**AIR POLLUTION EMISSIONS INVENTORY FOR ISLAND OF MAUI, 1993**

| Air Pollutant | Point Sources (tons/year) | Area Sources (tons/year) | Total (tons/year) |
|---|---|---|---|
| Particulate | 63,275 | 7,030 | 70,305 |
| Sulfur Oxides | 6,419 | nil | 6,419 |
| Nitrogen Oxides | 7,312 | 8,618 | 15,930 |
| Carbon Monoxide | 4,612 | 20,050 | 24,662 |
| Hydrocarbons | 1,991 | 234 | 2,225 |

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

**Table 3**

**ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST PIILANI HIGHWAY WIDENING PROJECT**

| Parameter / Location | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| **Particulate (PM-10) / Kihei** | | | | | |
| 24-Hour Averaging Period: | | | | | |
| No. of Samples | 352 | 340 | 308 | 337 | 337 |
| Highest Concentration ($\mu g/m^3$) | 95 | 78 | 65 | 155 | 72 |
| 2nd Highest Concentration ($\mu g/m^3$) | 80 | 72 | 63 | 119 | 66 |
| No. of State AAQS Exceedances | 0 | 0 | 0 | 1 | 0 |
| Annual Average Concentration ($\mu g/m^3$) | 20 | 23 | 19 | 25 | 22 |

Source: State of Hawaii Department of Health, "Annual Summaries, Hawaii Air Quality Data, 2002 - 2006"

**Table 3**

**ESTIMATED EMISSIONS FOR PIILANI HIGHWAY - KILOHANA DRIVE TO WAILEA IKE DRIVE**

| Scenario / Traffic Direction | Length (miles) | Average Daily Traffic Volume | Vehicle Miles Per Day | Average Travel Speed (mph) | Emission Factors (grams/veh-mile) | | | Emissions (lb/day) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CO | NOx | VOC | CO | NOx | VOC |
| Existing / Southbound | 0.9 | 7,700 | 6,930 | 32 | 12.8 | 1.43 | 1.15 | 195 | 22 | 18 |
| Existing / Northbound | 0.9 | 7,400 | 6,660 | 35 | 12.8 | 1.42 | 1.11 | 188 | 21 | 16 |
| | Totals | 15,100 | 13,590 | | | | | 383 | 43 | 34 |
| | | | | | | | (tons/yr) | 70 | 8 | 6 |
| 2016 Without Project / Southbound | 0.9 | 16,220 | 14,598 | 24 | 9.32 | 0.665 | 0.725 | 300 | 21 | 23 |
| 2016 Without Project / Northbound | 0.9 | 15,920 | 14,328 | 22 | 9.53 | 0.679 | 0.751 | 301 | 21 | 24 |
| | Totals | 32,140 | 28,926 | | | | | 601 | 42 | 47 |
| | | | | | | | (tons/yr) | 110 | 8 | 9 |
| 2016 With Project / Southbound | 0.9 | 16,220 | 14,598 | 30 | 8.96 | 0.638 | 0.668 | 288 | 20 | 21 |
| 2016 With Project / Northbound | 0.9 | 15,920 | 14,328 | 32 | 8.96 | 0.636 | 0.653 | 283 | 20 | 21 |
| | Totals | 32,140 | 28,926 | | | | | 571 | 40 | 42 |
| | | | | | | | (tons/yr) | 104 | 7 | 8 |
| 2022 With Project / Southbound | 0.9 | 17,000 | 15,300 | 29 | 8.15 | 0.418 | 0.511 | 275 | 14 | 17 |
| 2022 With Project / Northbound | 0.9 | 16,700 | 15,030 | 30 | 8.11 | 0.415 | 0.504 | 268 | 14 | 17 |
| | Totals | 33,700 | 30,330 | | | | | 543 | 28 | 34 |
| | | | | | | | (tons/yr) | 99 | 5 | 6 |

**Table 4**

**ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS NEAR INTERSECTIONS WITHIN PIILLANI HIGHWAY WIDENING PROJECT (milligrams per cubic meter)**

| Roadway Intersection | Year/Scenario | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2008/Present | | 2016/Without Project | | 2016/With Project | | 2022/With Project | |
| | AM | PM | AM | PM | AM | PM | AM | PM |
| Kilohana Drive at Piilani Highway | 4.1 | 3.1 | 4.5 | 3.3 | 3.9 | 2.9 | 4.1 | 3.0 |
| Okolani Drive at Piilani Highway | 2.4 | 2.1 | 3.0 | 2.2 | 3.1 | 2.6 | 3.7 | 2.9 |
| Wailea Ike Drive at Piilani Highway | 2.4 | 2.0 | 2.8 | 2.2 | 3.2 | 2.5 | 3.7 | 3.0 |

Hawaii State AAQS: 10
National AAQS: 40

Table 5

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS
NEAR INTERSECTIONS WITHIN PIILANI HIGHWAY WIDENING PROJECT
(milligrams per cubic meter)

| Roadway Intersection | Year/Scenario | | | |
|---|---|---|---|---|
| | 2008/Present | 2016/Without Project | 2016/With Project | 2022/With Project |
| Kilohana Drive at Piilani Highway | 2.0 | 2.2 | 2.0 | 2.0 |
| Okolani Drive at Piilani Highway | 1.2 | 1.5 | 1.6 | 1.8 |
| Wailea Ike Drive at Piilani Highway | 1.2 | 1.4 | 1.6 | 1.8 |

Hawaii State AAQS: 5
National AAQS: 10

# APPENDIX F.

# Acoustic Study

# ACOUSTIC STUDY FOR THE PIILANI HIGHWAY WIDENING KILOHANA STREET TO WAILEA IKE DRIVE WAILEA, MAUI

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JULY 2010
(REVISED APRIL 2011)

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## CHAPTER I. SUMMARY

The existing and future traffic noise levels in the environs of the proposed Piilani Highway Widening (between Kilohana Street and Wailea Ike Drive) Project in Wailea on the island of Maui were studied to evaluate potential noise impacts associated with the Build Alternative. Noise measurements were obtained, traffic noise predictions developed, and noise abatement alternatives evaluated.

Existing traffic noise levels in the project area currently exceed the U.S. Federal Highway Administration (FHWA) and Hawaii State Department of Transportation, Highways Division (HDOT) noise abatement criteria. Future (CY 2022) traffic noise levels are expected to exceed the "66 Leq" HDOT noise abatement criteria along the mauka (east) and makai (west) Rights-of-Way, under the Build or No-Build Alternatives. The noise abatement criteria will continue to be exceeded at noise sensitive dwelling units, but not at any public use facilities or park lands. Traffic noise mitigation measures in the form of noise barrier construction may be applied at the affected residences, but should be examined according to the criteria of reasonable and feasible. Because of the potential visual impacts of the noise barriers and the potential for graffiti, landscaping should be used on the roadway side of the barriers.

The following general conclusions can be made in respect to the number of impacted structures and lands which can be expected by CY 2022 under the Build Alternative. These conclusions are valid as long as the future vehicle mixes and average speeds do not differ from the assumed values.

- The HDOT's ">15 dB increase" criteria for substantial change in traffic noise levels will not be exceeded at any noise sensitive structure. Maximum increases in traffic noise levels in the project area should not exceed 6.6 dB as a result of growth in traffic volumes and the construction of the project.

- Under the No Build Alternative, future traffic noise levels at 13 residences which are located within the limits of project construction are expected to exceed the HDOT "66 Leq" criteria.

- Under the Build Alternative, future traffic noise levels at 16 residences which are located within the limits of project construction are expected to exceed the HDOT "66 Leq" criteria if they do not benefit from the noise shielding benefits of new sound attenuating walls. No parks or public structures (such as churches) within the limits of project construction should be affected by the proposed project or require noise mitigation measures under the Build Alternative.

- Future traffic noise levels at two commercial structures under construction at the future Wailea Gateway Shopping Center should not exceed current HDOT and FHWA noise criteria.



- The 5 mile per hour reduction in the posted maximum speed limit of 45 miles per hour to 40 miles per hour in the northbound lanes will result it a maximum traffic noise reduction benefit of 1.0 dB.

- The construction of sound attenuation barriers along the highway Rights-of-Way and Top of Fill is a possible noise mitigation measure which could also meet FHWA and HDOT policy requirements. For ground level receptors, 8 of the 11 sound attenuating walls which are required to meet the minimum 5 dBA attenuation criteria at the affected residences exceed the HDOT costs which are considered to be reasonable and feasible. Sound attenuating walls fronting lots TMK: 2-1-15: 015, TMK: 2-1-15: 013, and TMK: 2-1-08: 112 may be included in the highway improvement project since they will probably meet the HDOT cost criteria for "reasonable and feasible" traffic noise mitigation measures.

Potential short term construction noise impacts are possible during the project construction period along the entire project corridor. However, minimizing these types of noise impacts is possible using standard curfew periods, properly muffled equipment, administrative controls, and construction barriers as required. The possible use of blasting or chemicals to break or dislodge rock will be considered to reduce the total construction period, and to reduce the amount of time required to remove the rock if only mechanical (such as hoe ram) equipment were used. Controlled blasting operations using relatively small charges may be feasible without causing adverse noise and vibration impacts at nearby residences. In addition, the use of chemical expansion to break or dislodge rock during construction will also be considered where blasting or mechanical means are less desirable.

## CHAPTER II. GENERAL STUDY METHODOLOGY

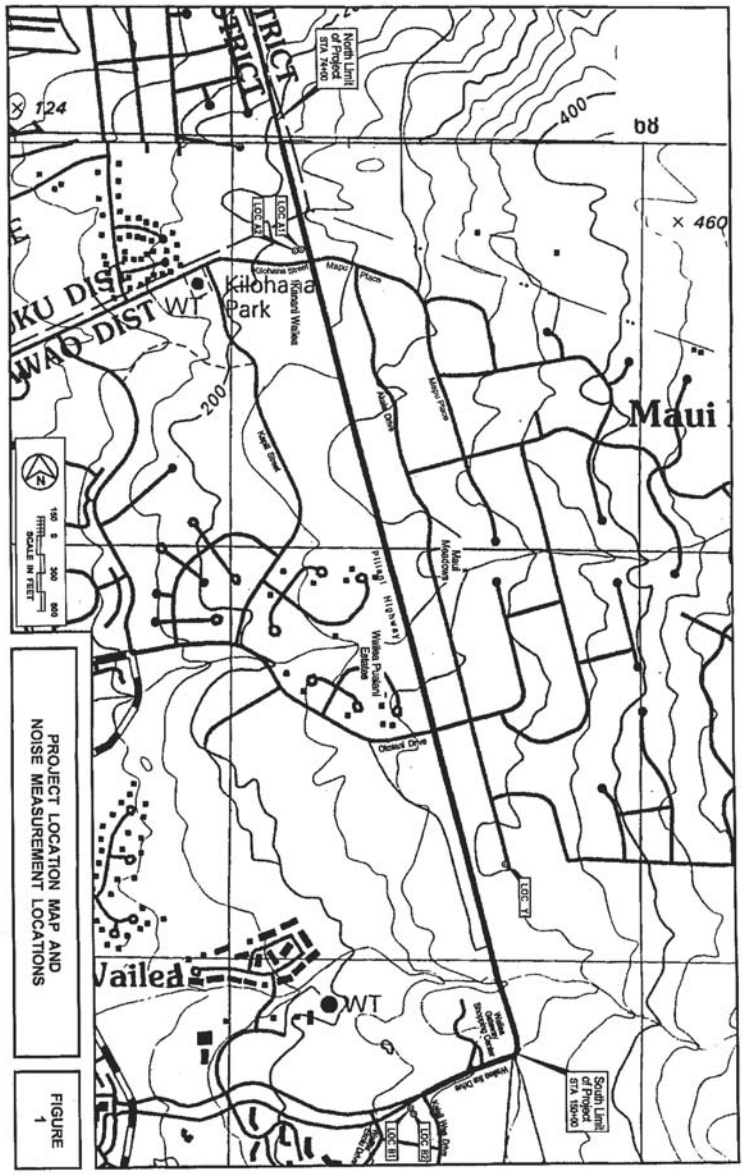
Noise Measurements. Existing traffic and background ambient noise levels at five locations in the project area were measured in March 2009. The traffic noise measurements were used to calibrate the traffic noise model which was used to calculate the Base Year (CY 2008) and future (CY 2022) traffic noise levels under the No Build and Build Alternatives. The background ambient noise measurements were used to define existing noise levels at noise sensitive receptors which may be affected by the project. Also, the measurements were used in conjunction with forecast traffic noise levels to determine if future traffic noise levels are predicted to "substantially exceed" existing background ambient noise levels at these noise sensitive receptors, and therefore exceed FHWA and HDOT noise standards and noise abatement criteria.

The noise measurement locations ("A1," "A2," "B1," "B2," and "Y") are shown in Figure 1. The results of the traffic and background noise measurements are summarized in Table 1. In the tables, Leq represents the average (or equivalent), A-Weighted, Sound Level. A list and description of the acoustical terminology used are contained in Appendix B.

Traffic Noise Predictions. The Federal Highway Administration (FHWA) Traffic Noise Model, Version 2.5 (or TNM, see Reference 1) was used as the primary method of calculating Base Year and future traffic noise levels, with model parameters adjusted to reflect terrain, ground cover, and local shielding conditions. At all traffic noise measurement locations, the measured noise levels were compared with TNM model predictions to insure that measured and calculated noise levels for the existing conditions were consistent and in general agreement. As indicated in Table 1, spot counts of traffic volumes were also obtained during the measurement periods and were used to generate the Equivalent Sound Level (Leq) predictions shown in the table. The average vehicle speeds entered into the TNM were higher than posted speeds so as to achieve better agreement between measured noise levels and those calculated by the TNM. With these input speed adjustments, the agreement between measured and predicted traffic noise levels was considered to be good and sufficiently accurate to formulate the Base Year and future year traffic noise levels.

Base Year traffic noise levels were then calculated along the project corridor using Base Year (2008) traffic volume data for the AM and PM peak hours from Reference 2. These traffic volumes are summarized in Appendix C. Traffic mix by vehicle types and average vehicle speeds for the various sections of the existing and future roadway were derived from observations during the noise monitoring periods. Determinations of the periods of highest hourly traffic volumes along the project corridor were made after reviewing the AM and PM peak hour traffic volumes from Reference 2 and the noise measurement results. Total two-way traffic volumes were generally highest during the PM peak hour. However, measured traffic noise levels were not significantly different for the AM, midday, and PM peak hours. For the purposes of this study, the PM peak hour was used to model the period with the highest traffic noise






PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATIONS

FIGURE 1

## TABLE 1
## TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

| | LOCATION | Time of Day (HRS) | Ave. Speed (MPH) | Hourly Traffic Volume AUTO | M.TRUCK | H.TRUCK | Measured Leq (dB) | Predicted Leq (dB) |
|---|---|---|---|---|---|---|---|---|
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0745 TO 0845 | 50 | 1,127 | 21 | 5 | 71.0 | 70.1 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0745 TO 0845 | 50 | 1,127 | 21 | 5 | 62.8 | 63.1 |
| B1 | 50 FT from the center-line of Wailea Ike Dr. (3/16/09) | 0910 TO 1010 | 42 | 639 | 11 | 2 | 65.4 | 65.3 |
| B2 | 100 FT from the center-line of Wailea Ike Dr. (3/16/09) | 0910 TO 1010 | 42 | 639 | 11 | 2 | 60.7 | 61.1 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1321 TO 1421 | 50 | 1,338 | 17 | 4 | 70.3 | 69.6 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1321 TO 1421 | 50 | 1,338 | 17 | 4 | 64.0 | 63.3 |



## TABLE 1 (CONTINUED)
## TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

| | LOCATION | Time of Day (HRS) | Ave. Speed (MPH) | Hourly Traffic Volume AUTO | M.TRUCK | H.TRUCK | Measured Leq (dB) | Predicted Leq (dB) |
|---|---|---|---|---|---|---|---|---|
| Y | 260 FT from the center-line of Piilani Highway (3/16/09) | 1511 TO 1546 | 52 | 1,546 (Estimate) | 13 (Estimate) | 3 (Estimate) | 49.1 | 46.7 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1553 TO 1653 | 50 | 1,781 | 15 | 3 | 71.0 | 71.2 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 1553 TO 1653 | 50 | 1,781 | 15 | 3 | 61.1 | 64.3 |
| A1 | 50 FT from the double yellow line of Piilani Hwy. on makai side (3/17/09) | 0645 TO 0745 | 50 | 1,106 | 21 | 6 | 70.8 | 70.0 |
| A2 | 100 FT from the double yellow line of Piilani Hwy. on makai side (3/16/09) | 0645 TO 0745 | 50 | 1,106 | 21 | 6 | 62.7 | 63.0 |

The Equivalent (or Average) Hourly Sound Level [Leq(h)] noise descriptor was used to calculate the Base Year and CY 2022 traffic noise levels as required by Reference 4. Aerial photo maps, tax maps, and project plans (where available) of the area were used to determine terrain, ground cover, and local shielding effects and distances from building structures, which were entered into the noise prediction model. Topographic maps of the areas far beyond the highway Rights-of-Way were not available, so receptor elevations were assumed to be equal to the ground elevations shown on the highway plans at locations closest to the study receptors.

Future year (2022) traffic noise levels were then developed for the No Build and Build (roadway improvement) Alternatives using the future traffic assignments of References 2 and 3. Under the Build Alternative, it was assumed that the proposed Honua`ula and Makena Resort Developments conditioned on the completion of the highway widening project would be in place. Forecast mixes of vehicle types were assumed to be identical for both existing and future traffic, with 98.7% automobiles, 1.0% medium trucks, 0.3% heavy trucks and buses. Vehicle speeds for Year 2022 were assumed to be identical to their Base Year values for the No Build Alternative (with speed reduction in the southbound lane at the approach to Wailea Ike Drive), and uniformly at 50 miles per hour in both directions under the Build Alternative. Future traffic conditions under the No Build Alternative may worsen, with average vehicle speeds declining as a result of increased congestion. Nevertheless, under the No Build Alternative, average vehicle speeds were assumed to remain the same as current values. For the purposes of evaluating the effects of speed reduction as a programmed traffic noise mitigation measure, future traffic noise levels under the Build Alternative were calculated for conditions with and without the 5 mile per hour reduction of the existing 45 miles per hour posted speed limit in the northbound direction.

Impact Assessments and Mitigation. Following the calculation of the future traffic noise levels, evaluations of the future traffic noise levels and impacts at noise sensitive receptor locations along Piilani Highway within the limits of construction were made. Comparisons of predicted future traffic noise levels with FHWA and HDOT noise abatement criteria (see Table 2) were made to determine specific locations where the noise abatement criteria are expected to be exceeded.

The HDOT 66 Leq(h) noise abatement threshold criteria and the HDOT "greater than 15 dB increase" criteria were applied to all noise sensitive buildings along the project corridor. By Reference 5, the HDOT has replaced the FHWA 67 Leq(h) criteria with their 66 Leq(h) criteria. The HDOT 71 Leq(h) noise abatement threshold criteria and the HDOT "greater than 15 dB increase" criteria were applied to all commercial buildings along the project corridor. Along the project corridor, the locations of the 66 and 71 Leq(h) traffic noise contours, without the benefit of shielding from natural terrain or man-made sound barriers, were also used to identify noise sensitive and commercial receptor locations, respectively, where the HDOT's noise abatement criteria would not be exceeded, and which would not require more detailed evaluations. In addition, the HDOT's criteria of "greater than 15 dB increase above existing background noise levels" was also used as a noise abatement criteria for this project (from Reference 5).



## TABLE 2

## FHWA & HDOT NOISE ABATEMENT CRITERIA
## [Hourly A–Weighted Sound Level––Decibels (dBA)]

| ACTIVITY CATEGORY | LEQ (h)* | DESCRIPTION OF ACTIVITY CATEGORY |
|---|---|---|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the areas are to continue to serve their intended purpose. |
| B | 67 (Exterior) | Picnic areas, recreation areas, playgrounds, activity sports areas, parks, residences, motels, hotels, churches, libraries, and hospitals. |
| C | 72 (Exterior) | Developed lands, properties, or activities not included in Categories A or B above. |
| D | ------ | Undeveloped lands. |
| E | 52 (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums. |

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* The Hawaii State Department of Transportation, Highways Division, utilizes Leq criteria levels which are 1 Leq unit less than the FHWA values shown.

Where noise mitigation measures were indicated for this project, the effectiveness of sound attenuating barriers and other possible noise mitigation measures were evaluated. The ability to meet the HDOT criteria of 5 dBA noise reduction was also examined for various noise barrier heights.

The noise barriers which would be required to meet the HDOT's 5 dBA noise reduction criteria were then examined in respect to potential cost per benefited residence. By HDOT policy (Reference 5), the sound attenuation walls were considered "reasonable and feasible" if their costs did not exceed $35,000 per benefited residence. For CMU walls, a cost of $39.00 per square foot was used to develop the cost estimates for the sound attenuation walls. For rock walls, a cost of $35.00 per square foot was used to develop the cost estimates for sound attenuating walls which are located on top of existing rock walls. Walls whose estimated cost exceeded $35,000 per benefited residence were identified for exclusion from the highway widening project.

Evaluations of potential airborne noise and ground vibrations from blasting operations to break and/or dislodge rock during construction were also performed. Predictions of expected airborne and ground vibration levels were performed at the closest residential areas in the project environs. Comparisons between predicted levels with current blast noise and vibration criteria and standards were also performed. Potential airborne noise and vibration impacts from blasting operations during construction were then evaluated, and mitigation measures recommended as necessary.



## CHAPTER III. EXISTING ACOUSTICAL ENVIRONMENT

For the purposes of this study, 2008 was used as the Base Year for calculating changes in traffic noise levels with the future No Build and Build Alternatives. The Base Year noise environment along the project corridor was described by calculating the Hourly Equivalent Sound Level [Leq(h)] along the existing roadway during the PM peak traffic hour for the 2008 time period. The hourly sound level, expressed in decibels, represents the average level of traffic noise along the project roadway during the PM peak hour of the study's Base Year.

Table 3 presents the traffic volume, speed, and mix assumptions used to calculate the Base Year noise levels during the PM peak hour along the existing Piilani Highway. Shown in Table 3 are the calculated peak hour Leq(h)'s at reference distances of 50, 100, and 150 FT from the geometrical center of the inbound and outbound lanes of the highway. The calculated distances to the 66 and 71 Leq noise contour lines under unobstructed, line-of-sight conditions to the roadway are shown in Table 4 for the PM peak hour. The actual distances to the contour lines will generally be less than indicated in Table 4 when intervening structures or terrain obstructions exist between the roadway and a receptor. This reduction (or shrinkage) of the traffic noise contour distances from the roadway's centerline is the result of noise shielding (or attenuation) effects caused by the intervening structures or terrain features (such as highway cuts).

By using the traffic noise data shown in Tables 3 and 4, and aerial photo maps of the existing improvements on the west (makai) and east (mauka) sides of the project corridor, the relationship of the existing free-field traffic noise contours to existing noise sensitive dwellings and commercial buildings in the project area were obtained. No park lands border the project corridor.

Table 5 presents the Base Year traffic noise levels at the various noise sensitive and commercial structures on both sides of the Rights-of-Way. The relationships of these receptor locations to the existing highway are shown in Figure 2. The existing traffic noise levels exceed the 66 Leq criteria at 2 single family structures within the limits of project construction. From Table 4, existing traffic noise levels could exceed the 66 Leq criteria at any residence located within 74 feet from the centerline of the highway. Existing traffic noise levels do not exceed the 71 Leq criteria for commercial properties at the two commercial buildings under construction at the future Wailea Gateway Shopping Center.

Some existing residences presently benefit from the noise shielding effects of walls which have been constructed along the lot boundary lines, and other residences in the Maui Meadows subdivision on the mauka side of the highway benefit from the noise shielding effects of the large highway cuts. In general, if the visual lines of sight between the receptors at the residences and the highway are blocked by the walls or the highway cuts, the residences will experience lower traffic noise levels due to the sound attenuation effects of the obstructions.

## TABLE 3

## EXISTING (CY 2008) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF PILLANI HIGHWAY ( PM PEAK HOUR )

| LOCATION | SPEED (MPH) | VOLUMES (VPH) TOTAL VPH | AUTOS | M TRUCKS | H TRUCKS | 50' Leq | 100' Leq | 150' Leq |
|---|---|---|---|---|---|---|---|---|
| North of Kilohana Street | 50 | 1,880 | 1,855 | 19 | 6 | 70.9 | 64.5 | 61.5 |
| Between Kilohana St. & Okolani Dr. | 50 & 55* | 1,356 | 1,338 | 14 | 4 | 70.0 | 63.8 | 60.9 |
| Between Okolani Dr. & Wailea Ike Dr. | 55 to 30** | 1,193 | 1,177 | 12 | 4 | 69.5 | 63.3 | 60.3 |

Notes:

1. * 50 mph southbound; 55 mph northbound
2. ** 50 to 30 mph southbound; 55 mph northbound
3. All distances shown are from the center of Pillani Highway.
4. Calculated Leq's are for unobstructed line-of-sight conditions.



## TABLE 4

## YEAR 2008 AND 2022 DISTANCES TO 66 AND 71 LEQ CONTOURS ( PM PEAK HOUR )

| STREET SECTION | 66 Leq SETBACK (FT) EXISTING | 66 Leq SETBACK (FT) CY 2022 | 71 Leq SETBACK (FT) EXISTING | 71 Leq SETBACK (FT) CY 2022 |
|---|---|---|---|---|
| North of Kilohana Street | 85 | 137 | 49 | 78 |
| Between Kilohana St. & Okolani Dr. | 78 | 127 | 45 | 72 |
| Between Okolani Dr. & Wailea Ike Dr. | 74 | 119 | 42 | 67 |
| South of Wailea Ike Drive | N/A | 35 | N/A | 19 |

**Notes:**

(1) All setback distances are from the roadways' centerlines.
(2) See TABLES 3 and 6 for traffic volume, speed, and mix assumptions.
(3) Setback distances are for unobstructed line-of-sight conditions.
(4) Soft ground conditions assumed along all roadways.

## TABLE 5

## EXISTING AND FUTURE TRAFFIC NOISE LEVELS WITHOUT AND WITH 5 MPH SPEED REDUCTION ( 4.92 FT RECEPTOR, PM PEAK HOUR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE (CY 2022) Leq NO BUILD / (CHANGE) | BUILD / (CHANGE) | -5 MPH / (CHANGE) |
|---|---|---|---|---|
| PIILANI HIGHWAY (MAUKA): | | | | |
| Receiver 2-1-15:017 | 57.2 | 59.7 /2.5 | 60.9 /3.7 | 60.9 /3.7 |
| Receiver 2-1-15:016a | 64.0 | 66.5 /2.5 * | 68.3 /4.3 * | 68.3 /4.3 * |
| Receiver 2-1-15:016b | 59.6 | 62.1 /2.5 | 63.7 /4.1 | 63.7 /4.1 |
| Receiver 2-1-15:016c | 62.0 | 64.5 /2.5 | 65.5 /3.5 | 65.5 /3.5 |
| Receiver 2-1-15:015 | 64.8 | 67.3 /2.5 * | 68.4 /3.6 * | 68.4 /3.6 * |
| Receiver 2-1-15:014 | 56.5 | 59.1 /2.6 | 59.8 /3.3 | 59.8 /3.3 |
| Receiver 2-1-15:013 | 66.9 * | 69.5 /2.6 * | 70.8 /3.9 * | 70.8 /3.9 * |
| Receiver 2-1-15:012 | 59.2 | 61.8 /2.6 | 62.7 /3.5 | 62.6 /3.4 |
| Receiver 2-1-15:011 | 60.6 | 63.3 /2.7 | 64.4 /3.8 | 64.4 /3.8 |
| Receiver 2-1-15:010 | 59.1 | 61.7 /2.6 | 63.4 /4.3 | 63.4 /4.3 |
| Receiver 2-1-15:009 | 64.3 | 66.9 /2.6 * | 68.1 /3.8 * | 68.1 /3.8 * |
| Receiver 2-1-15:008 | 62.4 | 65.0 /2.6 | 65.4 /3.0 | 65.3 /2.9 |
| Receiver 2-1-15:007 | 57.8 | 60.5 /2.7 | 61.8 /4.0 | 61.6 /3.8 |
| Receiver 2-1-15:006 | 57.5 | 60.1 /2.6 | 61.4 /3.9 | 61.2 /3.7 |
| Receiver 2-1-15:005 | 54.0 | 56.7 /2.7 | 58.2 /4.2 | 58.0 /4.0 |
| Receiver 2-1-15:004 | 52.8 | 55.5 /2.7 | 57.4 /4.6 | 57.2 /4.4 |
| Receiver 2-1-15:003 | 51.6 | 54.3 /2.7 | 56.6 /5.0 | 56.3 /4.7 |
| Receiver 2-1-15:002 | 50.4 | 53.1 /2.7 | 54.7 /4.3 | 54.4 /4.0 |
| Receiver 2-1-15:001 | 50.7 | 53.3 /2.6 | 55.1 /4.4 | 54.7 /4.0 |
| Receiver 2-1-14:019 | 52.7 | 55.4 /2.7 | 57.0 /4.3 | 56.5 /3.8 |
| Receiver 2-1-14:018 | 58.8 | 61.5 /2.7 | 63.5 /4.7 | 63.0 /4.2 |
| Receiver 2-1-14:017 | 60.6 | 63.3 /2.7 | 65.1 /4.5 | 64.4 /3.8 |
| Receiver 2-1-14:016 | 54.8 | 57.5 /2.7 | 58.9 /4.1 | 58.4 /3.6 |
| Receiver 2-1-14:015 | 61.9 | 64.6 /2.7 | 66.2 /4.3 * | 65.5 /3.6 |
| Receiver 2-1-14:014 | 63.5 | 66.1 /2.6 * | 67.2 /3.7 * | 66.4 /2.9 * |
| Receiver 2-1-14:013 | 64.8 | 67.5 /2.7 * | 68.5 /3.7 * | 67.7 /2.9 * |
| Receiver 2-1-14:012 | 66.2 * | 68.8 /2.6 * | 70.4 /4.2 * | 69.5 /3.3 * |
| Receiver 2-1-14:011 | 59.9 | 62.6 /2.7 | 63.5 /3.6 | 62.8 /2.9 |
| Receiver 2-1-14:010 | 63.2 | 65.9 /2.7 | 66.6 /3.4 * | 65.8 /2.6 |
| Receiver 2-1-14:009 | 56.3 | 58.9 /2.6 | 59.7 /3.4 | 58.9 /2.6 |
| Receiver 2-1-14:008 | 57.7 | 60.3 /2.6 | 60.8 /3.1 | 60.1 /2.4 |
| Receiver 2-1-14:007 | 60.8 | 63.5 /2.7 | 64.2 /3.4 | 63.3 /2.5 |
| Receiver 2-1-14:006 | 60.4 | 63.1 /2.7 | 63.2 /2.8 | 62.4 /2.0 |
| Receiver 2-1-14:005 | 64.1 | 66.7 /2.6 * | 68.9 /4.8 * | 67.9 /3.8 * |
| Receiver 2-1-14:004 | 58.7 | 61.4 /2.7 | 63.2 /4.5 | 62.4 /3.7 |
| Receiver 2-1-14:003 | 55.1 | 57.8 /2.7 | 59.0 /3.9 | 58.4 /3.3 |
| Receiver 2-1-14:002 | 56.1 | 58.8 /2.7 | 60.0 /3.9 | 59.5 /3.4 |
| Receiver 2-1-14:001 | 64.1 | 66.8 /2.7 * | 67.9 /3.8 * | 67.2 /3.1 * |
| Receiver 2-1-13:001 | 64.2 | 66.8 /2.6 * | 68.4 /4.2 * | 67.6 /3.4 * |
| Receiver 2-1-13:002 | 54.9 | 57.4 /2.5 | 57.8 /2.9 | 57.2 /2.3 |
| Receiver 2-1-13:003 | 64.2 | 66.7 /2.5 * | 68.3 /4.1 * | 67.6 /3.4 |



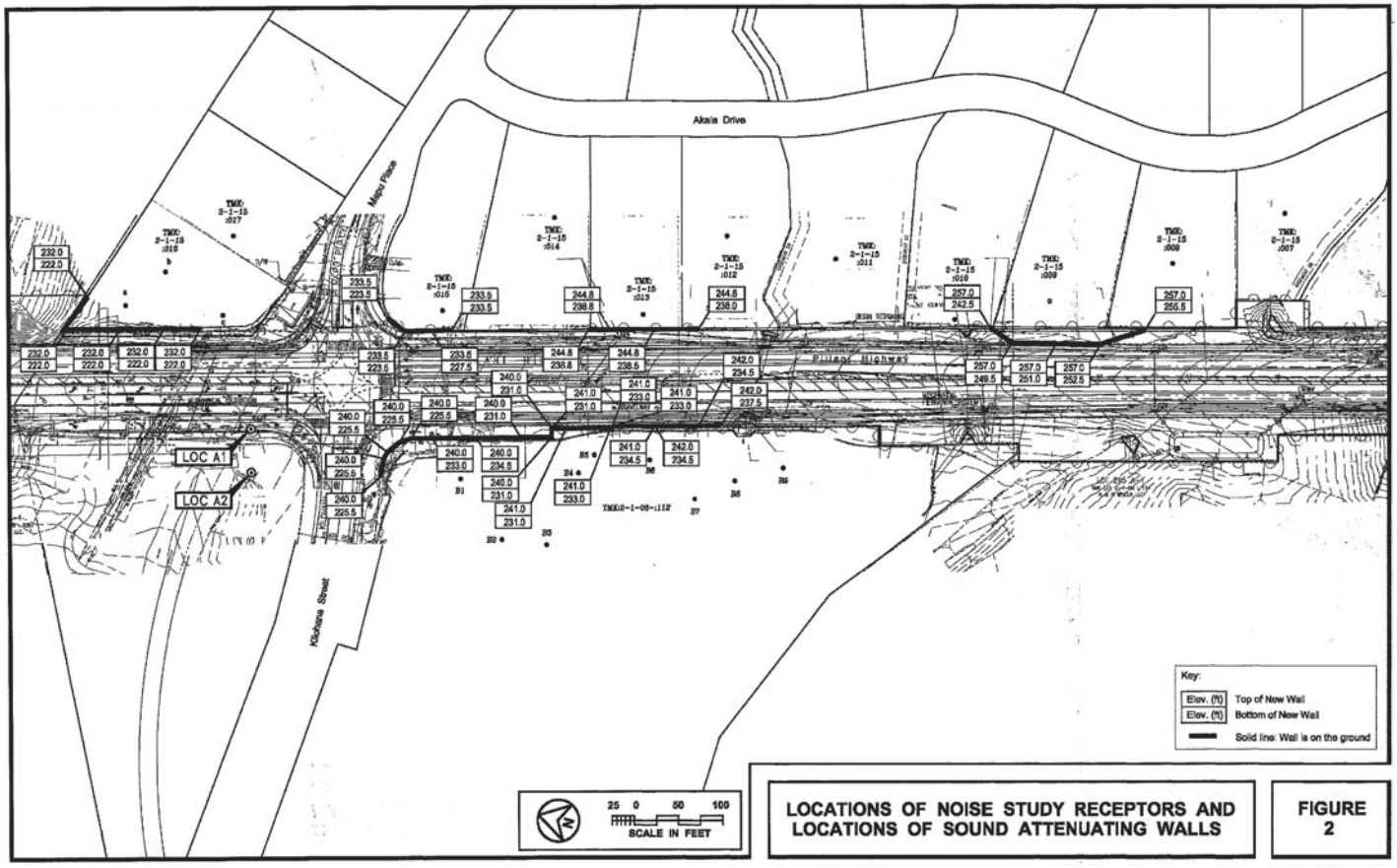
## TABLE 5 (CONTINUED)

## EXISTING AND FUTURE TRAFFIC NOISE LEVELS WITHOUT AND WITH 5 MPH SPEED REDUCTION ( 4.92 FT RECEPTOR, PM PEAK HOUR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE (CY 2022) Leq NO BUILD / (CHANGE) | BUILD / (CHANGE) | -5 MPH / (CHANGE) |
|---|---|---|---|---|
| PIILANI HIGHWAY (MAUKA) (Continued): | | | | |
| Receiver 2-1-13:004 | 54.2 | 56.7 /2.5 | 59.6 /5.4 | 59.2 /5.0 |
| Receiver 2-1-13:005 | 59.0 | 61.5 /2.5 | 64.9 /5.9 | 64.5 /5.5 |
| Receiver 2-1-13:006 | 48.9 | 51.4 /2.5 | 53.9 /5.0 | 53.6 /4.7 |
| Receiver 2-1-13:007 | 48.5 | 51.0 /2.5 | 54.0 /5.5 | 53.6 /5.1 |
| Receiver 2-1-13:008 | 53.9 | 56.4 /2.5 | 59.3 /5.4 | 58.8 /4.9 |
| Receiver 2-1-13:009 | 51.9 | 54.4 /2.5 | 57.8 /5.9 | 57.3 /5.4 |
| Receiver 2-1-13:010 | 54.6 | 57.1 /2.5 | 60.7 /6.1 | 60.3 /5.7 |
| Receiver 2-1-13:011 | 51.0 | 53.4 /2.4 | 57.1 /6.1 | 56.7 /5.7 |
| Receiver 2-1-13:012 (Vacant) | 58.9 | 61.4 /2.5 | 65.9 /7.0 | 65.5 /6.6 |
| Location Y | 47.4 | 49.8 /2.4 | 53.1 /5.7 | 52.7 /5.3 |
| PIILANI HIGHWAY (MAKAI): | | | | |
| Location A1 | 69.7 * | 72.2 /2.5 * | 75.6 /5.9 * | 75.6 /5.9 * |
| Location A2 | 63.4 | 65.8 /2.4 * | 69.3 /5.9 * | 69.3 /5.9 * |
| Receiver 2-1-08:112 B1 | 61.4 | 64.0 /2.6 | 66.6 /5.2 * | 66.6 /5.2 * |
| Receiver 2-1-08:112 B2 | 57.1 | 59.7 /2.6 | 61.5 /4.4 | 61.5 /4.4 |
| Receiver 2-1-08:112 B3 | 57.1 | 59.8 /2.7 | 61.4 /4.3 | 61.3 /4.2 |
| Receiver 2-1-08:112 B4 | 62.3 | 64.9 /2.6 | 67.8 /5.5 * | 67.8 /5.5 * |
| Receiver 2-1-08:112 B5 | 64.9 | 67.6 /2.7 * | 71.0 /6.1 * | 71.0 /6.1 * |
| Receiver 2-1-08:112 B6 | 63.8 | 66.5 /2.7 * | 69.8 /6.0 * | 69.8 /6.0 * |
| Receiver 2-1-08:112 B7 | 59.9 | 62.5 /2.6 | 64.8 /4.9 | 64.8 /4.9 |
| Receiver 2-1-08:112 B8 | 61.3 | 63.9 /2.6 | 65.0 /3.7 | 65.0 /3.7 |
| Receiver 2-1-08:112 B9 | 61.9 | 64.6 /2.7 | 65.0 /3.1 | 65.1 /3.2 |
| Receiver 2-1-26:029 | 62.4 | 65.1 /2.7 | 65.8 /3.4 | 65.4 /3.0 |
| Receiver 2-1-26:030 | 62.1 | 64.8 /2.7 | 65.4 /3.3 | 65.0 /2.9 |
| Receiver 2-1-26:031 | 61.8 | 64.5 /2.7 | 65.2 /3.4 | 64.8 /3.0 |
| Receiver 2-1-26:032 | 61.6 | 64.3 /2.7 | 65.0 /3.4 | 64.5 /2.9 |
| Receiver 2-1-26:033 | 55.0 | 57.7 /2.7 | 58.5 /3.5 | 58.1 /3.1 |
| Receiver 2-1-26:070 | 57.7 | 60.3 /2.6 | 60.7 /3.0 | 60.3 /2.6 |
| Receiver 2-1-26:071 | 57.5 | 60.2 /2.7 | 60.9 /3.4 | 60.6 /3.1 |
| Receiver 2-1-26:072 | 61.1 | 63.7 /2.6 | 64.8 /3.7 | 64.4 /3.3 |
| Receiver 2-1-26:073 | 61.6 | 64.3 /2.7 | 66.7 /5.1 * | 66.3 /4.7 * |
| Receiver 2-1-26:074 (Vacant) | 63.4 | 66.0 /2.6 * | 69.3 /5.9 * | 68.9 /5.5 * |
| Receiver 2-1-26:077 | 54.9 | 57.6 /2.7 | 58.9 /4.0 | 58.3 /3.4 |
| Receiver 2-1-08:144 WG-1 | 56.2 | 58.7 /2.5 | 62.8 /6.6 | 62.4 /6.2 |
| Receiver 2-1-08:144 WG-2 | 48.8 | 51.3 /2.5 | 54.4 /5.6 | 54.1 /5.3 |

**Notes:**

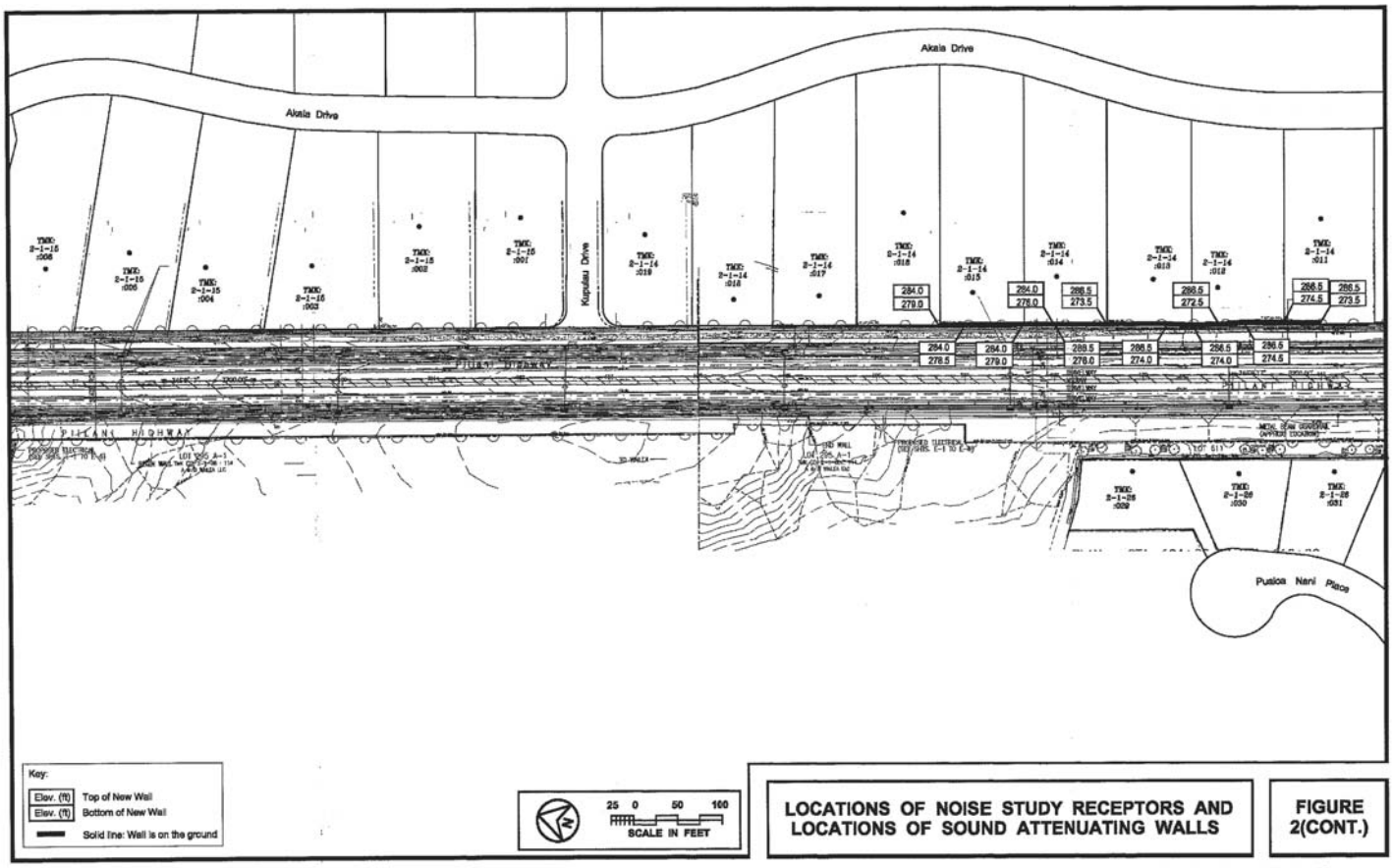
1. All receivers were assumed to be at 4.92 feet above ground level.
2. * Denotes exceedance of HDOT "66 Leq" criteria for residences.




**LOCATIONS OF NOISE STUDY RECEPTORS AND LOCATIONS OF SOUND ATTENUATING WALLS**

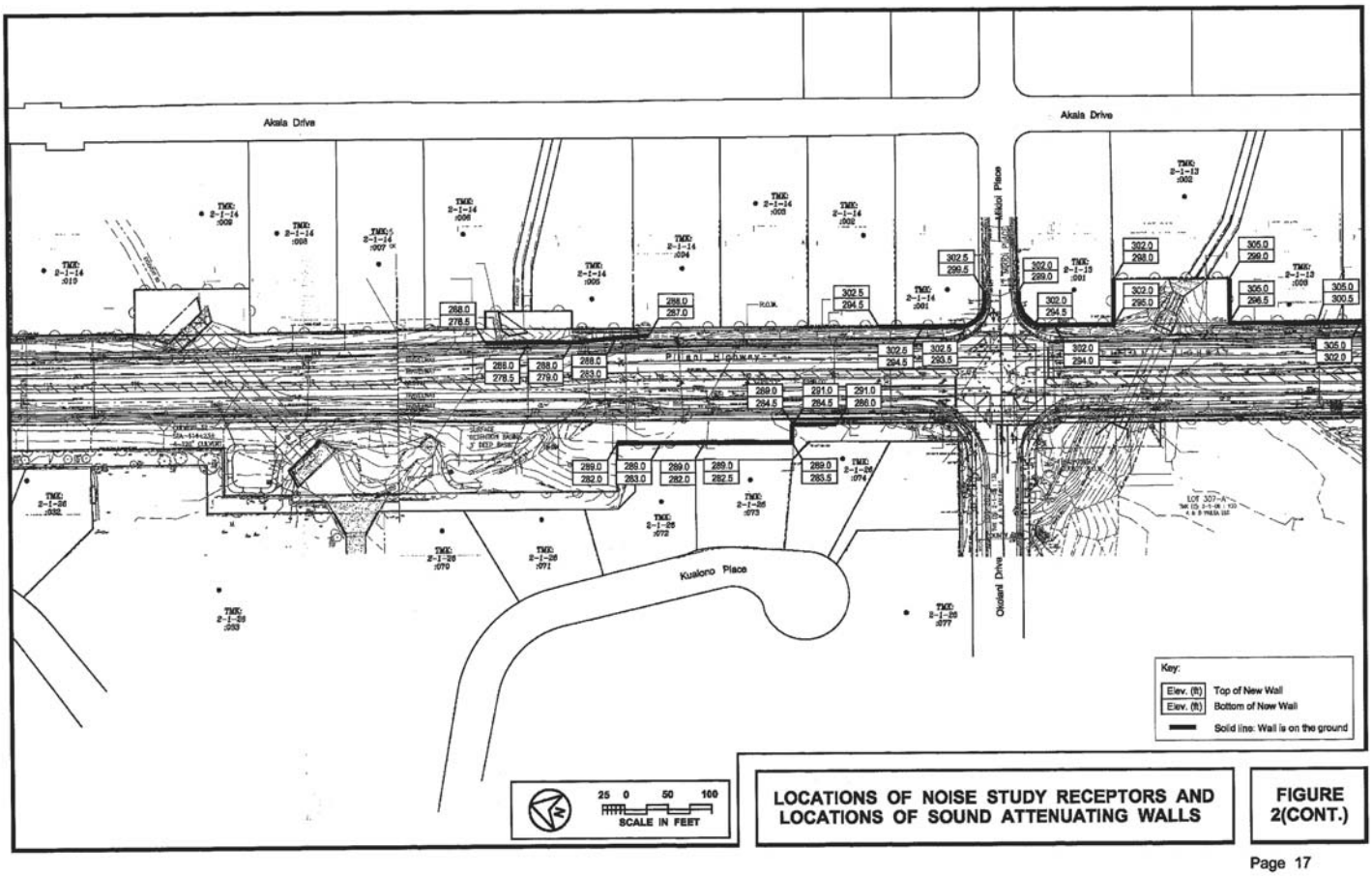
**FIGURE 2**






**LOCATIONS OF NOISE STUDY RECEPTORS AND LOCATIONS OF SOUND ATTENUATING WALLS**

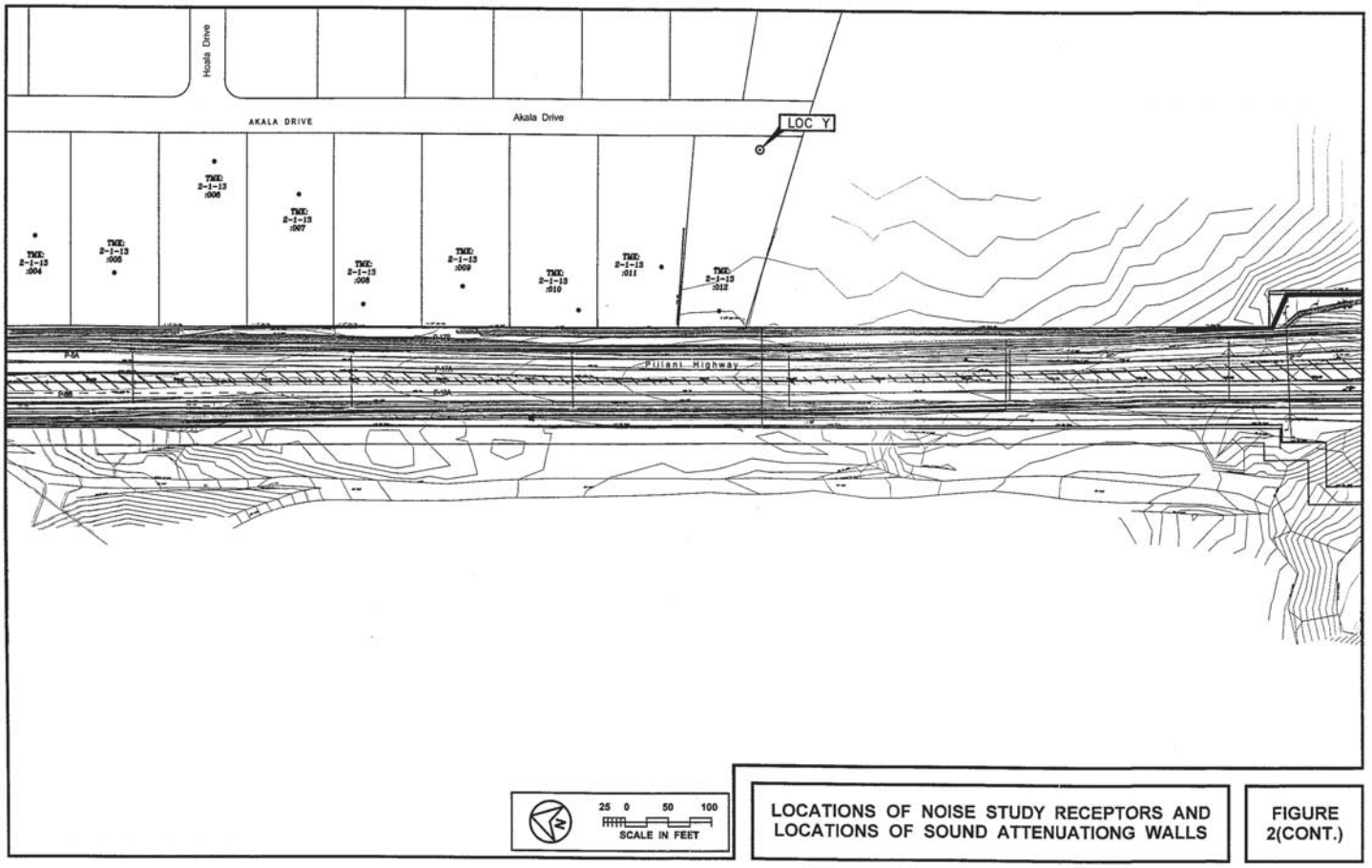
**FIGURE 2(CONT.)**




**LOCATIONS OF NOISE STUDY RECEPTORS AND LOCATIONS OF SOUND ATTENUATING WALLS**

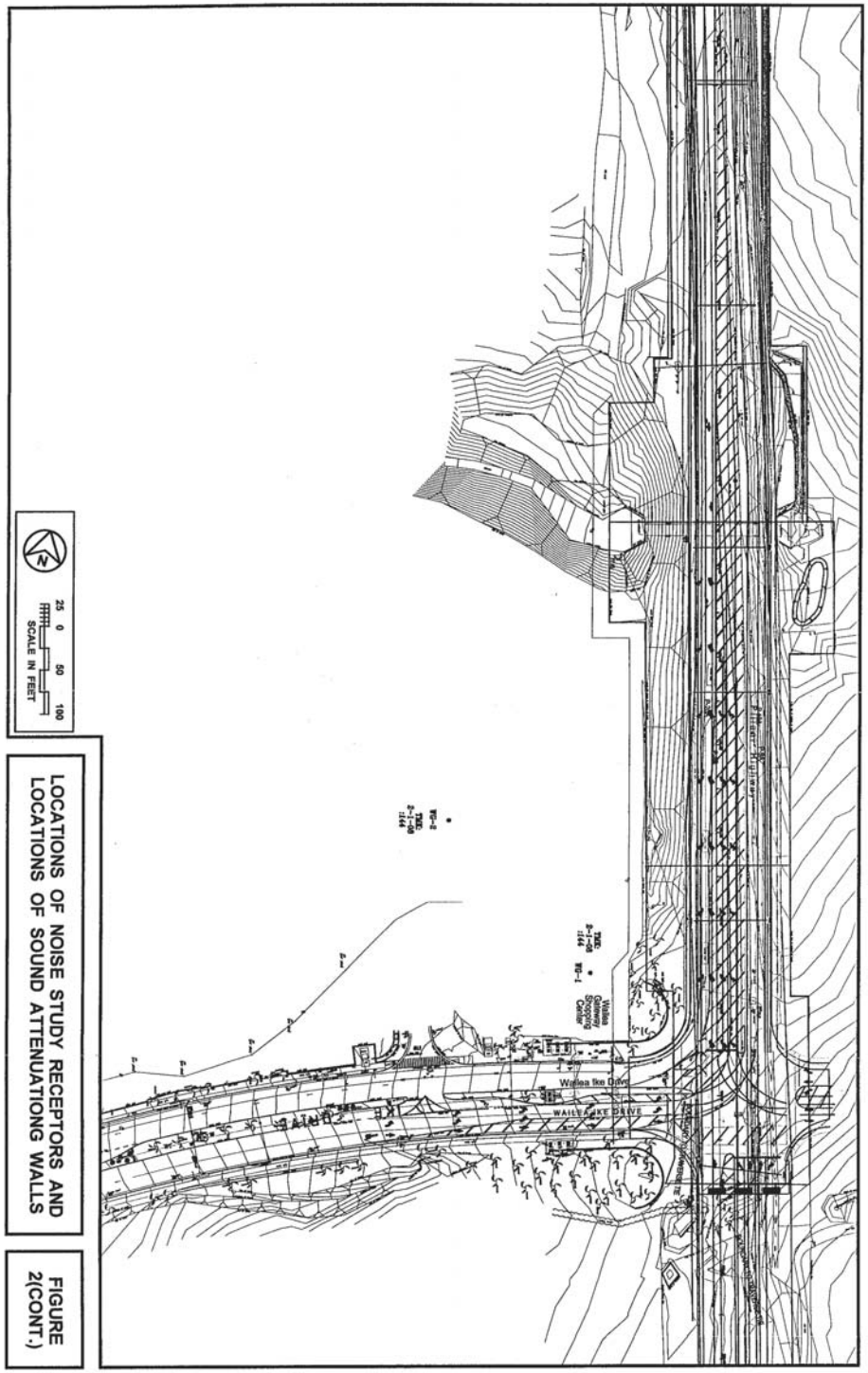
**FIGURE 2(CONT.)**






**LOCATIONS OF NOISE STUDY RECEPTORS AND LOCATIONS OF SOUND ATTENUATIONG WALLS**

**FIGURE 2(CONT.)**




LOCATIONS OF NOISE STUDY RECEPTORS AND LOCATIONS OF SOUND ATTENUATIONG WALLS

FIGURE 2(CONT.)



At areas removed from Piilani Highway (such as at Location "Y"), Base Year noise levels are much lower than along the highway's Rights-of-Way due to distance factors and local shielding effects from buildings and terrain features. Base Year noise levels in areas removed from the highway are typically less than 66 Leq(h), and possibly as low as 45 Leq(h). For example, as shown in Table 1, the measured background noise level at Location "Y" during the period prior to the PM peak traffic hour was 49.1 Leq(h). Location "Y" was partially shielded from Piilani Highway traffic noise by the large highway cut. Other non-traffic noise sources (birds, distant construction, and foliage moving with the wind) were probably in the order of 45 to 46 Leq(h), with the estimated traffic noise contributions at 47 Leq(h).

## CHAPTER IV. DESCRIPTION OF FUTURE TRAFFIC NOISE LEVELS

The future traffic noise levels in the immediate vicinity of the project during CY 2022 were evaluated for the No Build and Build Alternatives. The same methodology that was used to calculate the Base Year noise levels was also used to calculate the Year 2022 noise levels. It should be noted that forecast traffic volumes along Piilani Highway for the Year 2022 under the Build Alternative were greater than those under the No Build Alternative due to the addition of traffic from the proposed Honua`ula and Makena Resort Developments. Under both the No Build and Build Alternatives, vehicle mixes were assumed to be identical to the Base Year values.

Tables 4, 5, 6, and 7 summarize the traffic conditions, noise levels, and setback distances for the Build Alternative during the PM peak hour in CY 2022. Table 5 also indicates the increases in future traffic noise levels expected under the No Build and Build Alternatives prior to the inclusion of sound attenuation walls. As indicated in Table 7, future traffic noise levels in the immediate vicinity of the project are predicted to increase by approximately 2.4 to 2.8 dB between CY 2008 and CY 2022 solely as a result of projected traffic volume increases under the No Build Alternative. Under the No Build Alternative, the HDOT 66 noise abatement criteria will be exceeded at 13 existing dwelling units which do not benefit from the noise shielding effects of walls or terrain features.

Under the Build Alternative, widening of the highway between Kilohana Street and Wailea Ike Drive is planned so that the existing two, 12 foot wide lanes are replaced with four, 12 foot wide lanes plus turning lanes and 8 foot wide median. Figure 2 presents the noise sensitive receptor (or receiver) locations where future traffic noise levels were calculated for the Build Alternative using the FHWA Traffic Noise Model. The predicted CY 2022 traffic noise levels at the various receptor locations along Piilani Highway where traffic noise levels could exceed 66 Leq(h) are shown in Table 5 for the Build Alternative first under worst case conditions without a reduction in the northbound posted speed limit from 45 to 40 miles per hour. Then, for the condition with the planned reduction of the posted speed limit for the northbound lanes from 45 miles per hour to 40 miles per hour, predictions of future traffic noise levels under the Build Alternative are also shown in the far right column of Table 5. The noise reduction benefit from the reduction in the posted speed limit from 45 to 40 miles per hour in the northbound direction ranged from 0.0 to 1.0 dB. These reductions were included in the final calculations of future traffic noise levels under the Build Alternative.

The 66 Leq criteria should not be exceeded at any public use structures or park lands under the No Build or Build Alternatives. The 71 Leq criteria for commercial properties will not be exceeded at two multistory commercial buildings on the makai side of Piilani Highway at the Wailea Ike Drive intersection.

The following general conclusions can be made in respect to the impacted



## TABLE 6

## FUTURE (CY 2022) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF PIILANI HIGHWAY ( PM PEAK HOUR; UNDER BUILD ALTERNATIVE )

| LOCATION | SPEED (MPH) | TOTAL VPH | ********** VOLUMES (VPH) ********** AUTOS | M.TRUCKS | H.TRUCKS | 50' Leq | 100' Leq | 150' Leq |
|---|---|---|---|---|---|---|---|---|
| North of Kilohana Street | 50 | 4,335 | 4,279 | 43 | 13 | 74.9 | 68.8 | 65.8 |
| Between Kilohana St. & Okolani Dr. | 50 | 3,648 | 3,601 | 36 | 11 | 74.1 | 68.1 | 65.0 |
| Between Okolani Dr. & Wailea Ike Dr. | 50 | 3,208 | 3,166 | 32 | 10 | 73.6 | 67.5 | 64.5 |
| South of Wailea Ike Drive | 50 | 280 | 276 | 3 | 1 | 62.9 | 57.0 | 54.0 |

Note:

1. All distances shown are from the center of Piilani Highway.
2. Calculated Leq's are for unobstructed line-of-sight conditions.

## TABLE 7

## CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS ( CY 2022 ) ( PM PEAK HOUR )

| PIILANI HIGHWAY SECTION | NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC | PROJECT TRAFFIC |
|---|---|---|
| North of Kilohana Street | 2.40 | 1.60 |
| Between Kilohana St. & Okolani Dr. | 2.80 | 1.30 |
| Between Okolani Dr. & Wailea Ike Dr. | 2.40 | 1.70 |
| South of Wailea Ike Drive | N/A | 62.90 |



structures and lands which can be expected by CY 2022 under the Build Alternative. These conclusions are valid as long as the future vehicle mixes and average speeds do not differ from the assumed values.

The HDOT's ">15 dB increase" criteria for substantial change in traffic noise levels will not be exceeded at any noise sensitive structure. Maximum increases in traffic noise levels in the project area should not exceed 6.6 dB as a result of growth in traffic volumes and widening of the highway. Increases in future traffic noise levels without the Honua`ula and the conditionally permitted Makena Resort Developments are expected to range from 2.4 to 2.8 dB. Increases in future noise levels attributable to the Honua`ula and the conditionally permitted Makena Developments are expected to range from 1.3 to 1.7 dB within the limits of project construction.

- Under the No Build or Build Alternatives, future traffic noise levels at existing single and multifamily dwellings on both sides of the highway will continue to exceed the 66 Leq criteria. At least 13 residential structures are predicted to be affected by future traffic noise levels which exceed the 66 Leq HDOT noise criteria under the No Build Alternative. At least 16 residential structures are predicted to be affected by future traffic noise levels which exceed the 66 Leq HDOT noise criteria under the Build Alternative. At the two commercial buildings under construction at the future Wailea Gateway Shopping Center on the makai side of the highway, future traffic noise levels will not exceed the 71 Leq criteria for commercial structures under the Build Alternative.

- Exceedance of the 66 Leq noise mitigation criteria at public use structures or park lands are not expected to occur under the No Build or Build Alternatives.

## CHAPTER V. POSSIBLE NOISE MITIGATION MEASURES

Possible noise mitigation measures considered included the following:

A. Restricting the Growth In the Number of Noisy Buses, Heavy Trucks, Motorcycles, and Automobiles with Defective Mufflers. The percentage contribution to the total traffic noise by heavy trucks, buses, and noisy vehicles is currently less than 10 percent, and elimination of these noise sources would reduce total traffic noise levels by less than 0.5 Leq(h) units. Restricting the growth rate of these vehicles (to growth rates below passenger automobile growth rates) could produce noise reductions in the order of 0.1 or 0.5 dB, which are not considered significant for the level of regulatory efforts required.

B. Alteration of the Horizontal Or Vertical Alignment of the Roadway. This project involves the widening of the northbound and southbound lanes of the highway and does not involve alterations to the vertical or horizontal alignments of Piilani Highway. Major alterations of the horizontal alignment of the existing highway lanes were not considered appropriate due to the scope of this roadway improvement project, and due to the constraints imposed by the locations of the existing intersections along the project corridor. Noise sensitive receptors where the 66 Leq criteria is exceeded are located on both the east (mauka) and the west (or makai) sides of the highway, so mitigation of traffic noise on both sides using roadway realignment techniques would not be possible. Vertical realignment of the highway is not a reasonable noise mitigation measure because of the need to match the grades at existing intersections of Kilohana Street, Okalani Drive, and Wailae Ike Drive, because of the need to depress the roadway to achieve the noise shielding effects of the highway cuts, and because of the need for additional Right-of-Way width so as properly slope the sides of the cuts and to not create detrimental reflections off any vertical side walls along the cuts.

C. Acquisition of Property Rights for Construction of Noise Barriers, and/or Construction of Noise Barriers Along the Right-of-Way. For single story, noise sensitive buildings, construction of a sound attenuating wall is normally the preferred noise mitigation measure. The 5 to 7 dB of noise attenuation achievable with a 6 FT high wall is normally sufficient for single story structures. Many of the structures along Piilani Highway are multistory dwelling units, and the upper floors of those structures will not benefit from sound attenuation walls which are 6 to 8 feet high. Wall heights in the order of 15 to 20 feet above ground level will be required to attenuate traffic noise at the upper floor spaces. It should also be noted that the sound barrier will block the views to the roadway which some of the residents may enjoy. For this reason, concurrence from the affected homeowners should be obtained prior to construction of a sound barrier as a noise mitigation measure.



D. Acquisition of Real Property Interests To Serve As A Noise Buffer Zone. Where tall (or multistory) structures are expected to be impacted by future traffic noise, the use of sound attenuating barriers (see para. C above) will not be practical due to the excessive heights required to shield the upper levels from traffic noise. In these situations, the only other noise mitigation possibilities are sound insulation of the affected upper level units or acquisition of the property interests. Noise buffer zones extending approximately 119 to 137 feet from the center of the highway and at substantial cost would be required to meet the HDOT 66 Leq criteria. In general, the acquisition of property for the creation of noise buffer zones for noise mitigation has seldom been applied in Hawaii.

E. Noise Insulation of Public Use or Nonprofit Institutional Structures. No public use structures should require noise insulation as a result of the proposed highway improvements.

## TABLE 8

## PREDICTED TRAFFIC NOISE ATTENUATION VS. BARRIER HEIGHTS
## ( 4.92 FT HIGH RECEPTOR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE NOISE LEVELS (CY 2022) Leq W/O BAR./ (CHANGE) | | 6.0 FT WALL/ (CHANGE) | | 7.0 FT WALL/ (CHANGE) | | 8.0 FT WALL/ (CHANGE) | | RECOM. WALL/ (CHANGE) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIILANI HIGHWAY (MAUKA): | | | | | | | | | | | |
| Receiver 2-1-15:017 | 57.2 | 60.9 /3.7 | | 60.9 /3.7 | | 60.6 /3.4 | | 60.3 /3.1 | | 60.7 /3.5 | |
| Receiver 2-1-15:016a | 64.0 | 68.3 /4.3 | * | 68.3 /4.3 | ** | 66.7 /2.7 | ** | 65.0 /1.0 | ** | 63.0 /-1.0 | |
| Receiver 2-1-15:016b | 59.6 | 63.7 /4.1 | | 63.6 /4.0 | | 63.0 /3.4 | | 62.2 /2.6 | | 62.5 /2.9 | |
| Receiver 2-1-15:016c | 62.0 | 65.5 /3.5 | | 65.5 /3.5 | | 63.6 /1.6 | | 62.0 /0.0 | | 65.3 /3.3 | |
| Receiver 2-1-15:015 | 64.8 | 68.4 /3.6 | * | 63.1 /-1.7 | | 63.1 /-1.7 | | 61.5 /-3.3 | | 63.1 /-1.7 | |
| Receiver 2-1-15:014 | 56.5 | 59.8 /3.3 | | 58.9 /2.4 | | 58.7 /2.2 | | 58.4 /1.9 | | 58.9 /2.4 | |
| Receiver 2-1-15:013 | 66.9 * | 70.8 /3.9 | * | 64.3 /-2.6 | | 63.1 /-3.8 | | 62.3 /-4.6 | | 64.3 /-2.6 | |
| Receiver 2-1-15:012 | 59.2 | 62.6 /3.4 | | 62.0 /2.8 | | 61.9 /2.7 | | 61.9 /2.7 | | 62.0 /2.8 | |
| Receiver 2-1-15:011 | 60.6 | 64.4 /3.8 | | 64.3 /3.7 | | 64.2 /3.6 | | 64.2 /3.6 | | 64.3 /3.7 | |
| Receiver 2-1-15:010 | 59.1 | 63.4 /4.3 | | 63.2 /4.1 | | 63.2 /4.1 | | 63.2 /4.1 | | 63.2 /4.1 | |
| Receiver 2-1-15:009 | 64.3 | 68.1 /3.8 | * | 62.9 /-1.4 | | 62.1 /-2.2 | | 61.4 /-2.9 | | 62.9 /-1.4 | |
| Receiver 2-1-15:008 | 62.4 | 65.3 /2.9 | | 64.8 /2.4 | | 64.6 /2.2 | | 64.5 /2.1 | | 64.8 /2.4 | |
| Receiver 2-1-15:007 | 57.8 | 61.6 /3.8 | | 61.5 /3.7 | | 61.4 /3.6 | | 61.4 /3.6 | | 61.5 /3.7 | |
| Receiver 2-1-15:006 | 57.5 | 61.2 /3.7 | | 61.2 /3.7 | | 61.2 /3.7 | | 61.1 /3.6 | | 61.2 /3.7 | |
| Receiver 2-1-15:005 | 54.0 | 58.0 /4.0 | | 58.0 /4.0 | | 58.0 /4.0 | | 57.9 /3.9 | | 57.9 /3.9 | |
| Receiver 2-1-15:004 | 52.8 | 57.2 /4.4 | | 57.1 /4.3 | | 57.1 /4.3 | | 57.1 /4.3 | | 57.1 /4.3 | |
| Receiver 2-1-15:003 | 51.6 | 56.3 /4.7 | | 56.3 /4.7 | | 56.3 /4.7 | | 56.3 /4.7 | | 56.3 /4.7 | |
| Receiver 2-1-15:002 | 50.4 | 54.4 /4.0 | | 54.4 /4.0 | | 54.4 /4.0 | | 54.4 /4.0 | | 54.4 /4.0 | |
| Receiver 2-1-15:001 | 50.7 | 54.7 /4.0 | | 54.6 /3.9 | | 54.6 /3.9 | | 54.6 /3.9 | | 54.6 /3.9 | |
| Receiver 2-1-14:019 | 52.7 | 56.5 /3.8 | | 56.5 /3.8 | | 56.5 /3.8 | | 56.4 /3.7 | | 56.5 /3.8 | |
| Receiver 2-1-14:018 | 58.8 | 63.0 /4.2 | | 63.0 /4.2 | | 63.0 /4.2 | | 63.0 /4.2 | | 63.0 /4.2 | |
| Receiver 2-1-14:017 | 60.6 | 64.4 /3.8 | | 64.3 /3.7 | | 64.2 /3.6 | | 64.1 /3.5 | | 64.3 /3.7 | |
| Receiver 2-1-14:016 | 54.8 | 58.4 /3.6 | | 57.6 /2.8 | | 57.4 /2.6 | | 57.2 /2.4 | | 57.2 /2.4 | |
| Receiver 2-1-14:015 | 61.9 | 65.5 /3.6 | | 62.6 /0.7 | | 62.0 /0.1 | | 61.5 /-0.4 | | 62.6 /0.7 | |
| Receiver 2-1-14:014 | 63.5 | 66.4 /2.9 | * | 63.0 /-0.5 | ** | 62.6 /-0.9 | ** | 62.0 /-1.5 | ** | 61.4 /-2.1 | |



## CHAPTER VI. FUTURE TRAFFIC NOISE IMPACTS AND POSSIBLE NOISE MITIGATION MEASURES

Future traffic noise levels are predicted to exceed the HDOT 66 Leq(h) noise abatement criteria by CY 2022 under the Build Alternative at existing noise sensitive structures on both sides of the highway. Table 8 presents the predicted performances of sound attenuation walls located along the east and west sides of the highway in front of the affected structures for the Build Alternative with the Honua'ula and conditionally permitted Makena Resort Developments. The locations of the sound attenuation walls are shown in Figure 2. Sound attenuating walls were located along the makai and mauka Rights-of-Way or Tops of Fill or tops of retaining walls fronting residential lots where future traffic noise levels are expected to exceed the HDOT 66 Leq(h) noise abatement criteria, and the heights of the walls were adjusted upward until the 5 dB minimum attenuation criteria was met at the various affected receivers. Table 8 depicts the predicted traffic noise levels for various wall heights at the receivers on the mauka and makai sides for the proposed widened roadway. Based on the results shown in Table 8, relatively large wall heights exceeding 8 feet will be required to provide 5 dB of sound attenuation at receivers located on the mauka and makai sides of the highway. In the figure, the top wall elevations are required to comply with the minimum 5 dB attenuation criteria of HDOT for ground level receptors. It should be noted that complete topographic maps at the dwelling units were not available for this study, and the wall heights shown in Figure 2 are best estimates based on the available highway plans, sections, and profiles.

Attenuation of traffic noise at the upper floors of 2-story homes and town homes which are located on some of the lots along the highway will not be feasible due to the large wall heights required to shield the upper floors from the highway traffic. The other mitigation measures discussed in Chapter V are also not feasible at these upper floor receptor locations. Attenuation of traffic noise to meet HDOT criteria will be possible for the ground floors of the affected dwellings using the sound attenuation walls shown in Figure 2.

The predicted future noise levels for the required wall heights shown in Figure 2 are shown in Table 8 under the "RECOM. WALL" column. Because the HDOT "5 dBA noise reduction" criteria will not be met in all cases with 6 foot wall heights, the construction of 8 to 14.5 foot high walls will be required at some locations. A variance from local building codes may be required to construct the 8 to 14.5 foot high walls which are required to achieve at least 5 dBA of noise reduction. The sound attenuating walls must be continuous without see-through openings, and may be constructed from solid materials which have a minimum surface weight of 5 pounds per square foot. Use of landscaping on the roadway side of the wall is also recommended to soften the visual impacts of the walls and to minimize the potential for graffiti.

By the existing HDOT policy (see Reference 5), if the cost of the sound attenuating wall does not exceed $35,000 per benefited residence, construction of walls can be considered to be reasonable and feasible. Each of the 11 sound

## TABLE 8 (CONTINUED)

## PREDICTED TRAFFIC NOISE ATTENUATION VS. BARRIER HEIGHTS
## ( 4.92 FT HIGH RECEPTOR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE NOISE LEVELS (CY 2022) Leq W/O BAR./ (CHANGE) | | 6.0 FT WALL/ (CHANGE) | | 7.0 FT WALL/ (CHANGE) | | 8.0 FT WALL/ (CHANGE) | | RECOM. WALL/ (CHANGE) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIILANI HIGHWAY (MAUKA) (Continued): | | | | | | | | | | | |
| Receiver 2-1-14:013 | 64.8 | 67.7 /2.9 | * | 67.4 /2.6 | ** | 67.3 /2.5 | ** | 67.1 /2.3 | ** | 62.5 /-2.3 | |
| Receiver 2-1-14:012 | 66.2 * | 69.5 /3.3 | * | 69.6 /3.4 | ** | 69.6 /3.4 | ** | 69.3 /3.1 | ** | 63.7 /-2.5 | |
| Receiver 2-1-14:011 | 59.9 | 62.8 /2.9 | | 62.7 /2.8 | | 62.6 /2.7 | | 62.5 /2.6 | | 61.4 /1.5 | |
| Receiver 2-1-14:010 | 63.2 | 65.8 /2.6 | | 65.8 /2.6 | | 65.7 /2.5 | | 65.7 /2.5 | | 65.6 /2.4 | |
| Receiver 2-1-14:009 | 56.3 | 58.9 /2.6 | | 58.9 /2.6 | | 58.9 /2.6 | | 58.9 /2.6 | | 58.9 /2.6 | |
| Receiver 2-1-14:008 | 57.7 | 60.1 /2.4 | | 60.1 /2.4 | | 60.0 /2.3 | | 60.0 /2.3 | | 60.0 /2.3 | |
| Receiver 2-1-14:007 | 60.8 | 63.3 /2.5 | | 63.2 /2.4 | | 63.1 /2.3 | | 63.1 /2.3 | | 63.1 /2.3 | |
| Receiver 2-1-14:006 | 60.4 | 62.4 /2.0 | | 61.8 /1.4 | | 61.6 /1.2 | | 61.4 /1.0 | | 61.4 /1.0 | |
| Receiver 2-1-14:005 | 64.1 | 67.9 /3.8 | * | 63.6 /-0.5 | ** | 62.6 /-1.5 | | 62.0 /-2.1 | | 62.0 /-2.1 | |
| Receiver 2-1-14:004 | 58.7 | 62.4 /3.7 | | 61.4 /2.7 | | 61.1 /2.4 | | 60.8 /2.1 | | 60.8 /2.1 | |
| Receiver 2-1-14:003 | 55.1 | 58.4 /3.3 | | 58.0 /2.9 | | 57.9 /2.8 | | 57.9 /2.8 | | 57.9 /2.8 | |
| Receiver 2-1-14:002 | 56.1 | 59.5 /3.4 | | 58.6 /2.5 | | 58.4 /2.3 | | 58.2 /2.1 | | 58.2 /2.1 | |
| Receiver 2-1-14:001 | 64.1 | 67.2 /3.1 | * | 63.7 /-0.4 | ** | 62.7 /-1.4 | ** | 61.9 /-2.2 | | 62.0 /-2.1 | |
| Receiver 2-1-13:001 | 64.2 | 67.6 /3.4 | * | 63.1 /-1.1 | ** | 61.8 /-2.4 | | 60.4 /-3.8 | | 61.7 /-2.5 | |
| Receiver 2-1-13:002 | 54.9 | 57.2 /2.3 | | 56.7 /1.8 | | 56.6 /1.7 | | 56.5 /1.6 | | 56.6 /1.7 | |
| Receiver 2-1-13:003 | 64.2 | 67.6 /3.4 | * | 61.2 /-3.0 | | 60.4 /-3.8 | | 59.6 /-4.6 | | 61.2 /-3.0 | |
| Receiver 2-1-13:004 | 54.2 | 59.2 /5.0 | | 58.1 /3.9 | | 57.9 /3.7 | | 57.7 /3.5 | | 58.1 /3.9 | |
| Receiver 2-1-13:005 | 59.0 | 64.5 /5.5 | | 64.5 /5.5 | | 64.4 /5.4 | | 64.4 /5.4 | | 64.4 /5.4 | |
| Receiver 2-1-13:006 | 48.9 | 53.6 /4.7 | | 53.2 /4.3 | | 53.1 /4.2 | | 53.0 /4.1 | | 53.2 /4.3 | |
| Receiver 2-1-13:007 | 48.5 | 53.6 /5.1 | | 53.2 /4.7 | | 53.1 /4.6 | | 53.0 /4.5 | | 53.1 /4.6 | |
| Receiver 2-1-13:008 | 53.9 | 58.8 /4.9 | | 58.9 /5.0 | | 58.9 /5.0 | | 58.9 /5.0 | | 58.9 /5.0 | |
| Receiver 2-1-13:009 | 51.9 | 57.3 /5.4 | | 57.3 /5.4 | | 57.3 /5.4 | | 57.3 /5.4 | | 57.3 /5.4 | |
| Receiver 2-1-13:010 | 54.6 | 60.3 /5.7 | | 60.3 /5.7 | | 60.3 /5.7 | | 60.3 /5.7 | | 60.3 /5.7 | |
| Receiver 2-1-13:011 | 51.0 | 56.7 /5.7 | | 56.6 /5.6 | | 56.6 /5.6 | | 56.5 /5.5 | | 56.6 /5.6 | |
| Receiver 2-1-13:012 (Vacant) | 58.9 | 65.5 /6.6 | | 65.5 /6.6 | | 65.5 /6.6 | | 65.5 /6.6 | | 65.5 /6.6 | |



## TABLE 8 (CONTINUED)

## PREDICTED TRAFFIC NOISE ATTENUATION VS. BARRIER HEIGHTS
## ( 4.92 FT HIGH RECEPTOR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE NOISE LEVELS (CY 2022) Leq W/O BAR./ (CHANGE) | | 6.0 FT WALL/ (CHANGE) | | 7.0 FT WALL/ (CHANGE) | | 8.0 FT WALL/ (CHANGE) | | RECOM. WALL/ (CHANGE) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIILANI HIGHWAY (MAKAI): | | | | | | | | | | | |
| Receiver 2-1-08:112 B1 | 61.4 | 66.6 /5.2 | * | 60.9 /-0.5 | | 60.1 /-1.3 | | 59.4 /-2.0 | | 60.8 /-0.6 | |
| Receiver 2-1-08:112 B2 | 57.1 | 61.5 /4.4 | | 59.7 /2.6 | | 59.2 /2.1 | | 59.0 /1.9 | | 59.5 /2.4 | |
| Receiver 2-1-08:112 B3 | 57.1 | 61.3 /4.2 | | 59.7 /2.6 | | 59.2 /2.1 | | 59.0 /1.9 | | 59.4 /2.3 | |
| Receiver 2-1-08:112 B4 | 62.3 | 67.8 /5.5 | * | 63.2 /0.9 | ** | 62.2 /-0.1 | | 61.7 /-0.6 | | 62.5 /0.2 | |
| Receiver 2-1-08:112 B5 | 64.9 | 71.0 /6.1 | * | 65.6 /0.7 | | 64.9 /0.0 | | 63.4 /-1.5 | | 64.4 /-0.5 | |
| Receiver 2-1-08:112 B6 | 63.8 | 69.8 /6.0 | * | 65.3 /1.5 | ** | 64.1 /0.3 | | 64.0 /0.2 | | 64.5 /0.7 | |
| Receiver 2-1-08:112 B7 | 59.9 | 64.8 /4.9 | | 62.9 /3.0 | | 62.5 /2.6 | | 62.5 /2.6 | | 62.6 /2.7 | |
| Receiver 2-1-08:112 B8 | 61.3 | 65.0 /3.7 | | 64.0 /2.7 | | 63.8 /2.5 | | 63.7 /2.4 | | 63.8 /2.5 | |
| Receiver 2-1-08:112 B9 | 61.9 | 65.1 /3.2 | | 64.6 /2.7 | | 64.6 /2.7 | | 64.6 /2.7 | | 64.6 /2.7 | |
| Receiver 2-1-26:029 | 62.4 | 65.4 /3.0 | | 65.4 /3.0 | | 65.4 /3.0 | | 65.4 /3.0 | | 65.4 /3.0 | |
| Receiver 2-1-26:030 | 62.1 | 65.0 /2.9 | | 65.0 /2.9 | | 65.0 /2.9 | | 65.0 /2.9 | | 65.0 /2.9 | |
| Receiver 2-1-26:031 | 61.8 | 64.8 /3.0 | | 64.8 /3.0 | | 64.8 /3.0 | | 64.8 /3.0 | | 64.8 /3.0 | |
| Receiver 2-1-26:032 | 61.6 | 64.5 /2.9 | | 64.5 /2.9 | | 64.5 /2.9 | | 64.5 /2.9 | | 64.5 /2.9 | |
| Receiver 2-1-26:033 | 55.0 | 58.1 /3.1 | | 58.0 /3.0 | | 58.0 /3.0 | | 58.0 /3.0 | | 58.0 /3.0 | |
| Receiver 2-1-26:070 | 57.7 | 60.3 /2.6 | | 60.2 /2.5 | | 60.2 /2.5 | | 60.2 /2.5 | | 60.2 /2.5 | |
| Receiver 2-1-26:071 | 57.5 | 60.6 /3.1 | | 60.2 /2.7 | | 60.2 /2.7 | | 60.2 /2.7 | | 60.2 /2.7 | |
| Receiver 2-1-26:072 | 61.1 | 64.4 /3.3 | | 62.0 /0.9 | | 61.7 /0.6 | | 61.4 /0.3 | | 61.4 /0.3 | |
| Receiver 2-1-26:073 | 61.6 | 66.3 /4.7 | * | 62.2 /0.6 | ** | 61.6 /0.0 | ** | 61.1 /-0.5 | | 61.1 /-0.5 | |
| Receiver 2-1-26:074 (Vacant) | 63.4 | 68.9 /5.5 | * | 67.5 /4.1 | ** | 67.1 /3.7 | ** | 66.9 /3.5 | ** | 66.9 /3.5 | ** |
| Receiver 2-1-26:077 | 54.9 | 58.3 /3.4 | | 58.1 /3.2 | | 58.0 /3.1 | | 57.8 /2.9 | | 57.8 /2.9 | |

attenuating walls shown in Figure 2 have an associated construction cost and an associated number of benefited residences. In Table 9, the estimated cost per benefited residence for each sound attenuating wall was calculated so as to identify those walls which can be considered to be reasonable and feasible by HDOT policy.

The estimated wall costs shown in Table 9 exceeded the maximum $35,000 per benefited residence for 8 of the 11 walls examined. Only the walls fronting lots at TMK: 2-1-15: 015, TMK: 2-1-15: 013, and TMK: 2-1-08: 112 have a possibility of being considered as reasonable and feasible under the current HDOT traffic noise abatement policy. The final estimated costs of the walls shown in Figure 2 need to be determined, since the cost estimates may rise if the new wall sections need to be modified if they are not aesthetically pleasing or if existing subdivision signs need to be relocated. In addition, some negotiations with the landowners may also occur such as at TMK: 2-1-08: 112, where modifications to the existing rock wall may be desired instead of the construction of a new wall in front of the existing wall.

It is anticipated that potential noise impacts at any new noise sensitive or commercial establishments located in the project area may be mitigated through the inclusion of sound walls or other noise mitigation measures within the individual lot development plans. In addition, any new commercial establishments, public use facilities, or housing units which may be planned alongside the roadway represent areas of potential adverse noise impacts if adequate noise mitigation measures are not incorporated into the planning of these future projects. It is anticipated that the project's roadway improvements will be completed prior to any redevelopment of the presently open areas or commercial lots adjacent to a roadway, and that noise abatement measures such as adequate setbacks, sound attenuating walls or berms, or closure and air conditioning will be incorporated into these new developments along the roadway as required. In any event, new structures whose building permits were obtained after the date of this noise study will not qualify for noise abatement measures under existing HDOT procedures.



## TABLE 8 (CONTINUED)

## PREDICTED TRAFFIC NOISE ATTENUATION VS. BARRIER HEIGHTS
## ( 4.92 FT HIGH RECEPTOR )

| RECEPTOR LOCATION | EXISTING (CY 2008) Leq | FUTURE NOISE LEVELS (CY 2022) Leq W/O BAR./ (CHANGE) | 6.0 FT WALL/ (CHANGE) | 7.0 FT WALL/ (CHANGE) | 8.0 FT WALL/ (CHANGE) | RECOM. WALL/ (CHANGE) |
|---|---|---|---|---|---|---|
| PIILANI HIGHWAY (MAKAI) (Continued): | | | | | | |
| Receiver 2-1-08:144 WG-1 | 56.2 | 62.4 /6.2 | 62.4 /6.2 | 62.4 /6.2 | 62.4 /6.2 | 62.4 /6.2 |
| Receiver 2-1-08:144 WG-2 | 48.8 | 54.1 /5.3 | 54.1 /5.3 | 54.1 /5.3 | 54.1 /5.3 | 54.1 /5.3 |



Notes:

1. All receivers were assumed to be at 4.92 feet above ground level.
2. * Denotes exceedance of HDOT "66 Leq" criteria for residences.
3. ** Denotes noise attenuation does not meet HDOT's 5 dB attenuation criteria for "substantial noise reduction."

## TABLE 9

## ESTIMATED COSTS OF SOUND ATTENUATING WALLS

| WALL LOCATION | Benefited Residences | Total Area (SF) of New Wall | Estimated Cost of New Wall | Estimated Cost Per Benefited Residence |
|---|---|---|---|---|
| Mauka Side: | | | | |
| TMK: 2-1-15: 016* | 1 | 1,997 | $69,911 | $69,911 |
| TMK: 2-1-15: 015 | 1 | 562 | $21,910 | $21,910 |
| TMK: 2-1-15: 013 | 1 | 785 | $30,608 | $30,608 |
| TMK: 2-1-15: 009 | 1 | 1,113 | $43,400 | $43,400 |
| TMK: 2-1-14: 012 to 014 | 3 | 4,513 | $173,911 | $57,970 |
| TMK: 2-1-14: 005 | 1 | 1,397 | $54,467 | $54,467 |
| TMK: 2-1-14: 001 | 1 | 1,061 | $41,386 | $41,386 |
| TMK: 2-1-13: 001 | 1 | 1,071 | $41,785 | $41,785 |
| TMK: 2-1-13: 003 | 1 | 1,181 | $46,072 | $46,072 |
| Makai Side: | | | | |
| TMK: 2-1-08: 112* | 4 | 3,688 | $129,079 | $32,270 |
| TMK: 2-1-26: 073 | 1 | 2,014 | $78,534 | $78,534 |

Note:
* Indicates use of new rock wall on highway side of existing rock wall. For all other wall sections, use of CMU walls was assumed.



## CHAPTER VII. CONSTRUCTION NOISE IMPACTS

General Construction. Short-term noise impacts associated with construction activities along the existing highway may occur. These impacts can occur as a result of the short distances (less than 50 FT) between existing dwelling units to the anticipated construction corridor. The total duration of the construction period for the proposed project is not known, but noise exposure from construction activities at any one receptor location is not expected to be continuous during the total construction period.

Noise levels of diesel powered construction equipment typically range from 80 to 90 dB at 50 FT distance. Typical levels of noise from construction activity (excluding pile driving activity) are shown in Figure 3. The maximum impulsive noise levels of rock breaking equipment (such as hoe rams) can be 5 to 8 dB greater than those shown in Figure 3. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

Construction noise levels at existing structures can intermittently exceed 90 dB when work is being performed at close distances in front of these structures. Along the roadway improvement project, distances between the construction sites and receptors are expected to be between 30 and 200 FT, and construction noise levels may intermittently exceed 90 dB. The State Department of Health currently regulates noise from construction activities under a permit system (Reference 6). Under current permit procedures (see Figure 4), noisy construction activities are restricted to hours between 7:00 AM and 6:00 PM, from Monday through Friday, and exclude certain holidays. Noisy construction activities are normally restricted to the hours of 9:00 AM to 6:00 PM on Saturdays, with construction not permitted on Sundays. These restrictions minimize construction noise impacts on noise sensitive receptors along the roadway project corridor, and have generally been successfully applied. In this way, construction noise impacts on noise sensitive receptors can be minimized.

In addition, the use of quieted portable engine generators and diesel equipment should be specified for use within 500 FT of noise sensitive properties. Heavy truck and equipment staging areas should also be located at areas which are at least 500 FT from noise sensitive properties whenever possible. Truck routes which avoid residential communities should be identified wherever possible. The use of 8 to 12 FT high construction noise barriers may also be used where close-in construction work to noise sensitive structures is unavoidable.

Blasting. Blasting may be used to fragment and/or dislodge rock during the construction operations to reduce the time required to cut into the faces of the existing highway cuts. Nighttime or early morning blasting operations should not be required.

**AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE**

**FIGURE 4**






**FIGURE 3**

**ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE**

Blast induced ground and air vibrations have the potential to startle or annoy surrounding residents, and to also cause damage to structures. However, when properly controlled, blasting operations at the proposed construction site need not pose significant risks of damage or annoyance to neighboring buildings or residents.

Airborne Noise from Blasting. The air blasts associated with blasting are concussion type, low frequency vibrations, which are of relatively short duration (or impulsive) and generally described in terms of peak over pressure in psi, or in dBL. The dominant sources of the air blast are the Air Pressure Pulse, which is caused by the large displacement of the ground surface near the charge, and the Stemming Release Pulse, which is caused by gas pressure ejecting the stemming (fill) material from the hole bored for the explosive charge. The low frequency characteristic (usually referred to as bass sounds) of air blast noise tends to induce vibrations in structures (and subsequent complaint reactions) due to the low resonant frequency (10 to 25 Hz) of buildings. High frequency sounds of amplitudes equal to blast noise generally do not induce vibrations and cause physical damage to structures. Although the human ear has an opposite characteristic (i.e., the ear is less sensitive to low frequency sounds), structures which vibrate can produce secondary audible effects such as rattling sounds (of fixtures, doors, etc.), and effects which are sensitive to touch (or feelable). Sound levels at which these secondary effects occur vary with the weight (and probably stiffness) of the structure. In general, the inception point of sound induced vibration is difficult to establish, but may occur at levels as low as 80 dBL. These levels are significantly below the peak levels of 120 to 136 dBL which have been associated with low risk of damage to structures.

If blasting is used to break or dislodge rock, the charge weights per delay will be adjusted so as to eliminate any risk of damage to nearby structures. The levels of air blast are anticipated to be well below the structural damage criteria for buildings, so risks of window glass breakage from the blasting at the proposed project are considered to be very low. Since complaints resulting from air blast noise levels may occur at levels considerably below those necessary to cause damage to structures (120 to 136 dBL), additional analyses were conducted to estimate the percent of the neighboring population which may be highly annoyed by blasting operations. At air blast noise levels of 120 dBL, and with no more than five blasts per week, the average noise exposure levels from blasting operations are predicted to be 41 Lcdn, which is analogous to 41 Ldn except for the use of C-Weighting rather than A-Weighting filters. An exposure level of 41 Lcdn (or 41 Ldn) is very low, and less than 1.0 percent of the population exposed to this level are expected to be highly annoyed (see Reference 7). For these reasons, risks of adverse noise impacts from blasting operations of up to five blasts per week which are also controlled to avoid risks of damage to structures are considered to be very low.

Ground Vibration from Blasting. Ground vibrations, or seismic waves, are also generated during blasting operations, and are generally described in terms of peak particle velocity in inches/ second. Most of the seismic energy remains trapped in the ground, but some energy is released as an over pressure pulse into the air (or Rock



Pressure Pulse). In general, the ground vibrations as well as the airborne Rock Pressure Pulse are expected to be less intrusive than the Air Pressure and Stemming Release Pulses. As an example, tunneling work under Dole Street on Oahu for a sewer project generated some initial air blast complaints from nearby residents during blasting of the surface entrance to the tunnel. However, once the entrance to the tunnel was formed and blasting was confined to tunneling underground, complaints stopped.

Predictions of peak over pressure or ground vibration levels vs. scaled distance from the blast are not precise, with initial uncertainties for a given location in the order of 20 to 30 dBL. For this reason, it is standard practice to employ seismograph monitoring of air and ground vibrations during blasting operations with a 3-axis geophone (for ground vibrations) and a microphone (for air vibrations).

The separation distances between the potential blasting areas and surrounding noise sensitive neighbors range are typically very small and range from less than 500 feet to less than 100 feet. At these small separation distances between the blast areas and surrounding noise sensitive neighbors, charge weights will probably be limited to less than one pound of explosives per delay. At one pound of explosives per delay, the predicted vibration levels at 125 feet separation distance are in the order of 0.070 to 0.40 inches per second. These predicted levels of ground vibration are encroaching into the thresholds for structural or architectural damage to buildings, and may be feelable (see TABLE 10). In addition, these levels are also encroaching into the 0.35 inches per second threshold recommended to minimize adverse human responses to vibrations resulting from sporadic impulsive shock excitations (see Reference 8). Based on these predictions of vibration levels from blasting operations, it was concluded that risks of adverse impacts from ground vibrations can be very low, but the sizes of the charge weights per delay may need to be kept at relatively small values in order to minimize risks of damage to nearby structures.

Mitigation of Noise and Vibration Impacts from Blasting. Because blasts may be both feelable and audible in the surrounding communities, mitigation measures will probably be required to minimize risks of antagonizing nearby residents. These recommended mitigation measures are described as follows:

- Regularly monitor air blast and ground vibration levels simultaneously at the closest noise sensitive residence(s) or structure(s) during the blasting operations to develop the data base for the surrounding area.

- For initial blasts, prior to establishment of a data base of ground vibration and air blast levels vs. scaled distance, use the minimum practical charge weight (in equivalent pounds of TNT) per delay as well as the minimum practical number of delays (or bore holes).

- If practical, reduce maximum air blast levels to less than 110 dBL at the nearest noise sensitive residences in response to air blast complaints. Possible methods

**TABLE 10**

**SUMMARY OF BUILDING DAMAGE CRITERIA**

| PEAK GROUND VELOCITY (mm/sec) | PEAK GROUND VELOCITY (in/sec) | COMMENT |
|---|---|---|
| 193.04 | 7.6 | Major damage to buildings (mean of data). |
| 137.72 | 5.4 | Minor damage to buildings (mean of data). |
| 101.16 | 4.0 | 'Engineer structures' safe from damage. |
| 50.8 | 2.0 | Safe from damage limit (probability of damage <5%). |
| | | No structural damage. |
| 33.02 | 1.3 | Threshold of risk of 'architectural' damage for houses. |
| 25.4 | 1.0 | No data showing damage to structures for vibration <1 in./sec. |
| 15.24 | 0.6 | No risk of 'architectural' damage to normal buildings. |
| 10.16 | 0.4 | Threshold of damage in older homes. |
| 5.08 | 0.2 | Statistically significant percentage of structures may experience minor damage (including earthquake, nuclear event, and blast data for old and new structures). |
| | | No 'architectural' damage. |
| 3.81 | 0.5 to 0.15 | Upper limits for ruins and ancient monuments. |
| 1.0 | 0.04 | Vertical vibration clearly perceptible to humans. |
| 0.32 | 0.01 | Vertical vibration just perceptible to humans. |

Source: 'State-of-the-Art Review: Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains'; U.S. Department of Transportation; December 1983.



of accomplishing this are: reducing charge sizes; increasing delay intervals; increasing hole depth; orienting bore holes to direct the Stemming Release Pulse away from noise sensitive properties; trucking in high quality stemming material to minimize stemming blowouts; and filling (sandbagging) over the area to be blasted and the detonating chord.

- Schedule actual blasting during the warm periods of the day to minimize the possibility of thermal ducting and focusing of air blast noise at large distances from the blast. If possible, also schedule blasting during fixed time periods, so that the members of the community can also schedule their activities accordingly.

- The most conservative vibration criteria for damage to "Ruins and Ancient Monuments" (see TABLE 10) is 0.15 inches per second. Initial test shots should be structured so as to not exceed this limit at the closest structures, with subsequent shots adjusted to reflect the results of the blast monitoring data.

## APPENDIX A. REFERENCES


(1) "FHWA Highway Traffic Noise Model User's Guide;" FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).

(2) Traffic Impact Analysis Report, Piilani Highway Widening; Austin, Tsutsumi & Associates, Inc.; July 21, 2009.

(3) 2022 Traffic Turning Movements without the Highway Widening Project; Austin, Tsutsumi & Associates, Inc.; August 4, 2009.

(4) Federal Highway Administration; "Procedures for Abatement of Highway Traffic Noise and Construction Noise;" 23 CFR Chapter I, Subchapter H, Part 772;" April 1, 1995.

(5) "Noise Analysis and Abatement Policy;" Hawaii State Department of Transportation, Highways Division, Materials Testing and Research Branch; June 1997.

(6) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.

(7) "Method for Assessment of High-Energy Impulsive Sounds with Respect to Residential Communities;" American National Standard, ANSI S12.4; Acoustical Society of America.

(8) "Guide to the Evaluation of Human Exposure to Vibration in Buildings;" American National Standard, ANSI S2.71; Acoustical Society of America.




## APPENDIX B

## EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., decl).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PWL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

## APPENDIX B (CONTINUED)

### TABLE I

### A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

| | TERM | SYMBOL |
|---|---|---|
| 1. | A-Weighted Sound Level | $L_A$ |
| 2. | A-Weighted Sound Power Level | $L_{WA}$ |
| 3. | Maximum A-Weighted Sound Level | $L_{max}$ |
| 4. | Peak A-Weighted Sound Level | $L_{Apk}$ |
| 5. | Level Exceeded x% of the Time | $L_x$ |
| 6. | Equivalent Sound Level | $L_{eq}$ |
| 7. | Equivalent Sound Level over Time (T) (1) | $L_{eq(T)}$ |
| 8. | Day Sound Level | $L_d$ |
| 9. | Night Sound Level | $L_n$ |
| 10. | Day-Night Sound Level | $L_{dn}$ |
| 11. | Yearly Day-Night Sound Level | $L_{dn(Y)}$ |
| 12. | Sound Exposure Level | $L_{SE}$ |

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78,



## APPENDIX B (CONTINUED)

### TABLE II

### RECOMMENDED DESCRIPTOR LIST

| | TERM | A-WEIGHTING | ALTERNATIVE(1) A-WEIGHTING | OTHER(2) WEIGHTING | UNWEIGHTED |
|---|---|---|---|---|---|
| 1. | Sound (Pressure)(3) Level | $L_A$ | $L_{pA}$ | $L_B$, $L_{pB}$ | $L_p$ |
| 2. | Sound Power Level | $L_{WA}$ | | $L_{WB}$ | $L_W$ |
| 3. | Max. Sound Level | $L_{max}$ | $L_{Amax}$ | $L_{Bmax}$ | $L_{pmax}$ |
| 4. | Peak Sound (Pressure) Level | $L_{Apk}$ | | $L_{Bpk}$ | $L_{pk}$ |
| 5. | Level Exceeded x% of the Time | $L_x$ | $L_{Ax}$ | $L_{Bx}$ | $L_{px}$ |
| 6. | Equivalent Sound Level | $L_{eq}$ | $L_{Aeq}$ | $L_{Beq}$ | $L_{peq}$ |
| 7. | Equivalent Sound Level (4) Over Time(T) | $L_{eq(T)}$ | $L_{Aeq(T)}$ | $L_{Beq(T)}$ | $L_{peq(T)}$ |
| 8. | Day Sound Level | $L_d$ | $L_{Ad}$ | $L_{Bd}$ | $L_{pd}$ |
| 9. | Night Sound Level | $L_n$ | $L_{An}$ | $L_{Bn}$ | $L_{pn}$ |
| 10. | Day-Night Sound Level | $L_{dn}$ | $L_{Adn}$ | $L_{Bdn}$ | $L_{pdn}$ |
| 11. | Yearly Day-Night Sound Level | $L_{dn(Y)}$ | $L_{Adn(Y)}$ | $L_{Bdn(Y)}$ | $L_{pdn(Y)}$ |
| 12. | Sound Exposure Level | $L_S$ | $L_{SA}$ | $L_{SB}$ | $L_{Sp}$ |
| 13. | Energy Average Value Over (Non-Time Domain) Set of Observations | $L_{eq(e)}$ | $L_{Aeq(e)}$ | $L_{Beq(e)}$ | $L_{peq(e)}$ |
| 14. | Level Exceeded x% of the Total Set of (Non-Time Domain) Observations | $L_{x(e)}$ | $L_{Ax(e)}$ | $L_{Bx(e)}$ | $L_{px(e)}$ |
| 15. | Average $L_x$ Value | $L_x$ | $L_{Ax}$ | $L_{Bx}$ | $L_{px}$ |

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

APPENDIX C

SUMMARY OF BASE YEAR AND FUTURE YEAR TRAFFIC VOLUMES ALONG PIILANI HIGHWAY

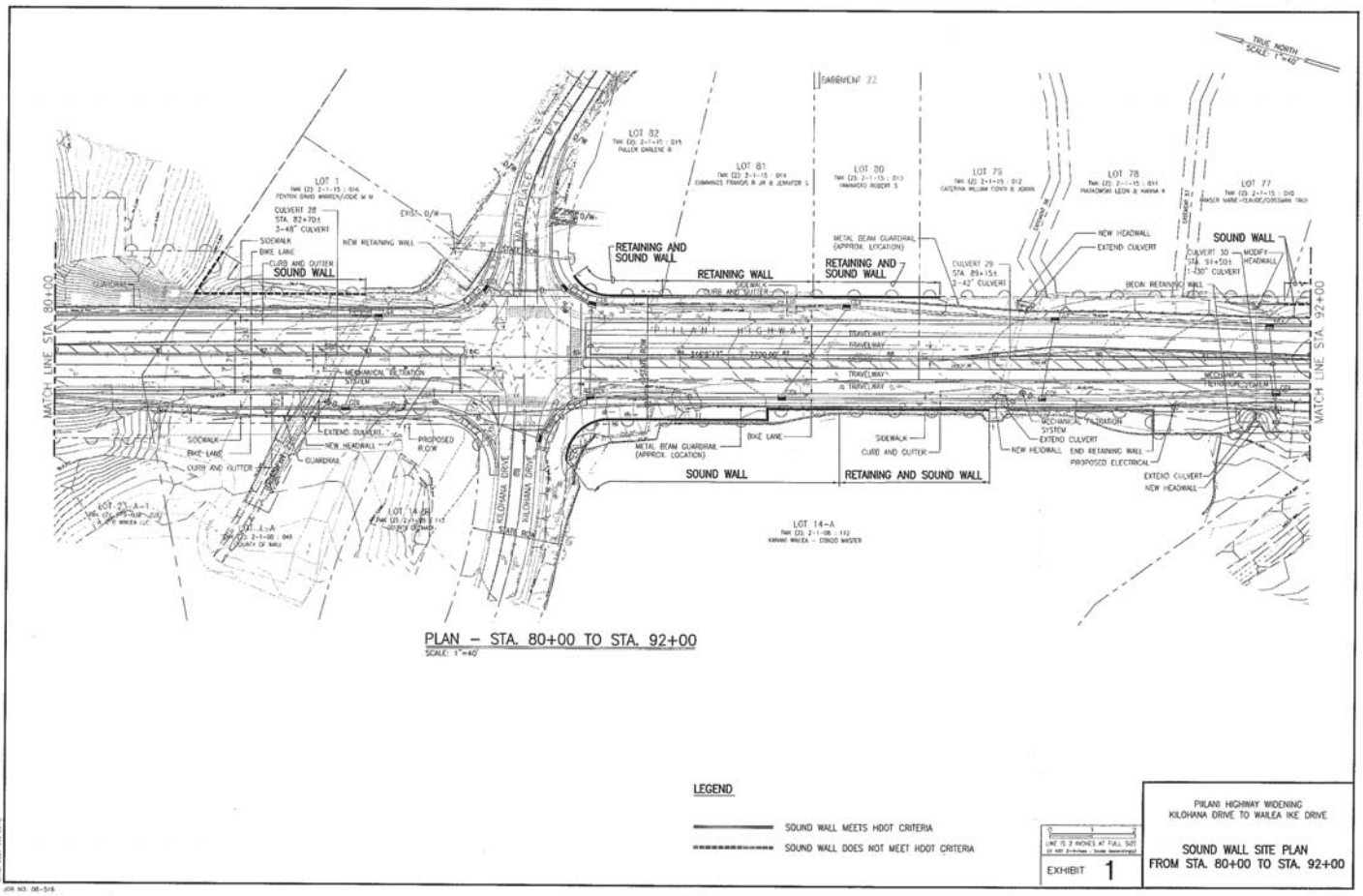
| ROADWAY LANES | **** CY 2008 ***** AM VPH | PM VPH | CY 2022 (NO BUILD) AM VPH | PM VPH | CY 2022 (BUILD) AM VPH | PM VPH |
|---|---|---|---|---|---|---|
| North of Kilohana Street (NB) | 502 | 1,043 | 1,020 | 1,760 | 1,410 | 2,280 |
| North of Kilohana Street (SB) | 941 | 837 | 1,550 | 1,515 | 1,910 | 2,055 |
| Two-Way | 1,443 | 1,880 | 2,570 | 3,275 | 3,320 | 4,335 |
| South of Kilohana Street (NB) | 296 | 821 | 710 | 1,480 | 1,100 | 2,000 |
| South of Kilohana Street (SB) | 798 | 572 | 1,370 | 1,145 | 1,775 | 1,685 |
| Two-Way | 1,094 | 1,393 | 2,080 | 2,625 | 2,875 | 3,685 |
| North of Okolani Drive (NB) | 290 | 770 | 705 | 1,425 | 1,095 | 1,945 |
| North of Okolani Drive (SB) | 759 | 549 | 1,330 | 1,125 | 1,690 | 1,665 |
| Two-Way | 1,049 | 1,319 | 2,035 | 2,550 | 2,785 | 3,610 |
| South of Okolani Drive (NB) | 214 | 711 | 475 | 1,205 | 865 | 1,725 |
| South of Okolani Drive (SB) | 723 | 461 | 1,220 | 815 | 1,580 | 1,355 |
| Two-Way | 937 | 1,172 | 1,695 | 2,020 | 2,445 | 3,080 |
| North of Wailea Ike Drive (NB) | 217 | 752 | 530 | 1,380 | 930 | 1,910 |
| North of Wailea Ike Drive (SB) | 723 | 461 | 1,300 | 875 | 1,670 | 1,425 |
| Two-Way | 940 | 1,213 | 1,830 | 2,255 | 2,600 | 3,335 |
| South of Wailea Ike Drive (NB) | N/A | N/A | N/A | N/A | 130 | 125 |
| South of Wailea Ike Drive (SB) | N/A | N/A | N/A | N/A | 85 | 155 |
| Two-Way | N/A | N/A | N/A | N/A | 215 | 280 |

NOTES:
1. "No Build" Represents Conditions without Honua'ula Project and without Additional Makena Resort Projects.
2. "Build" Represents Conditions with Honua'ula Project Plus Additional Makena Resort Projects.



# APPENDIX F-1.

# Sound Wall Analysis




PLAN – STA. 80+00 TO STA. 92+00
SCALE: 1"=40'

LEGEND

SOUND WALL MEETS HDOT CRITERIA

SOUND WALL DOES NOT MEET HDOT CRITERIA

IF NOT 2-inches - Scale Accordingly

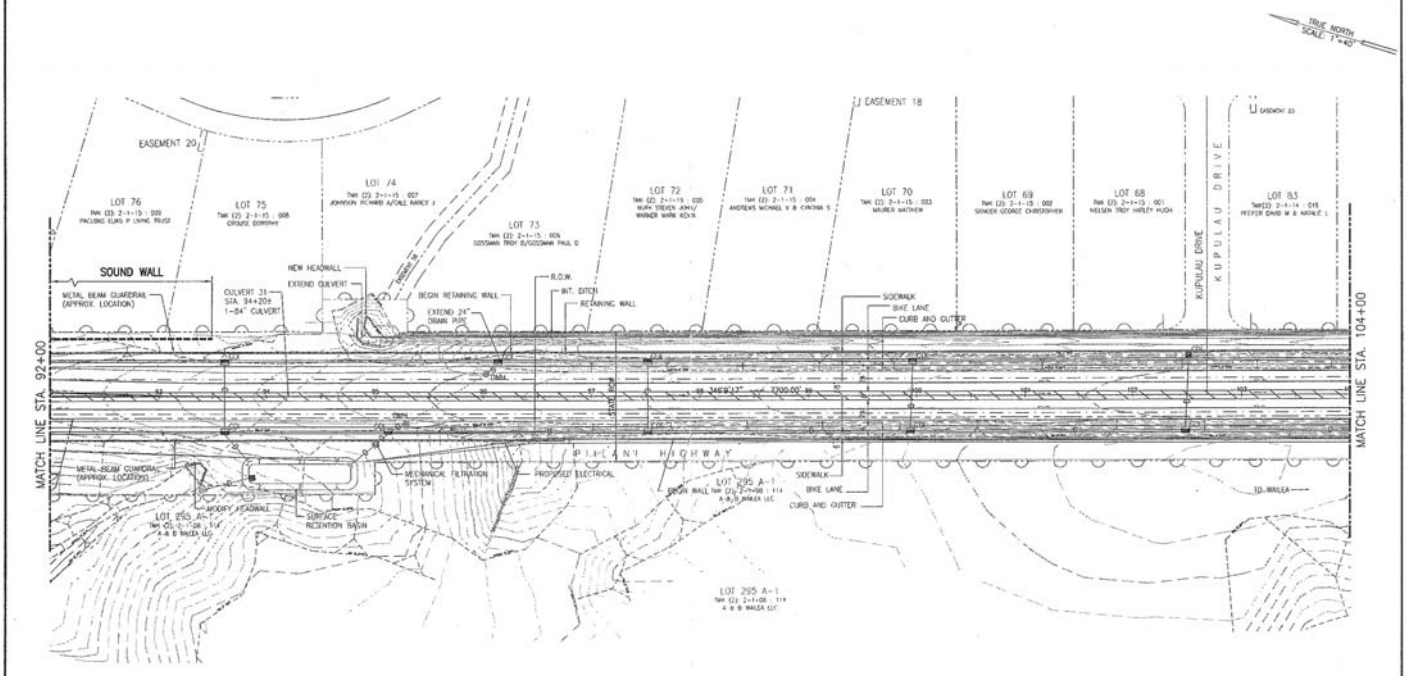
EXHIBIT 1

PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

SOUND WALL SITE PLAN
FROM STA. 80+00 TO STA. 92+00

DATE: JULY 29, 2019

JOB NO. 08-516




PLAN – STA. 92+00 TO STA. 104+00
SCALE: 1"=40'

LEGEND

SOUND WALL MEETS HDOT CRITERIA

SOUND WALL DOES NOT MEET HDOT CRITERIA

IF NOT 2-inches - Scale Accordingly

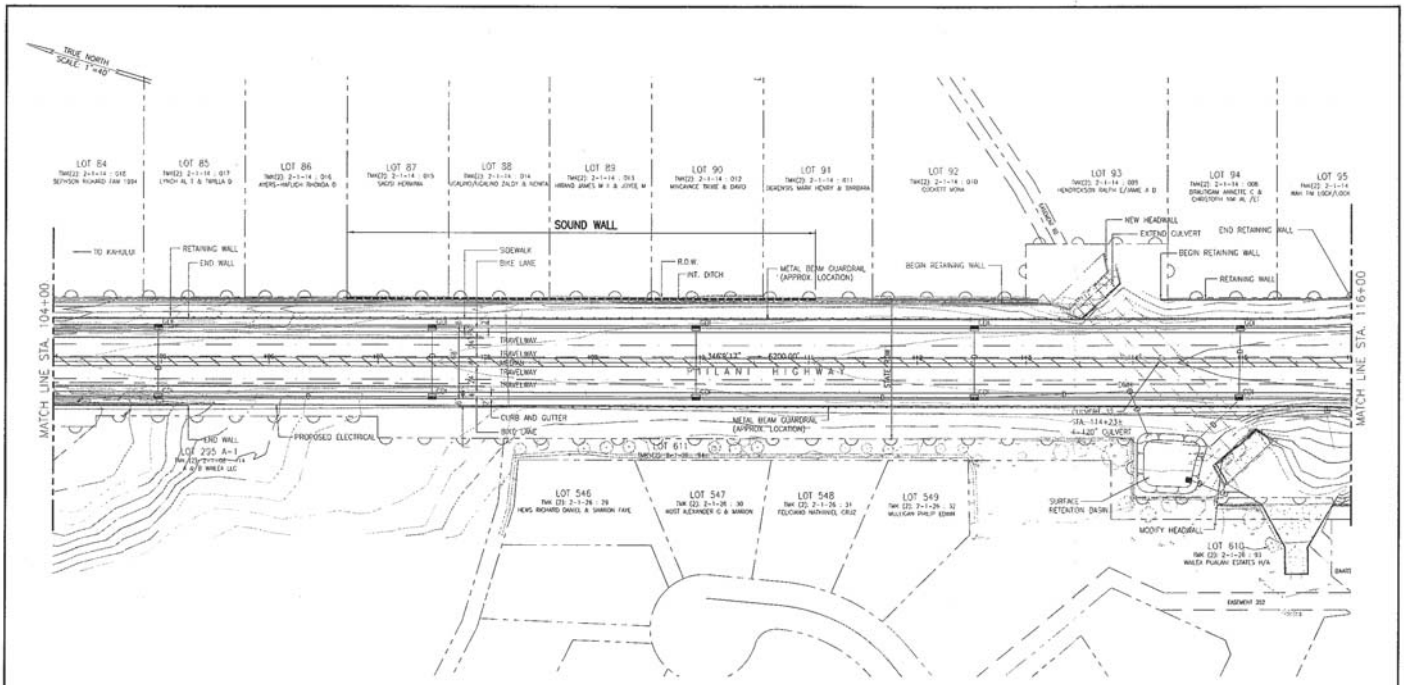
EXHIBIT 2

PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

SOUND WALL SITE PLAN
FROM STA. 92+00 TO STA. 104+00

DATE: JULY 29, 2019

JOB NO. 08-516




PLAN – STA. 104+00 TO STA. 116+00
SCALE: 1"=40'

LEGEND

SOUND WALL MEETS HDOT CRITERIA

SOUND WALL DOES NOT MEET HDOT CRITERIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2-inches - Scale Accordingly)

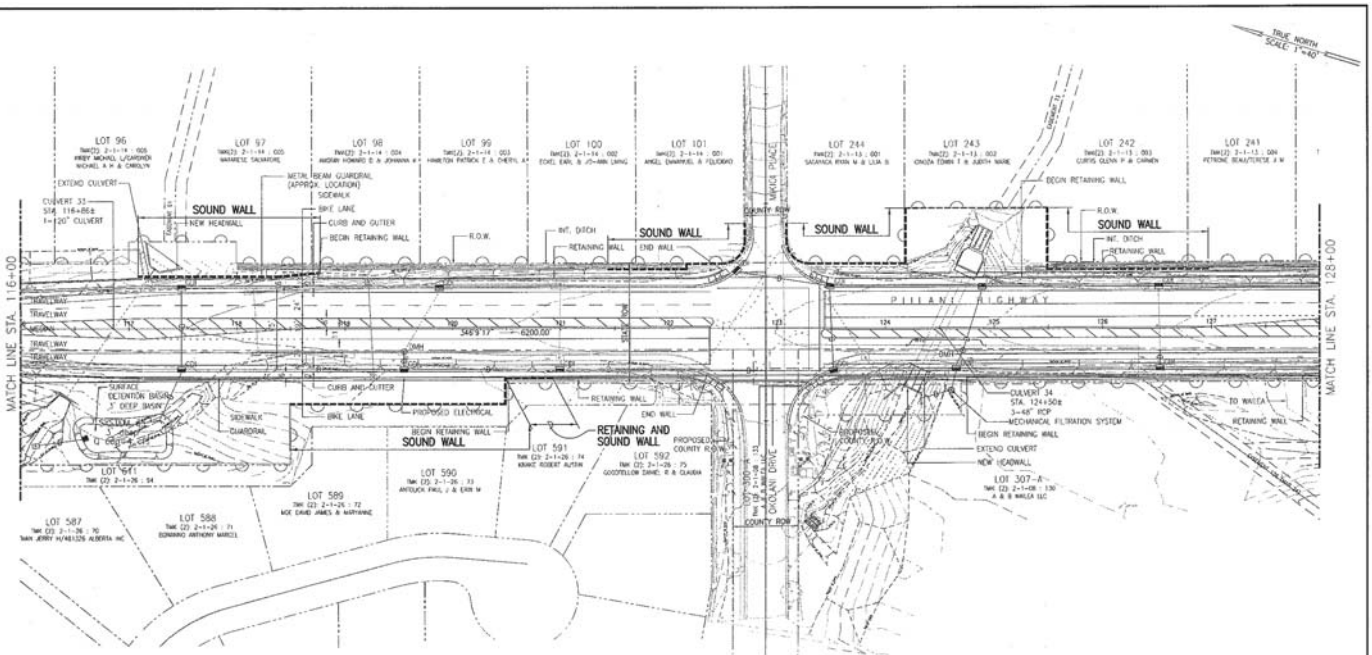
EXHIBIT 3

PILIANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

SOUND WALL SITE PLAN
FROM STA. 104+00 TO STA. 116+00

DATE: JULY 29, 2010

JOB NO. 08-516




PLAN – STA. 116+00 TO STA. 128+00
SCALE: 1"=40'

LEGEND

SOUND WALL MEETS HDOT CRITERIA

SOUND WALL DOES NOT MEET HDOT CRITERIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2-inches - Scale Accordingly)

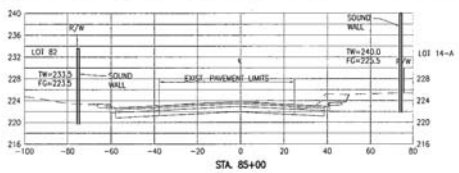
EXHIBIT 4

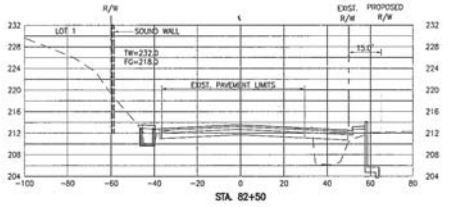
PILIANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

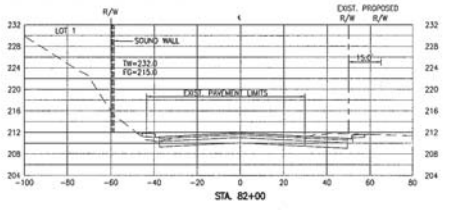
SOUND WALL SITE PLAN
FROM STA. 116+00 TO STA. 128+00

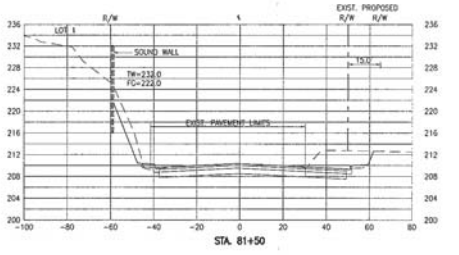
DATE: JULY 29, 2010

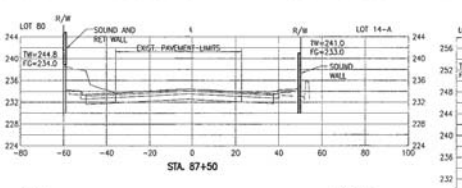
JOB NO. 08-516

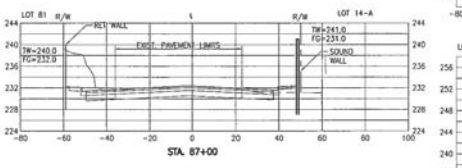


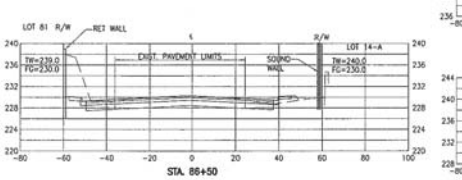



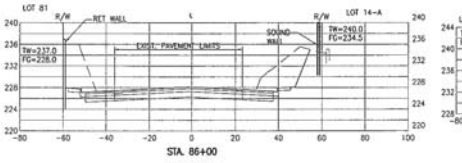



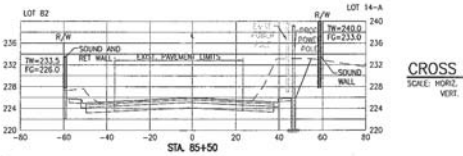



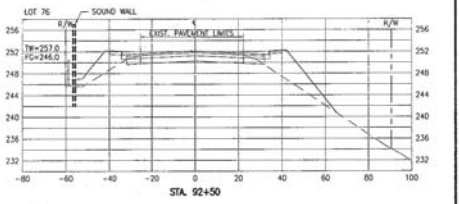



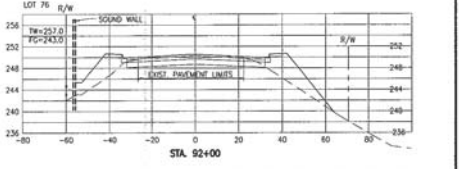



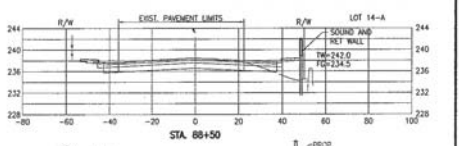



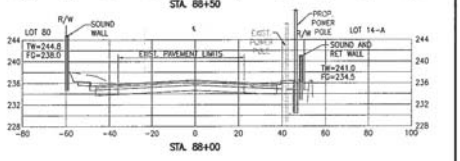




CROSS SECTIONS
SCALE: HORIZ. 1"=40'
VERT. 1"=16'

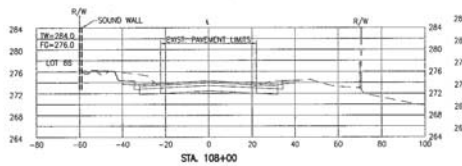
LEGEND
SOUND WALL MEETS HDOT CRITERIA
SOUND WALL DOES NOT MEET HDOT CRITERIA

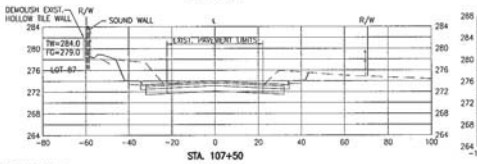
PUILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

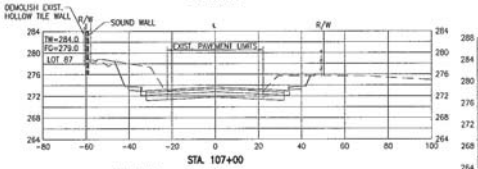
SOUND WALL CROSS SECTIONS 1

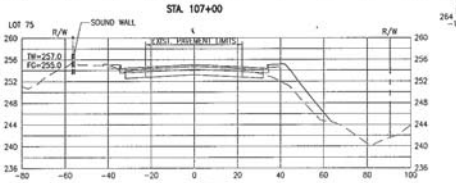
EXHIBIT 5

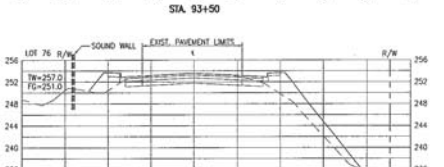
DATE: JULY 29, 2019

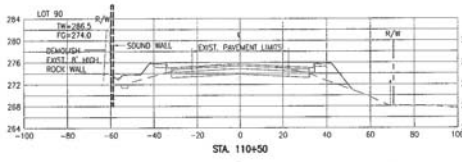


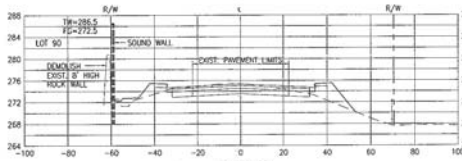



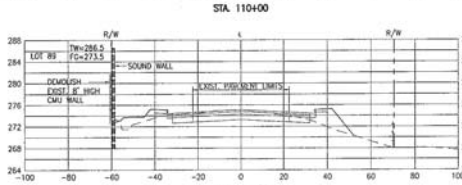



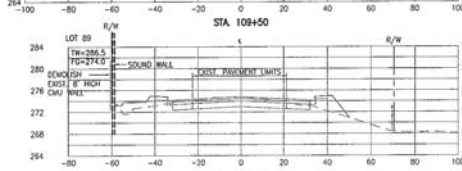



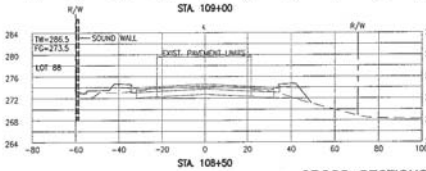



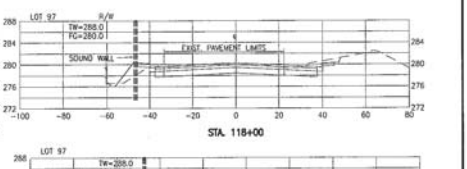



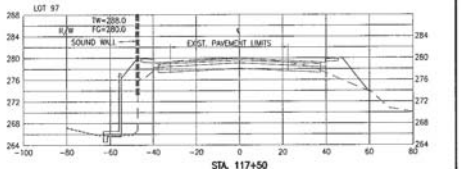



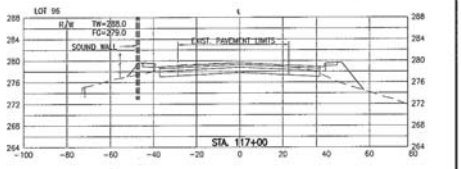



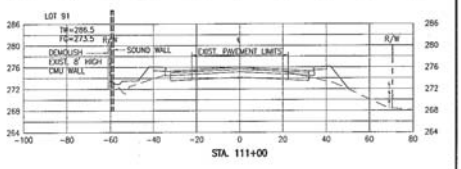




CROSS SECTIONS
SCALE: HORIZ. 1"=40'
VERT. 1"=16'

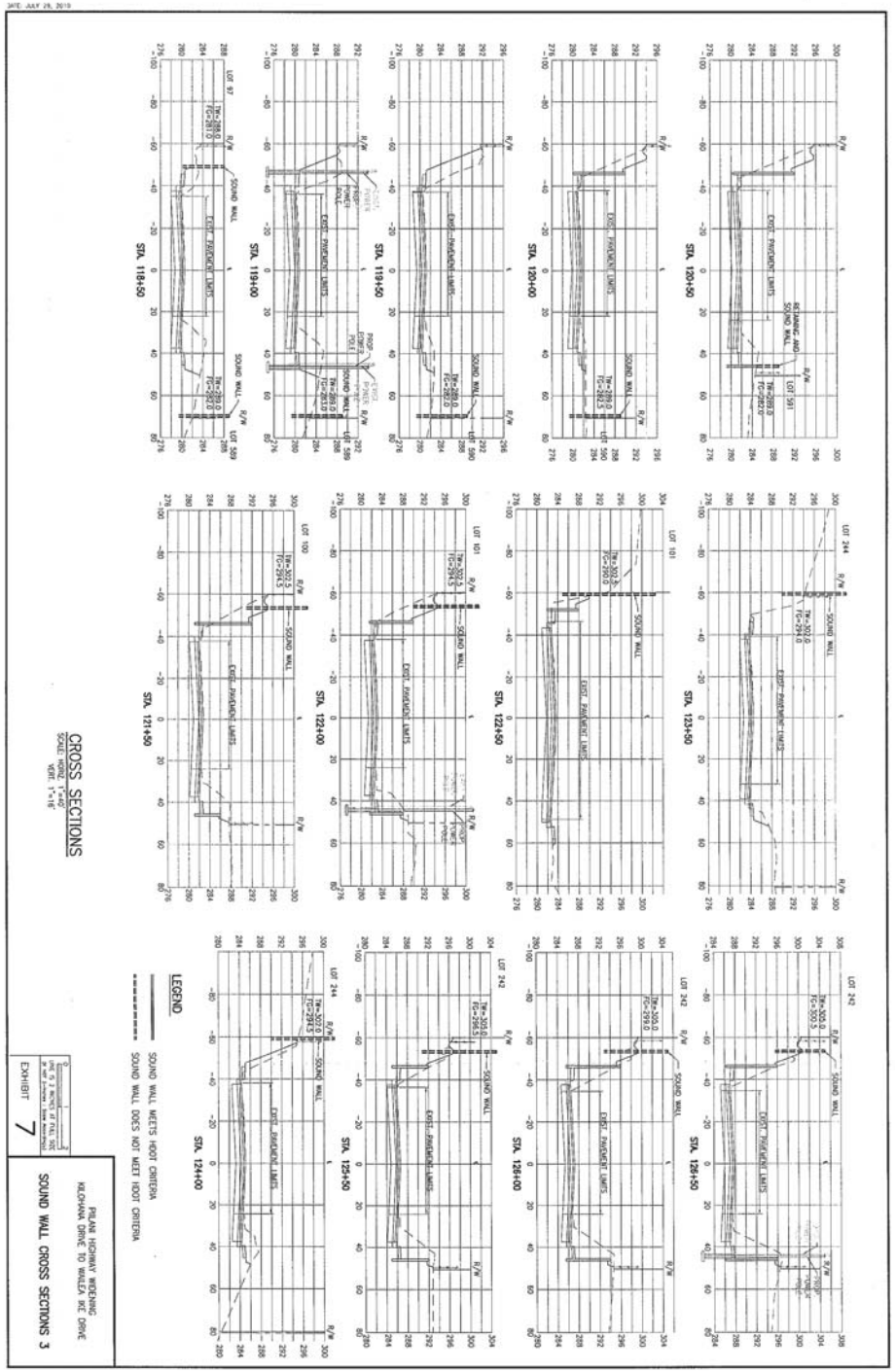
LEGEND
SOUND WALL MEETS HDOT CRITERIA
SOUND WALL DOES NOT MEET HDOT CRITERIA

PUILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE

SOUND WALL CROSS SECTIONS 2

EXHIBIT 6

DATE: JULY 29, 2019




# APPENDIX G.

# Department of Land and Natural Resources, State Historic Preservation Division Letter Dated July 16, 2009

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

KEN C. KAWAHARA
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

July 16, 2009

Mr. Mark Roy, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793
planning@mhplanning.com

LOG NO: 2009.0148
DOC NO: 0907PC30
Archaeology

**SUBJECT:** **Chapter 6E-42 Historic Preservation Review – Early Consultation on the Pi'ilani Highway Widening to Four Lanes between Kilohana and Wailea Ike Drive**
**Pacahu Ahupua'a, Makawao District, Island of Maui**
**TMKs: (2) 2-1-008:046; (2) 2-1-008:113; (2) (2) 2-1-008:130; 2-1-008:131; (2) 2-1-008:999; (2) 2-1-014:999; (2) 2-1-015:999; (2) 2-1-026:094**

Thank you for the opportunity to comment on the aforementioned project, correspondence for which we received on February 6 of 2009. Please accept our apologies for the lengthy delay in responding.

Based on the submitted document, the project involves widening improvements to the Pi'ilani Highway between Kilohana Drive and Wailea Iki Drive, as requested by the County of Maui in association with the rezoning application made by Honua'ula Partners, LLC. The proposed areas of effect are all within or immediately alongside an existing County roadway/road right-of-way. The proposed project is also located in an area where numerous isolated and clustered pre-Contact period human burials and other culturally significant deposits have been found. Given the above information, the most reasonable form of mitigation appears to be precautionary archaeological monitoring during all project related ground altering disturbance.

Therefore, upon review of any permit application associated with the proposed project forwarded to us by the County of Maui, we will likely recommend the following:

A qualified archaeological monitor shall be present during *those portions of the project which involve ground altering disturbance* in order to document any historic properties which may be encountered and to provide mitigation measures as necessary. *Please note that ground altering disturbance includes previously disturbed stratigraphy, as culturally significant subsurface deposits are often found in these contexts.*

As per Hawai'i Administrative Rules (HAR) §13-279, this means that prior to the commencement of ground altering disturbance associated with the proposed project, the project developer or developer's agent must submit an appropriately prepared *monitoring plan* to this office for review and acceptance. The plan must contain the following provisions:



1) Specify the kinds of historically or culturally significant sites or remains of sites anticipated and where in the construction area they are likely to be found;
2) Specify how such sites or remains of sites will be documented;
3) Specify how such sites or remains of sites will be treated;
4) Specify that the archaeologist (s) conducting the monitoring has (have) the authority to halt construction in the immediate area of the find in order to carry out the plan;
5) Specify that coordination between the archaeologist and construction crew has been scheduled so that all involved parties are aware of the plan and what it means;
6) Specify what laboratory work will be performed on any cultural sites or remains of sites that might be found in the project area;
7) Specify details concerning the archiving of any collections that are made;
8) Specify a schedule of report preparation and that the report will be submitted within the required 180 days after completion of the proposed undertaking.

A list of those meeting the requirements to perform such work can be obtained on the SHPD's website at http://hawaii.gov/dlnr/hpd/pdfs/2009-Permittee.pdf or by contacting our main office at (808) 692-8015.

If you have any questions or comments regarding this letter, please contact the SHPD's Lead Maui Archaeologist, Ms. Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Sinoto Consulting, LLC: akihikosinoto@aol.com
Jeff Hunt, Director, Dept. of Planning, FAX (808) 270-7634

# APPENDIX H.

# Cultural Impact Assessment

**CULTURAL IMPACT ASSESSMENT**

**For the**

# PROPOSED PI'ILANI HIGHWAY WIDENING PROJECT

**April 2009**



Hana Pono, LLC

# CULTURAL IMPACT ASSESSMENT
For the

# PROPOSED
# PI'ILANI HIGHWAY WIDENING
# PROJECT

Prepared for:

Honua'ula Partners, LLC
1300 N. Holopono Street, Suite 201
Kihei, HI 96753

Prepared by:

Hana Pono, LLC
Keli'i Tau'a
and
Kimokeo Kapahulehua

April 2009

Hana Pono, LLC
2275 Apala Place
Haiku, Maui, Hawai'i 96708





## Management Summary

| | |
|---|---|
| **Report** | Cultural Impact Assessment for the Proposed Pi'ilani Highway Widening Project; specifically focusing in the moku (district) called Honua'ula District (now Makawao), Maui Island |
| **Date** | February 2009 |
| **Project Location** | County of Maui; Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive |
| **Acreage** | 1 mile of an existing 2-lane road will be expanded into a 4-lane highway |
| **Ownership** | Honua'ula Partners, LLC |
| **Project Description** | Expansion of existing Pi'ilani Highway to 4-lanes |
| **Region of Influence** | Direct effect on Maui Meadows, Wailea Kanani, Wailea Pualani Estates, Kai Malu at Wailea, Wailea Gateway Shopping Center, and The Bluffs at Wailea Subdivisions with an indirect effect on the Mākena Community |
| **Agencies Involved** | SHPC/DLNR, Maui County Council, Maui County Planning Department, SHPD, HDOT |
| **Environmental Regulatory Context** | The Undertaking is Subject to both State and County Zoning Regulations, the Cleanwater Act, and Other Environmental Regulations |
| **Results of Consultation** | No concerns regarding Mauka-Makai Trails, Native Plants, Archaeological Sites, Current Gathering Practices or Access Concerns |
| **Recommendations** | Preservation Precincts for Native Flora and Archaeological Sites, Stewardships, etc… |

## Cultural Summary

The focus of this study is on the roughly 1 mile long straightaway of the Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive, which is sandwiched between Maui Meadows Subdivision mauka (upward) of the Pi'ilani Highway and the following subdivisions makai (ocean side) of Pi'ilani Highway: Wailea Kanani, Wailea Pualani Estates, Kai Malu at Wailea, Wailea Gateway Shopping Center, and The Bluffs at Wailea. The widening of this section of highway addresses the anticipated increase in traffic in Wailea and Mākena.

This portion of land is at the tip of the traditional district of Honua'ula and Southwest district called Kula. Due to the location of the project area relative to the large mass of Haleakalā the daily trade wind is funneled from Kahului all the way through Mākena from the early afternoon into the wake of the sunset hour at South Maui. Along with these winds, the hot sun in Kihei and Wailea has baked the sandy earth that sits upon a solid rock foundation. In the area of the proposed widening, the cut along the sides of Pi'ilani Highway indicates that the foundation is bedded solid blue rock.



**Figure 1: Blue rock foundation at project area**

For years, the only way to get to Wailea 'Ike and Mākena from Kihei was by an ancient walkway starting at the ocean side of Kalama Park. As South Maui continually expanded, the residents found it necessary to find other methods and roadways to reach Mākena. Ancient methods of canoeing and coming down from Ulupalakua upon the footpaths continued but walking along the sea coast eventually gave in to horses and ox drawn carts. The same path gave way to a dirt road for Model T cars. The road was covered with sand and oil as Kupuna Clark cited until more developments took place beyond the park.

As Wailea kept on growing, it was deemed necessary to build Pi'ilani Highway. And now, with Honua'ula and Mākena Resorts on the planning books for more development, widening this corridor will assist traffic flow to and from South Maui.





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Cover Photo: Sunset from project area

## Introduction

Under contract to Honua'ula Partners LLC, Hana Pono LLC of Maui, prepared this Cultural Impact Assessment (CIA) for the proposed expansion/widening of Pi'ilani Highway to Wailea Ike Drive in Wailea mauka (uplands), Makawao District, Maui Island. This CIA was undertaken in accordance to HAR Title 11 Chapter 200-4(a) and Chapter 343 of the Hawaii Revised Statutes. The content generally follows the guidelines for assessing cultural impacts as set forth by the State of Hawaii Office of Environmental Quality (OEQC 1997). This study includes a summary compiled from information acquired through archival research, literature search and oral interviews with persons knowledgeable with the immediate project area as well as the Honua'ula region.



**Figure 2: View of project area**

## Project Area

The subject of our current study is comprised of a small strip of land running parallel with the Maui Meadows subdivision at the beginning of the township Wailea. The proposed project is being undertaken in conjunction with the proposed residential development project known as Honua'ula, which echoes the name of the traditional district.

The immediate boundaries of the project area are the existing Maui Meadows and a portion of the proposed Honua'ula development to the east, Kilohana Road to the north , and Wailea-Ike Drive to the south.





Since the cultural significance of an area must be assessed in the context of the surrounding greater region, the subject of our study will be the area of the traditional Honua'ula District. The moku (section) of Honua'ula lies between Kula of the north, Kahikinui of the east, the sacred islands of Molokini and Kaho'olawe of the west and the ocean to the south.

## Methods

The scope of this report will be to compile a cursory summary based on various historical, cultural and ethnographical accounts and facts regarding Honua'ula. The information was acquired through archival research, literature searches and oral interviews with persons knowledgeable with the immediate project area as well as the Honua'ula region.

## Chronological Background

Six time periods shall be discussed with a general overview of each providing the reader some background to get a bigger picture of how Hawaiian culture has been shaped by the various external influences. This discussion of mythical and documented ancient history will provide the reader with an understanding of how we arrived at present day.

### *Era 1: Mythical Creation*

Traditional stories 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, pull up all the islands from the bottom of the sea.

The latest and last physical appearance of Pele occurred as late as mid-1800s 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 1998: 228).

Many of the lava flows in the summit depression and in the Ulupalakua to Nu'u area were dark black and bare 'a'a (rough, jagged type of lava landscape). The two freshest lava flows run near La Perouse Bay. The upper flow broke out of a fissure near Pu'u Mahoe and the lower flow broke out at Kalua o Lapa cone. Both flows contain large balls or wrapped masses of typical 'a'a found throughout Hawai'i.

### *Era 2: Pre-contact Migration – 0 to 1100AD*

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).

### *Era 3: Early Tahitian Migration – 1100 to 1400AD*

This third period, 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.

The target area of study is in Honua'ula, which is an ancient name that was introduced to Hawai'i by Chief Mō'ikeha of Tahiti. The reason Chief Mō'ikeha decided to depart from Tahiti was to separate himself from his lover Lu'ukia who originally came from Hawai'i with her husband Olopana. Lu'ukia had created turmoil in Mō'ikeha's life and therefore the Chief felt that his separation from her would heal his wounds. (Sterling 1998: 214)

### *Era 4: 'Ohana – 1400 to 1600AD*

The fourth period dates from 1400 through 1600. Voyaging between Hawai'i and Tahiti ended. The external influences of the migrating Polynesian chiefs along with internal developments within the culture resulted in sophisticated innovations in cultivation, irrigation, aquaculture, and fishing. These innovations were applied in the construction of major fishponds, irrigation systems, and field cultivation systems. Such advances resulted in the production of a food surplus that sustained the developing stratification of Hawaiian society into three basic classes: the ali'i (the chiefs), kahuna (the priests), and maka'ainana (the commoners). Oral traditions relate stories of warring chiefs, battles, and conquest resulting in the emergence of the great ruling chiefs who controlled entire islands, rather than portions of islands. These ruling chiefs organized great public works projects that are still evident today. For example, 'Umi-A-Liloa of Hawai'i constructed taro terraces, irrigation systems, and heiau throughout Hawai'i island, including the Pu'uhonua at Kealakekua. King Pi'ilani was inspired to construct a "King's Highway" that passed through Honua'ula as it encircled the entire island of Maui.

### *Era 5: Chiefly rule of the Ahupua'a – 1600 to 1778*

In the fifth period, during the century preceding the opening of Hawai'i to European contact in 1778, the Hawaiian economy expanded to support a population between 400,000 and 800,000 people. The social system consisted of the 'ohana who lived and worked upon communally held portions of land called 'ili within the ahupua'a natural resource system. These families-- the building blocks of the Hawaiian social system--were ruled over by the stewards of the land, the chiefs along with their retainers and priests. The history books are filled with tales of battles among the chiefs from all islands.

Even during this period of chiefly rule, land in Hawai'i was still not privately owned. The chiefly class which provided stewardship over the land divided and re-divided control over the districts of the islands among themselves through war and succession. A single chief could control a major section of an island, a whole island or several islands depending upon his military power.





The chief divided his landholdings among lesser ranking chiefs who were called konohiki. The konohiki functioned as supervisors on behalf of the chief over the people that lived on the lands and cultivated them. The tenure of a konohiki was dependent upon his benefactor, the chief. Konohiki were often related to the chief and were allocated land in recognition of loyal or outstanding service to him. However, unlike elsewhere in Polynesia, the konohiki were rarely related to the maka'ainana or commoners on the land under his supervision. Thus, the konohiki represented the collective interest of the ali'i class over the maka'ainana as well as the individual interest of his patron chief.

The lands allocated to the konohiki were called ahupua'a. Ahupua'a boundaries coincided with the geographic features of a valley. The typical windward ahupua'a ran from the mountain to the ocean, were watered by a stream, and were bounded on both sides by mountain ridges. On the other hand, leeward ahupua'a rarely had permanent streams, thus the well-water upland areas became important in the leeward regions. The overall intent of either ahupua'a is that it would afford the 'ohana who lived in the ahupua'a access to the basic necessities of life-- marine foods from ocean reefs and streams, low lying wetlands for taro, fresh water, timber, and medicinal plants from the uplands and forests.

The konohiki supervised all productive communal labor within the ahupua'a month-to-month and season-to-season. He collected the annual tribute and determined if it was sufficient in relation to the productivity of the land. He regulated the use of land and ocean resources, administering the kānāwai (law) applying to the use of irrigated water as well as to fishing rights in the ocean. The konohiki was responsible for organizing communal labor for public works projects such as roads, fishponds, and irrigation systems.

The ahupua'a of the konohiki was further divided into strips of land called 'ili which were allocated to the maka'ainana (common Hawaiians). These land grants were given to specific extended family units of maka'ainana called 'ohana. The 'ili either extended continuously from the mountain to the ocean or was comprised of separate plots of land located in each of the distinct resource zones of the ahupua'a. In this way an 'ohana was provided access to all of the resources necessary for survival (Handy, Handy & Pukui 1972: 49).

### *Era 6: Captain Cook to present—1778 to present*

In 1778, the arrival of Captain Cook drastically changed Hawai'i from a Stone Age Society to a Nation dependent upon imported goods and technologies. The importation of new animals and plants changed the islands and put a lot of stress on the eco-system that sufficiently provided for the Hawaiian people in ancient times. Captain Cook and those Westerners that soon followed brought diseases that the Native Hawaiians had no immunity against and the onset of several epidemics caused a major population decrease throughout the archipelago of Hawai'i.

The arrival of the Christian missionaries in 1820 caused another shift in the Hawaiian socio-religious system. The Hawaiians believed in many gods and now through the missionary teachings, they were taught that there was only one God. Along with these two major changes came the moving away from the barter system because the money system was introduced.

The success of King Kamehameha uniting the islands in the late 1800's established a ruling family for several years until a new government under King Kamehameha III established the Great Mahele that introduced private land ownership—a move away from the concept of land stewardship.

Private land ownership now brought new businesses to Hawai'i the first being the sugarcane industry and ranching followed by the pineapple industry. These businesses required labor that

started the immigration movement to Hawaii beginning with the Chinese, Japanese, etc… Hawai'i is said to be the melting pot of the Pacific.

## The Name Pi'ilani

The usual custom of royal marriages required the bride to be secluded from all male company except the husband until her pregnancy was assured. This custom assured that the child born was of royal descent. When Kahekili's son, Kawaokaohele, chose his bride, Princess Kapalaoa of O'ahu she was subject to this hymeneal seclusion. During this time a strange incident occurred. In the early evening, the peace was shattered by the screams of Kapalaoa.

Due to the kapu the warrior guards were not able to approach the Princess, only her ladies-in-waiting could come to her aid. As they entered the darkened room, they beheld a fearsome sight.

Resting upon the princess was a huge dragon-like lizard. This form was one traditionally used by the God of Power and Destruction. It was Kū in his physical manifestation. Even as the women watched, the dragon slowly rose in the semi darkness and disappeared.

When the Princess Kapalaoa gave birth to a son he was given the name of Pi'ilani (translated to mean: Ascent to Heaven) to memorialize the visitation of the divine Kū. This tradition bequeathed to the royalty of Maui, their claim of divine descent and also the belief that their kingdom could never be conquered except by a descendant of Kāne, God of Life and Creation. Interestingly, Kamehameha I whose birth signified his descent from the Kāne lineage-- did take the Kingdom of Maui.

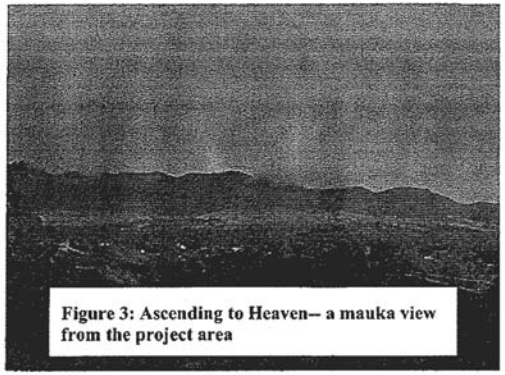

**Figure 3: Ascending to Heaven– a mauka view from the project area**

King Pi'ilani was the 15th Mo'i (king) of Maui; he reigned in the 14th century at the heart of the innovative era. And like Kamehameha the Great of later years, he unified the island of Maui, Lana'i, Moloka'i and Kaho'olawe. The battles for unification of these four islands were followed by a long period of peace, stability, and prosperity at which time he dedicated his efforts to building the King's Highway. Also called the Pi'ilani Highway or the Alaloa (long road), it was intended to encircle the coastline of Maui connecting heiau and villages. The king was highly respected as a wise ruler who cared for his people by visiting them at their ahupua'a (land division). Because he liked to travel throughout his kingdom, the Alaloa was instrumental in his travels in and around the coastline of Maui. King Pi'ilani was not able to complete the Pi'ilani Highway in his lifetime, fortunately his son followed through on his behalf.

No other monarch is so revered by the people of Maui as Pi'ilani, and even in their mele (chant or poetry), the Island of Maui is often addressed as Na-Hono-A-Pi'ilani—the bays that belong to Pi'ilani.





At the time of King Pi'ilani's death, his kingdom encompassed all of what is called Maui County today. King Pi'ilani's children were: the oldest Lono-a-Pi'ilani whose mother was La'ie-lohelohe-i-ka-wai, next came Lono's younger sister, Pi'ikea, then another sister, Ka-la-'ai-heana. The youngest was Kiha-a-Pi'ilani, who was born and reared on 'Oahu.

## Two Heirs to the Maui Kingdom

King Pi'ilani left two heirs to the kingdom, the oldest son and the youngest son. He wanted the two brothers to share the ruling powers between them. When King Pi'ilani died in Lahaina the kingdom of Maui became Lono-a-Piilani's as Kiha-a-Piilani was not present at the time of his father's death. Lono-a-Piilani wasted no time in establishing his authority and directing his younger brother to be submissive to him. However, the O'ahu elders who reared Kihapi'ilani made many predictions about his life that he would endure living in poverty and eventually would become a powerful ruler. In the first years of Lono's reign all the people in the kingdom were content. Lono took care of his youngest brother; Kiha returned the gesture by caring for the people of the kingdom. His older brother didn't appreciate that because he thought that his younger brother was trying to win the people over in order to stage a revolt against him. Lono kept a close eye on Kiha. Both brothers planted taro in the ahupua'a of Waihe'e. Kiha's taro patch exceeded his elder brother's in size, which made the king very angry. He therefore sought to kill his younger brother. Kiha fled and began his life as a maka'ainana (commoner). He lived in disguise and poverty for many years as predicted by the elders until one day he would become the predicted famous ruler. Kiha established an army on the Island of Hawai'i where his older sister, Pi'ikea had gone to live and was eventually able to overthrow his brother and become the 17th Mo'i(King) of Maui. (Kamakau, 1961: 22)

## Alaloa, the Long Road

After establishing his authority and settling the people of Maui, Kihapi'ilani turned his attention to his father's "Alaloa". He extended the work of his father and continued the Alaloa Road so that it started up again in Ulupalakua and the new ruler was responsible to take it all the way to Hana and thereby completing his father's dream. In some areas, the road was paved with rock 4-6 feet and over 138 miles (222km.) long.

The early settlers in Hawai'i traveled on foot up and down the mountains and if they lived close to shore, they paddled from one part of the island to the other or completely around it. They also traveled from island to island on their canoes. By building the Pi'ilani highway on the island of Maui, the King probably involved the entire population of the island since it required a large work force to complete the road.

**Figure 4: One of the remaining pieces of the Alaloa**



In his lifetime, there was a modest population on the island and they probably had cleared out some type of walk way or path along the seashore and maybe up to the mountains. To build the Kings Highway would take a lot of rocks since evidence shows that in some of the areas of the remaining highway, the engineers of the King were selective in choosing the pahoehoe rocks (smooth lava rock). Even at the lava flow with 'a'a (jagged lava), pahoehoe were placed on them. If there was no pahoehoe rock, they used tools such as the Hawaiian stone adze called ko'i to break down those jagged edged lava so that one could walk on the road. If they needed to dig, they used another archaic tool called the 'o'o or digging stick to make their holes. The path along the ocean had rocks that were fetched from the seashore since they were smoothed and easier on the feet. When the road approached the streams, similar type of smooth rocks were taken from the riverbeds and placed on the roads. Otherwise, smooth chips of blue rock served as the foundation of Alaloa. Upon its completion, the road became the only ancient highway to encircle any of the Hawaiian Islands.

The present day Pi'ilani Highway starts from the western part of Maui lined up with bays of Hononana, Honokohau, Honolua, Honokahua, Honokeana, and Honokowai. It is said that the Hono A Pi'ilani (bays of Pi'ilani) could be seen from Kaho'olawe, Lana'i and Moloka'i.

Today, the route of Honoapi'ilani Highway stretches from beyond the bay areas cutting through Lahaina, continuing to 'Olowalu and circling the point at Ma'alaea on the other side of the mountain and runs right up to Wailuku town where it ends. Doing its course to Central Maui, a branch of the road takes a right turn and heads towards South Maui all the way to our ending target area of Wailea. Again, Pi'ilani Highway then leap-frogs up to Ulupalakua and stays its course to Hana. The present day namesake does not follow the exact course of the ancient Pi'ilani Highway, but it shares several parallel segments.

## Pathways from Kalama Park, Kihei to Mākena

It is still common knowledge among kupuna (elders) who lived during the 1930s in South Maui that there was no existing road from Kihei to Mākena except for a walking trail along the shoreline. When the four-legged animal came to Hawai'i, the horse, donkey, oxen and mule were used extensively to transport supplies or to ride from Kihei to Mākena and out to Kaupo.

Upon interviewing one elder, a question was asked about a family that lived in Kihei. This was a familiar answer. "Go down and follow the road and you pass the four coconut trees. Then you come down to the plumeria tree. When you pass this street, you turn right. Dirt road. That's where they live." MD Albrono (Honua'ula Report: 6,9). This statement expresses how the Hawaiian people viewed their surroundings, mostly by the plants, stones and topographical feature that existed from before they were born. It was a simple life, without traffic lights and highway names.

In describing travel to Mākena, kupuna Eddie Chang says we came down from Ulupalakua. There wasn't a road until World War II when the military built the road to have access to Mākena. Supplies were shipped to Mākena landing. Kupuna reminded us that the landing was built before the Kahului Harbor. In fact, Mākena actually had two harbors one at the present landing and the other at the Mākena Church. (Honua'ula Report: 3,7)

Eventually, a good road was developed along the ocean side and called South Kihei Road. Later, the Pi'ilani Highway was constructed which connected to Honoapi'ilani Highway of West Maui starting at the base of Mokulele Highway above the South Kihei Road. It follows the same parallel route until it reaches Kilohana Avenue then later was extended to Wailea 'Ike Road.





In short, the above paragraphs provide a description of the rapid changes of the lifestyle of the people who were accustomed to walking the land rather than speeding along in vehicles that would get them to their destination. The Hawaiian people had a sense by walking the land barefooted that they would be in contact with the mana (life force, spiritual power of the land) that would invigorate their entire being which would keep them healthy, focused and in-tune with what the island provided them. Even today those who have attempted to walk the 'aina barefooted find how invigorating it is to travel at a speed that allows for careful observation.

On the other hand, the development of the modern roadways that went from Kihei through Wailea and reached down to Mākena made for easier access to all of the fishing, surfing and sun-tanning locations that South Maui has to offer.

## Cattle Ranching and Hawaiian Planters

At the turn of the century 1900, Honua'ula was rich with pili-grass, tobacco, cotton, ilima, native plants, and trees, such as noni and kukui. Hawaiian planters populated areas surrounding the proposed Pi'ilani Highway Widening project. With the introduction of cattle and ranching in this region, changes to the environment have been documented.

> *In Honua'ula as in Kahikinui and Kaupo, the forest zone was much lower and rain more abundant before the introduction of cattle. The usual forest zone plants were cultivated in the lower uplands above the inhabited area. Despite two recent lava flows, which erupted in about 1750, the eastern and coastal portions of Honua'ula were thickly populated by Hawaiian planters until recent years. A number of families whose men are employed at Ulupalakua Ranch have homes near the ranch house. Close by these native homes are little dry land taro cultivated.* (Handy, p. 508)

Ranching has been blamed for many of the district's environmental problems. The cattle and goats stripped the land of its native flora while destroying ancient Hawaiian temples and gravesites. Ranching operations took over land previously owned by Hawaiian families. Some Hawaiians left the area and were not aware of it when the ranchers took their lands through the process of "quiet title" or adverse possession.

## Impact of Modern Developments

In the 1930's, the township of Kihei stopped at Kalama Park. There was no access, in terms of roads, beyond that point. At that time the land Southward was, in simple terms, a kiawe forest.

In the 1960's, when water was piped into the dry South Maui, suddenly Kihei became a worthy destination for sun-lovers. The growth in South Maui between the 1960's through to present day has considerably changed the landscape of the once vacant kiawe forest. The tourist industry took advantage of the pristine beaches of South Kihei, Wailea and Mākena. The residential developments south of Kalama Park are mostly populated by malihini (newcomers). The sun, sand and surf lured many people from abroad and the continuing development provided homes and jobs for them to stay.

## Conclusion

The current cultural assessment undertaken in conjunction with the proposed Pi'ilani Highway widening resulted in finding no significant cultural concerns or impacts within the area of potential impact. Also, there are no indigenous plants that will be affected by the widening project. The report does refer to King Pi'ilani and his son Kihapi'ilani who were responsible for building the great Alaloa road. The expansion of the Pi'ilani Highway will, in some way, continue the work of our beloved King Pi'ilani from Maui's ancient history.

As with all developing societies, transportation is one of the central components. King Pi'ilani understood the value of "paved" roads and easy travel.

Kimokeo Kapahulehua and I (Keli'i Tau'ā) as Hawaiian practitioners send our Mahalo Akua, Nā Aumakua, Nā Kupuna, Nā Makua a me Charlie Jencks (Thank God, Ancestral Gods, Elders, Parents and Mr. Jencks) for inspiring us to provide this sincere and honest cultural report. The road widening development will open up south Maui from Kihei to Mākena to new opportunities and new challenges. We hope the developers will tread with as much care as they have shown during the planning process. Also, if found, we desire that the native plants can be kept intact as much as possible to retain the unique identity of the region. By expressing these thoughts, we now can close this report me ke aloha pumehana (with our fondest love and support) and the wisdom of our kupuna who said, "E ho'olohe i ka leo o ka 'aina" (Listen to the voice of the land).

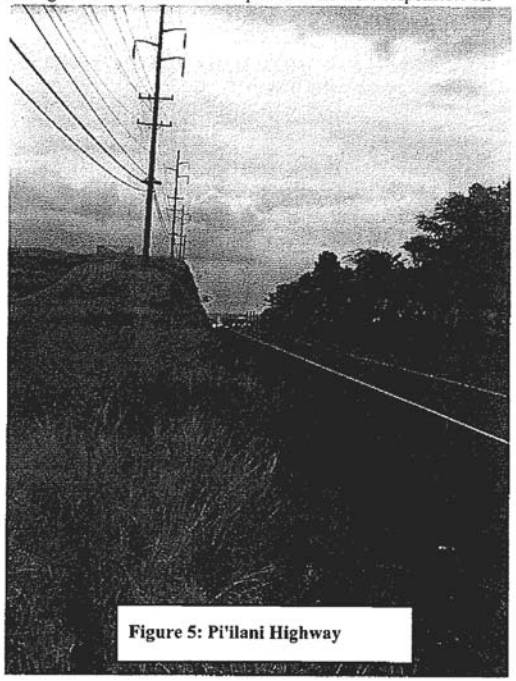

**Figure 5: Pi'ilani Highway**





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Interviews:

Joann Amoran
Herman Clarke
Lehua Clubb





## Appendix A: Interview Transcripts

### *Interview: Johanna Amorin*
### By Keli'i Tau'a



*November 5, 2008*

**KT: Keli'i Tau'a**
**JA: Consultant Johanna Amorin**

KT- I'm sitting here with?
JA- Johana Kuuleilokelani Shin-Amorin.
KT- Born in?
JA- Born on Oahu.
KT- Your native extraction is?
JA- Mama- pure Hawaiian. Daddy- pure Korean.
KT- Her name was?
JA- Mama's name was Hannah Kahanahaipule Moses.
KT- Ahh, so the Moses was what ethnicity?
JA- Pure Hawaiian because of great ancestor changed a Hawaiian name into an English name for biblical reasons but the family is pure Hawaiian.
KT- Wow. All though you were born on Oahu you said you've been living in Kihei in particular an area that we are doing research for which is Kilohana and further south to Wailea Ike which is going to be part of the Wailea 670 now known as Honuaula to have access road to the different developments that will be there. So, in terms of that, how long have you been living in that area?
JA- I live on Akala Drive which is the first street up into the Maui Meadows subdivision and I have been there since December of 1973.
KT- So you saw a lot of change from that time?
JA- Yes. I've seen a lot of growth, South Maui I believe, districts on Maui.

KT- When you came to Maui you weren't-were you conscientious of not only the influx of new residents for this island but ideas which created changes in the 'aina or the land?
JA- Culture is very important to me, living in a place that I could call home. Infrastructure, we have some problems but you know the government, all governments, all phases you need to get together and fix the problems where in the future I think the majority of the people of Maui will benefit. And it's all about the majority.
KT- So, in that area from the time you moved there, we who are of the islands have our own characteristics about us of how we love different things. I think it echoed very loudly when a group of Hawaiian people committed to get Kahoolawe back to the people in the State and that's when the term 'aloha aina' resounded loud and clear that we the people of the islands need to respect and love the land. Is this what you're saying about how you feel about where you come from now in Kihei?
JA- Kihei where I live, my resident, my aina, I love the area. All of my children were born and reared in that house. They enjoy the shoreline, the beaches, the swimming, the resources, they respected the culture. But today there's a lot of growth as I said but whatever is available should be enjoyed by everyone but also respected.
KT- So you are reinforcing that as a development comes about that there should be a passage where the public can have access to the beach.
JA- I believe that the public should have access to the beach. The beach- it's environment does not belong to any private owner, it should be available to whoever wants to get to the shoreline.
KT- So you didn't tell me how old you were when you moved to Maui.
JA- Well, I've been on Maui since 1972, married a Maui boy I was 30 at the time and today I'm 65, my Medicare year.
KT- Yes.
JA- I have 3 loving sons. I have 3 mo'opuna; one grandson and two granddaughters my youngest one blonde hair grey eyes. So there's a whole array of culture within our families and I'm sure I speak for most of the families who have been native to Maui or Hawaii nei.
KT- Can you recall the language being spoken in your household where you were raised?
JA- Being that mama was Hawaiian daddy was Korean when we went to grandma's house the influence was Hawaiian. When we went to daddy's mother's house it was Korean. But within our own household we were told to speak English and sometimes Pidgin, you know being educated you knew when to speak Pidgin.
KT- Yes, so there's a value to all communicable languages to understand one another.
JA- Yes, and again the cultures in Hawaii Nei. My upbringing was among all different cultures and the respect and they were, you don't get huhu(angry)with any one particular you just felt this ohana-ship within yourself to get along with your neighbors and I teach my children the same thing, "Watch what you say!" and "You're not better than anyone else." And "Everybody has the right to grow old and live a happy life."
KT- So by that philosophy that you grew up, where did your kids have to go to school?
JA- My children were all born on Maui and my husband went to Catholic school and so the beginning of my 3 they went to Catholic school in Kahului and then some of them went into higher education in Wailuku at St. Anthony. My eldest graduated from St. Anthony, my 2nd graduated from Baldwin and my 3rd son graduated from Maui and it's only because of the division with our residence.
KT- So do you feel the neighborhood around you provided enough culture for one to go and enjoy the neighborhood into the kiawe forest or down to the ocean that if someone was very





interested they could have learned a lot from just being around in what was happening in you ahupua'a or your moku of Honuaula?
JA- Yes, the Hawaiian culture lives within my being and it's a reflection of my past and it's in the house and the children learn from that in the schools they had the opportunity to learn Hawaiian studies and they all did and when they were 5th graders they went to Kamehameha for Explorations and it was one of the proudest things to be a native Hawaiian and to be able to learn more about the culture. They enjoy the beaches that surround them and just living on the aina, living in Hawaii and having a lot of respect and for your neighbors too, and being in sports and getting to be good neighbors, my children had all of that, all of that.
KT- You know there isn't a lot of streams running down close to Maui Meadows but close to Kamali'i School is a small ravine where they found some petroglyphs. By us researching Maui, most of the streams that flow down from Haleakalā down to the ocean there are pocket areas where people of ancient times have put their artwork or their communications on rocks. Are there any kinds of Hawaiian, for lack of a better word, sites that you can think of in the area that we are looking at in the upcoming development that you might want to point out that you're sure that the developer targets that to stay away from desecrating any areas. I'm discussing stone walls of ancient times, different artifacts that have been found.
JA- Well, just sharing with my past and my family my husband actually worked for a surveying company when we first moved to Maui Meadows in fact in the Mākena area surveying company and he would see heiau's(temples) and things that were there and I'm sure the company had studies done or any development that we have especially in the mauka areas of Kihei that's not developed we have the authorities, we the planning department and all the agencies that need to do studies before development is done. I have a lot of respect for these departments and what they do. We also have some renowned Hawaiian cultural experts who live on Maui and together we will preserve, we will preserve because that is our job.
KT- So if I heard you correctly your husband participated in surveying some areas in where we're speaking of that were identified as Hawaiian temples otherwise known as heiau's.
JA- Yes and this was a long time ago, this was probably in the middle '70's- during the 1970's, I believe, he used to work for A&B for this surveying unit and a lot of it is respected because you're part of the culture and when you see something like that the company knows about it and studies are done. But I understand also as a planning commissioner that the big development that takes place in Mākena there are studies and I feel very relieved to understand that the people that go in they are very thorough with what they do and it's all about preserving and protecting the rights of the Hawaiian people.
KT- Yes. As you were raising your family at your present residence, what were some of the fun activities that you and your family could go enjoy within your neighborhood circle which I'm referring to; Kihei, Wailea, Mākena and so forth, what did the kids love going and doing?
JA- Well the beaches and when we had grandma coming over and grandpa coming over way back in the '70's, the late '70's we would ride out to the point, Mākena Point and go and check the scenery out there by La Perouse Bay and walk among all of that lava, you know, and they were exposed to that and the beautiful scenery out there. The resorts have taken over a lot but a lot of it still remains but I understand the parks are still there for those who want to enjoy and I believe everyone should continue to enjoy, you know it's not for one it's for all.
KT- So when you were participating with the planning commission what was the major concern of those who sat on the Board with you?

JA- We come together as a body of 9 people to make good decisions for the development, the projects that come before us and my aim is to do the right thing for the majority of the people not the new and the investors that come over but the long term to preserve what we can and smart development to make sure that the infrastructure takes place, it's always taken a back seat to development. There are-and again the government needs to work together and the State. Look at Lahaina everything is just delayed or set back, who's fault is it? I guess we have to get somebody who can really scream out and be heard, you know it's all about that voice.
KT- Who was the mayor at the time you participated on the planning commission?
JA- I was fortunate I had Alan Arakawa when I first became a commissioner and when I left it was our current mayor Charmaine Tavares.
KT- Those are pretty much the kind of questions I wanted to ask you. If you have any thoughts about anything else you would like to share and have us included in this kind of report that you see in front of you go ahead and say what's in your gut.
JA- I believe in my culture, I love my culture; My grandma, my mama. I've seen where I've come from, low-income housing, I've worked hard to maintain a better quality of life for myself but I never forget where I came from and to preserve my culture in whatever way I can. Who will benefit? My children and everyone else; our neighbors, the people who really want to be here who takes pride in our aina, in our culture, it's there for everyone. Growing up in Hawaii it was never just being Hawaiian, you're Filipino, you're Chinese, I'm Korean, you're Caucasian, you're a whole mixture, this is the melting pot of the world and it's for everyone who wants to be here to enjoy but it's with respect. Thank you.

## *Interview: Herman Clark*
## By Keli'i Tau'a

*October 30, 2008*

**KT: Keli'i Tau'a**
**HC- Consultant – Herman Clark**

HC- This house here was the first house here in Kihei but we had a lot of old houses here and there scattered.
KT- Okay.
HHC- Used to be a piggery across here.
KT- Okay when you say "this place" what is-what did they call this place before? Is there another name outside of Kihei? Is there a district name?
HC- Kenolio Street.
KT- Kenolio Street, okay.
HC- That's what it was. Kenolio because Kenolio used to be way down in the back of Maui Lou working for Harold Rice. Harold Rice had a piggery back there.
KT- Right, Honoulu Ranch.





HC- Yes. And down side where the stream is Crozier had a rock crusher inside there crushing rocks.
KT- Okay.
HC- That's that stream, you know, going out.
KT- Yes.
HC- Okay. So, Mama Sarah when-she passed away already so I know all the old people and most of them all passed away. My father and my mother, they passed away.
KT- What is your full name?
HC- My name is Eugene C. Clark Sr.
KT- Where did Mama and Papa come from?
HC- Okay my mother is from Kauai.
KT- Okay, so Chinese?
HC- Chinese-Hawaiian. They own taro patch in Hanalei. And my cousin, my mother's brother's daughter, is Kalehua…I can't think of her married name right now, she married too many times you know what I mean?
KT- Kalehuawehi?
HC- So my mother's oldest niece like, the brother's daughter, so she knows a lot of things over here because when she was a little girl she came here and stayed with us. And you know, we grew up as the same age.
KT- Yes, and your father?
HC- My father was Sergeant Clark.
KT- He was an army man?
HC- He came here to instruct the Hawaiian National Guard back in '35. We came here in '35 when the airport was-from the mud flats by right across of the power plant. So then we stayed in the Hawaiian Homestead where the 344 Off guard used to have their camp, Paukukalo. And then from there when the war broke out we lived by the end of the pali before the new road went over. We stayed there for 6 years.
KT- By Ma'alaea?
HC- Past Ma'alaea, you know going to Lahaina before Ukumehame. So had old house over there, the Mahi's were staying there off and on like a beach house.
KT- Yeah?
HC- So my father got that place there from the State and we was raised down there like as a kid.
KT- So where did you go to school?
HC- At St. Anthony School. We caught the bus, the railroad bus.
KT- Railroad bus?
HC- Uh huh at that time railroad bus. (Laughter)
KT- So that was owned by the Sugar Plantation?
HC- By Kahului Railroad.
KT- Kahului Railroad. But Kahului Railroad was part of A&B.
HC- Yes, yes.
KT- So the railroad came all the way to here?
HC- To Lahaina and then we would catch and then go to school and go home on the bus too.
KT- Oh, over there! But it didn't come here to Kihei?
HC- No not to Kihei. By the end of the Pali Road and that's why it goes that way there the old days. That's the old road now I'm not talking about the new road.
KT- Right. So why did mom and dad move to Kenolio Road?

HC- Figure he bought the place through auction through the State you know the taxes or whatever audit.
KT- So when he moved here what was he doing, what kind of work?
HC- My father retired in '47 from the army then he was the harbor division foreman. Then when the big planes started to fly in he was a customs inspector. He was a smart man that's why they call him Sergeant Major.
KT- So you went to school St. Anthony and you always lived here?
HC- Yes.
KT- Earlier you were talking about breaking rock here in Kenolio.
HC- Yes, yes, clean up the property.
KT- How many acres is this?
HC- Just about 1/8 acre shy from a whole acre.
KT- So over here used to be all rocks?
HC- All rocks, blue pohaku and I learned how to at 11 years old. I used an 18 pound sledgehammer. I dig 'em out, I put the bar in there I move 'em, I move 'em, I move 'em. I crack 'em all then I get this old pickup truck, my father myself and my brother we converted that 1934 Chevrolet into a truck.
KT- Okay.
HC- And then I put all the rocks on it and I stuck it all behind by the end of the property. Then was so high already- was about 8 feet high already so my father decides to give to the County because he was good friends with the County and all that. So he tell them come get them and they made the stone wall in Kalama Park. You know where the parking lot all the blue rock?
KT- Right, right.
HC- I cracked all that for 2 ½ years. I come home after school I crack rocks.
KT- Oh my, that's just like hard labor.
HC- But I learned. You know you learn.
KT- What did you learn?
HC- I learned a lot of stuffs that's why.
KT- So for the young people to understand what you said because today young people are different they don't look at labor as…
HC- Yes, yes. But when you help the family out you do what you have to do. When you come home after school mama says, "You eat little bit, you do your homework when you pau your job outside the yard. Then you study you do your homework." That's how our life was back then the old days.
KT- So how old are you now?
HC- Seventy-seven, I still going yet.
KT- Yes.
HC- I help a lot of people out.
KT- How do you mean you help people?
HC- Getting well.
KT- What do you do that people will get well?
HC- I can feel their body through reflexology touch the body and all that.
KT- How did you learn that?
HC- That was given to me when I was in the hospital from a helicopter accident. I was in Castle Memorial Hospital, my mothers oldest brother came there and he said, "Jean you still have a job to do." That's what happened.





KT- How old were you then?
HC- I was in my late 30's.
KT- Why were you on the helicopter?
HC- Why, because I was doing some job up in Waikamoi and the helicopter down draft and ran into the cliff.
KT- Wow.
HC- So I got out of that and everything and I fight my way through.
KT- Only you survived or…
HC- Everybody survived, the pilot survived and everything but then afterwards the pilot went to Alaska and died. He had another helicopter accident.
KT- Oh my gosh.
HC- Yeah, so I was doing a little demolition work up in that area there.
KT- So you said uncle gave you the gift?
HC- My mothers oldest brother Rudolf. He's the one came to the hospital saying, "Jean you still have a job to do yet."
KT- So is this Chinese?
HC- Chinese-Hawaiian.
KT- No. So is what you do Chinese or Hawaiian or…
HC- I do Chinese and Hawaiian way.
KT- Oh, okay. So it's your own way that's the gift passed to you.
HC- Yes that's right I worked. I had an office in Kahului A&B Building with Christina Chang and a couple of other psychologist and A&B doctors. Then I said I do most of the job paying the rent for it and then I got out, that's why I opened a health spa at Kealia Beach Plaza. I used to do seaweed wraps and lomilomi and all of that. I helped a lot of people. Then the hydrotherapy tub I put them in there and I have to ask them if they're diabetic or whatever I can't leave them in there too long in there because it's going to drain, you know. So I have to take them out within 10 minutes or 5 minutes just to loosen up the toxins from their body. Then I put them in a room, I put somebody else in there, I clean the hydrotherapy tub, keep it clean and all. Then I put a new one in there again. That's how I am.
KT- When you were growing up here in Kihei and now you've seen a lot of changes.
HC- Yes.
KT- What were some of the old places that our elders used to go? Do you know of any heiau's in this area?
HC- Yes used to be heiau's down-side back of Maui Lu and all that used to be heiau's.
KT- Wow.
HC- And then down Mākena.
KT- The area that we're doing this study for is where Kilohana Street which goes up to Maui Meadows and goes across to Mākena. They want to build(widen) the road there.
HC- Yes.
KT- As far as you know-well kupuna say never used to have a road beyond Kalama Park.
HC- No, never.
KT- Can you remember what was happening on that side?
HC- Okay, this was the main road you would go down to Kihei.
KT- This-meaning Kenolio Road?
HC- Yes, yes. Never get the front street in the south road no more this was the main street. This was only sand and oil, sand and oil. They throw the oil they throw the sand on it. Then only few

houses over here down to Maui Lu and then it cuts back down. Go by where Maui Lu used to be and then go short distance and then get sand again before Azeka's and all that. Before you go to Maui Sunset and all that sand and oil, sand and oil that's how it was.
KT- Did you remember some of the families?
HC- Well families…what I remember is more like Mrs. Saffery, old lady Saffery she died already. And then Isaacs and then I remember the old Koa House and the fish pond.
KT- What about Akina's?
HC- Akina's, yes Akina's was further down and they had the construction. Old man Frank Akina and then Alec Akina run the bus. When he started with the bus was old banana station wagon taking the children from here to old Kihei School right here. This was the first school over here.
KT- Oh, okay.
HC- And then inside the schoolyard there was the teacher's house to stay in. That's how I know everything that way there, you see? And then they went open the road gradually. Usually it was all back to this way here, back to this road and then everything went change, gradually change, that's all I remember down there. Then during the war the pier in front of the ABC Store used to be HC&S Store used to be the Post Office and the store. Johnny Ventura was the manager for the store and the Post Office. I don't know if you remember that?
KT- Yes. Well the other kupuna I interviewed told me that story.
HC- And then had the pier across where the Navy boat was stationed across there. They call that the crash boat.
KT- Okay.
HC- They the one was pulling the barge out when the plane dropped. They practiced bombs on it going towards Kahoolawe. If they hit the barge they know what number, what plane hit it-who's the better pilot, right? (Laughter) That's the way I look at it. So I didn't care because there were no explosives in it was all water bombs-500 pounders. That's why I get two outside there.
KT- Yeah I see that.
HC- That's all water bombs. And so my father went put that up when I brought it back from the kiawe trees way back there. So we make one mailbox in one and the other one is a landmark right. And that's how it is.
KT- So, after you finished St. Anthony what did you do?
HC- No, I went to Maui Vocational that time. Then I went to take up the machinates, I went to Pearl Harbor and worked the next day. I was sixteen and a half. I told them I wanted to go. I told my ma I'm going, daddy I'm going. So my mother's oldest brother pick me up down the airport. Next morning he took me down to Pearl Harbor where we sign up for work. The next day I work.
KT- So how many years you worked there?
HC- I worked in there 3-4 years then I went to Ammunition Depot in Nanakuli side.
KT- That was during the war already.
HC- Right, right, right and then the Korean War.
KT- And then you returned here to Maui.
HC- Yes.
KT- So, as a young boy you saw many of the changes taking place.
HC- Yes, all over.





KT- Did you see any activities or people going up to where I described where they want to put in the new road by Kilohana Street?
HC- No.
KT- So all of that was just barren, nothing?
HC- Yeah, that's right nothing at all.
KT- Only kiawe.
HC- That's right all kiawe. All through here was all kiawe and all boulders. This over here of course here was farms.
KT- Oh, okay what did they plant?
HC- At that time this was on the corner lot, they had 7 acres see. And then the next notch was 7 acres, then the next one was 7 acres-one subdivision was. What most of their farming of planting squash and tomato and whatever because the water was very little bit coming down from Ulupalakua. No water at all, you know. So we the last house here, if we going to take a shower we cannot, we gotta wait. If we have open water first they get the water before us so we put a 500 gallon water tank up. And then we fill 'em up during the night and that's what we use for drinking and cooking and all that my mother until we dig a well here.
KT- So you didn't see too many people paddling canoes during your time?
HC- No, no.
KT- This Kihei Canoe Club is a recent activity.
HC- Right, right. I know Bishop used to be with the Pioneer Federal Bank I think was. He helped out with the canoe club because I gave some coconut trees to him for plant where the canoe club. My heart is always good for help out you know. That's how I am.
KT- So how many children you have?
HC- I had six. I lost one, my youngest boy.
KT- And they all living on Maui?
HC- Yes, everyone living on Maui here.
KT- How many boys and how many girls?
HC- I got three boys and two girls left.
KT- Have they learned what you do?
HC- They really learn a lot from me and they know a lot of things around too, see.
KT- So they'll be able to do what you do to help people?
HC- Yes they do that. I taught them how to be mechanics. I taught them how to be welders and everything. I did everything while on earth what I could. Because you know when you get hardship, you get hardship.
KT- Yes. Who did you marry?
HC- I married a Mahi. One of the Mahi girls from Iao Valley, Margaret.
KT- Oh so that's a big, big, big family.
HC- Yes. (Laughter) Big family I tell you braddah from the Big Island. Her father was a fireman from Wailuku Fire-he started in Paia Fire Department then he moved to Wailuku. And they have an estate up in Iao Valley. Then Becky Min, the oldest sister, sold the property across the river. It's across the river I call it Golden Bridge before where I go meet my wife, my girlfriend. I do bouncer work and everything in Maui here.
KT- So a lot of different jobs you had?
HC- Yes, yes. I wasn't ashamed of work that's why. Till today because I barely can see now I just do my thing inside this house and that's all. And I'm glad I met Bully and helping him out now.

KT- So what is your diagnosis of what's happening now with him?
HC- With him, his energy, because he was shut down two kidneys okay. And then that went put him downhill very fast that's why I keep him going. Once you get everything flowing good, energy, he going be different man.
KT- Well, his mind is going real fast so I'm always getting, "Go do this. Go do that." So I'm thinking he's well already.
HC- Yes, yes. No he is well. I'm going to tell you that there.
KT- He's getting better but he still could use a lot of more help.
HC- Yes, yes a lot of help yeah. Because you know when you get poison through your body it takes time to get it out of your blood stream. Okay I don't know if you know Stanley Biga?
KT- Yes.
HC- The father-eighty, right?
KT- Yes.
HC- He goes to dialysis three times a week he comes to me now twice a week. Friday, tomorrow, he sees me tomorrow morning at 9 o'clock. And he knows a lot of changes too around. Did you talk to him already?
KT- No, I haven't had a chance.
HC- Well he knows because he was surveying for the County. He was a surveyor then he worked for the State.
KT- So his body break down too?
HC- His kidneys shut down too but now his kidneys working and his sugar count now is up by my doing my work. Because me one man I concentrate to get you well because I help babies out too. Sometimes 1 week-2 week old babies I help out. Doctors they don't know the family bring 'em to me I said, "If you don't want to hear them cry go outside wait." (Laughter) Right? But no I do it right in front of them and they watch me, yes. Because here my sister sold the property to the church and all that and they want to put a-I was talking to Bully about it. He said no they can't do it because this the main highway going to come they going to take 15 feet from each property to widen the road up, right. So with kaho the minister there, Mau, you know I tried to get it back but Bully tell me get another property and exchange with him be better. And that's why I'm talking to my attorney about that. Because I want the property back because my mother and father comes and visit me all the time and my youngest son all buried out in the ocean outside here. So I don't want to let go the place but my sister did that. The same as Bully he told me the sister done that to him. So that's bad because my sister went change everything went take my mother to the mainland when my father died. Then she never say on pull here or there then every six-eight months she come home. She don't tell me nothing. My mother only went to fourth grade in Kauai, smart woman but she's a quiet one, you know I mean she don't say nothing. But my sister worked for the attorney up in Sand Diego and changes all everything and my mother go sign but she don't know what she's doing, she don't know. So I talked to Dick Mcarthy who's my attorney and I said, "I feel real unhappy because mommy and daddy always come and see me three times a month come visit me every time, every time, three times a month." Because I have to sit up and sleep on my chair because my eyes bleed you see so the doctor said you cannot be laying down.
KT- You gotta let it drain.
HC- Drain, yes, yes. If not the thing is going to burst so that's why I do that. So I still want to get this place back. I talk to Mau he don't want to release it he said he wants to put a school here and all that but then Bully tell me they can't do it. That's what Bully tells me now, you know





what I mean? So how I feel about it the church should release it so I just looking for an empty lot, a little bigger for they can build a school for them. But what area I can't say yet. My attorney's looking for it and he's going to look for it.
KT- So some of the places can you remember any significant places-now it's changed to Wailea but before that did you go down at all during your younger days to Wailea, Mākena…
HC- To Mākena, oh yes! Before we go down to Mākena was all down by the beach side you go sand road.
KT- How did you go?
HC- With a truck. (Laughing) Go all the way down to La Purouse Bay.
KT- So all dirt road.
HC- All dirt road then when you come down to the lava flow it's all, you know gravel like from the rock.
KT- So how far could you go?
HC- Up to La Purouse Bay where old man Sam Po used to stay and take care the house for Robinson. I don't know if you remember Robinson?
KT- That Sam Po is the one that…
HC- Caretaker.
KT- Yeah but he was interviewed in a book called Sights of Maui. He was a big man, his wife was big.
HC- Yes, yes. And he used to throw net a lot in Mākena Beach and that's how all the farmers used to come down bring vegetables he go throw net catch manini and stuff exchange. That's how it was.
KT- So the farmers from Kula?
HC- Kula, yes.
KT- Wow.
HC- I remember all that.
KT- And they used to have to walk down or the car come down?
HC- Ah they come down through where Chang's come down that old…that road from Ulupalakua come down.
KT- Oh, okay.
HC- You know where Chang's house used to be, Debbie Chang?
KT- Yeah, now it's their gravesites over there.
HC- Yeah used to be an old store over there, Chang's Store yes.
KT- Oh that's Eddie Chang's father then.
HC- Right, Debbie Chang's father.
KT- Yeah. You can remember that, huh?
HC- Yes.
KT- So you folks used to just go camp overnight or you come back come home?
HC- No we always come home, we always come home. But sometimes we as boys, we go and camp all one night you know. Because we go diving, we young yet, we like dive and bring fish home for eat. That was our, my mother said you always, if you going for something you always don't say you going fishing or whatever you say holoholo that's the Hawaiian way. You come home with fish, with squid like that there but never say you going fishing for fish or squid because you going come home white washed. Right?
KT- That's what they said.

HC- I know! (Laughter) Just like I've been on Kaho'olawe before the war back in the 30's back in '38-'39 there.
KT- What did you do there?
HC- I loved to fish with my father. I put the, I take a tube I put a little ply board make it round tie 'em up with the tube put my okala inside there and swim up to shore and I go throw net. Young, I was young age yes. My uncle made me a throw net so he taught me how to throw net and I catch Moe, Holehole. I not going throw on any kind fish I look. He said, "You look for that fish, you look that fish the color you can tell. But when the fish stay over there all get coral head. You try go pick up the net you no go stick your hand inside there-too much puhi. (Laughter) Broke the coral the net stay tangled with and then you can get 'em." That's what he tell me so that's how I do. No go stick your hand inside there because all white water yeah?
KT- Yeah.
HC- So you been on that island too?
KT- Nope, I've never been.
HC- Oh that island's beautiful island. I know I've been on that island many times with my father.
KT- Always to go fishing?
HC- Fishing yes. That's why I love my fishing. I love my diving. I don't get myself into trouble, hang around and no do nothing. It's everything is work and fish weekends when my father goes it's always weekend.
KT- By the way, how often does Kimokeo have to visit you? Twice a week or…
HC- Usually I want him to see twice a week to get that blood flow…
KT- Circulation.
HC- Yeah that's right, yes. That's very important you know that because the energy flows, the oxygen flows through the body. When you don't have oxygen flow you downhill, yes, very downhill that's why.
KT- Well you've really helped him because I saw the change.
HC- Well I'm glad to help him you know that and I take 'em like a brother for me. Yes. And then you know when he was in the hospital my attorney call me up, Dick Mcarthy, he said he need to be helped on. But I cannot go to the hospital because they don't want me to go up there and go work on him. So I said, "As soon as he come out he come down here." Yeah that's how he came down here.
KT- Good.
HC- Then he tell me he feels much different now, he feels real different now.
KT- Yeah, he was trying to take the world on his shoulders but now he learned to slow down little bit take care home base first.
HC- That's right, yes. Well, like me you know I can't see but I still help people out.
KT- That's amazing. So now it's all touch.
HC- Well I do massages; I do lomilomi and all that. I do adjustments and all too. And then in '98 before my boy died I went up to Spokane, Washington and fixed a broken hip with a woman who called for me and I saw the x-rays and all that. I put her broken hip back I stay one month up there I have to work twice a day so don't get blood clots. Until today every Sunday she called me up, "Jean I'm all right and I'm walking, I'm dancing." I said, "Good." And nothing is bothering here and I'm really happy about that.
KT- What a great gift your uncle gave you.





HC- Yes, yes. My uncle, you know, he was a patriarch for the Mormon Church. But even my wife is Mormon but I stay home I do my own pule that's where I felt. I'm a Catholic, my wife is a Mormon. I pray for my-when I was single, yes I go to church but ever since I can't drive now and all that there no I stay home I pule myself.
KT- So what religion are your children?
HC- All Mormon. The wife wanted them to be baptized in the Mormon Church but I said it's up to them, you know what I mean? It's not my choice.
KT- Yeah.
HC- The mother who suffers, you know. Now she's what 72 I think now and she still baby sits, she loves to baby sit. She comes on weekends, she come home tomorrow she watch me I get my niece here- Leilani I think you met her.
KT- Yes.
HC- She watches me, wash the clothes and all that for me. Before I can wash clothes I can see the numbers yeah. Now I cannot see (laughter) kinda hard yeah? And like before you know the mud flats went dry up we get that red dirt come through here go all the way to Kahoolawe. We like drive on the road you gotta stop no can see nothing. Yes, you gotta stop.
KT- I'm sure you grew up where there were a lot of Hawaiian stories.
HC- Oh yes.
KT- Today people call it ghost but you know it's not ghost.
HC- No it's not, no.
KT- Describe it in your own words what were they, what were these things?
HC- Well the way I feel because all the old Hawaiians- Charlie Aikala comes to me and Helen Kenolio they all like come sit down and talk with me and drink one cold beer. (Laughter) And you know Charlie Aikala, he like his fishing too. That was him too see. And we talk story, David Chang, I took care of his two children a girl and a boy. I took care because he got divorced from Esther Chang. And we all meet, sometimes we meet down by the VFW Hall before the road no go through yeah stay block off you see so we gotta go around. So that's old timers, all the old timers and I'm happy they-get some more I kind of forget their names the older ones you know. And then with the big rays and all that there like this guy here he Japanese guy Blackie used to have piggery down here-Goya whatever his name was. Yeah I don't know if you ever talked to him before.
KT- No I didn't.
HC- Yeah, that's all old timers. But the place is all developed now with houses or condominiums coming up. Too much down here and we don't have too much water our water pressure dropped down quite a bit. And how the County making that problems, right? Why somebody getting paid under the table? That's what I feel, I feel something that it's wrong. That's how I feel brother, I going to tell you that here, it's too much. And the traffic and the road is not set for all the traffic and all that there on the South Kihei Road and that's how I feel. Why they should develop so much in Kihei? Like sometimes I think number 2 Waikiki we going be.
KT- Oh no, you don't want that to happen.
HC- No I don't want that to happen, I tell you that there.
KT- But I guess this is such a lovely place that's why everybody wants to come.
HC- Yes, yes. But it's all right but give a chance for the locals too. A lot of places I know a lot of white man who got money and you cannot even go down to the beach to go and swim and walk on the sand. They're all trying to put a stop to that. That's no good, the beaches all for everybody.

KT- Oh, used to be the fisherman.
HC- Fisherman, yes, yes. He's a good friend of mine I help him out too see when he's hurting and all that. One time he had tapeworm he tell me, "Jean, how in the world I can get the tapeworm?" I said, "Okay you listen to me what I going to tell you go take." I said, "You go to Star Market they were selling the dog tapeworm pill. You only take one." That's when I had my health spa, see in '80. He took the pill tell me, "Jean I thank you now I no feel itchy and all that there." He said the tapeworm was all coming out. I said what the dog take you can eat too you know that. That's medicine. But I said you drink hot tea too to help it out. That's all it takes, natural stuff.
KT- Wow.
HC- And then Cameron the son, when he fell down he had a blackout of everything I worked on him too but now I hear he's in Hale Makua I think now, yes Cameron. And then the sister I don't know where the sister moved to because one football player went buy the property yeah. That's why it's all cleaned up with all grass.
KT- Oh yeah, who's that.
HC- I can't think of the name but I read about it.
KT- Yeah, I forgot. Kimokeo's good friend, our friend we went to do the blessing there-I forgot his name. But you take care of many people but are you healthy yourself?
HC- I'm healthy except for my eyes, that's the only thing. I take care a lot of people a lot of people from all over the world. I went up to Germany work on two doctors in Frankfurt Hospital. I work on the Naomi Judd, you know the mother and daughter used to sing at Nashville, you ever heard the name?
KT- Naomi Judd.
HC- Uh huh. When she had liver hepatitis C I was sent there special from Jimmy Boren I help her out. Within three days you going to see some changes in you and she's a registered nurse too. And you know, you know what she told me, "Jean are you married?" I said, "Yes I can't lie to you." "I would have married you." (Laughter) I laugh like hell! I said, "No I can't marry you I help you out that's all." Yes, and then I work on a lot of other people. I tell you have papers about me helping so much people. Mr. Sugarman, Bully knows Mr. Sugarman.
KT- Yep, I know him.
HC- Oh you know him? He knows about my life too, I help him out too. I help the father out, I help the stepmother out.
KT- So does it make you happy that you have this gift that you can help others.
HC- Oh yes, yes. I always like to help people out. That's one thing with me I always like to help because I never say no. Because, funny, I thank the Lord for giving me the gift my mother's side had, my father's side had too. My father's grandfather was a healer too and probably I got it see when I was a young boy I was asthmatic. I huff and puff, I huff and puff and I can't even run around, I can't play sports. I always sit down by the flagpole in the school and just read, read. I cannot play baseball or run around, no I only sit down and read. Until the day I got married at 25 I got rid of the asthma. Till today I'm not whole I tell you, till today.
KT- What were your interests, what were you reading?
HC- I just read whatever I opened the page. I don't remember everything and mostly was Catechism.
KT- Studies then you were reading your studies.





HC- Yes, and that's where I was. We come home we gotta pull weeds but me I no pull weeds I go hammo rocks at 11 years old. I don't run around with gangs, I don't play with other children I work. Then you know the old Kihei School here?
KT- Yes.
HC- They see me how I work cracking rocks and all that and one was Kenolio's son and tell me, "Jean boy you're a strong boy." I said, "My mind is to help and clean up the property." That's how I felt. Even my own children I no let them go down the pool hall and all that, no. Think about your hands and what your hands bring in for you. Fishing, I take them on my father's boat going fishing and we always get extra fish we sell for make expense back for repair the boat, paint the boat and all that there. And get extra money I give them. That's how life was. Same with catering, I cook for the Stouffer Hotel for 22 years doing luaus. One night we had to do four luaus in one night.
KT- Wow.
HC- All different areas, you know they have their own conventions yeah and we put pig in there. One time I have to put pig, turkey, fish, lobster tails and all that and each one comes out at a certain time not all at one time with the pig. They're surprised because my grandfather them whack me on the fanny when you don't do it right. (Laughter) That's old days, right?
KT- Yep.
HC- You learn. You have to learn to earn your own things not like today the children, no. All my children work. All of them work and their children work because I tell them, "If you no teach them the right way they'll be hanging around in the streets and they get in trouble." And that's the way I look at it.
KT- So when you were living here did you go mauka? Did you go Ulupalakua or usually you just stay down and go to the ocean instead of go mountain?
HC- Once and while when I like chase girls up there I go up Ulupalakua. Other than that I stay the ocean side. (Laughter)
KT- So, can you remember when the deer started coming in because now it's infested with deer.
HC- Ah, the deer was coming in-I think was back in the late '80's. That's the last time I remember because they was raising sheep's up there then the deer came in. Whoever brought it-I don't know who brought it and that's terrible now.
KT- It changes the land.
HC- Yes, yes, they eat everything up. They even come to Keawekapu now and they come by George Sugarman's house, I know that. Did you ever interview him?
KT- We used to go over but there wasn't a reason to interview him.
HC- Well anyway, because he asked me a lot of questions I tell him too, see.
KT- Yeah, he did a nice article on you I remember.
HC- Yes, yes. I help so much people out I help many, many people and they thank me for it and I don't charge them, God gave me the gift that's all. I don't even put calabash bowl out, you know what I mean? No. I just thank the Lord that he gave me the gift. A lot of energy even for my eyes and all that but I still for my own house I can see what I want to do. I know how it feels. That's why I told Bully I want the house back again from the church. He said, "Well, Jean you go look for one property and you exchange." I got to talk to my attorney about that. I feel sorry my sister went sell that because Bully went through the same way too. That's what he told me his sister went sell.
KT- So the property you talking about it right back here.

HC- Right here, this whole section here. We worked hard, my father worked hard. He paid about three thousand for this property and we put the first house on this property here in Kihei. That's why it's like a landmark.
KT- Why do you have the description of the teeth on your wall?
HC- I buy the whole set when I used to work with the doctors up in Kahului. So I study about that, the gums and all that because it all works under the feet. I know every portion of the body, people cannot believe me.
KT- So that's what they call reflexology.
HC- Reflexology, yes, that's why. Well you know, when you work on body you have to really study. You have to know the body how it flows. That's why the doctors tell me I know more than them at times, that's right. Everything is they take x-rays and all that to know what the problems is but I know every part of the body where it goes what glands goes and here and there. So you have to study all that there and all I tell them what to pick up at the health food stores certain, certain medicine all natural no chemicals with it and that's the proper way. How long you studied medicine?
KT- Not that long.
HC- But you teach that?
KT- No I teach Hawaiian culture, Hawaiian Language, Hawaiian Dance.
HC- Oh, I think my granddaughter going there I think if I'm not sure. This one here, Ornellas, my oldest daughters daughter Alena. I know she was going to school joining Hawaiian language and all that. I don't know which school, I never ask her. She comes down here she's 18 now she comes check on me and all that.
KT- Did you folks have Hawaiian activities before when you were growing up for the community?
HC- No, we didn't.
KT- Were the families in this area close?
HC- No, all far apart.
KT- But did you get together where there's an ohana feeling among the people?
HC- The only thing when we was growing up is Uncle Charlie and Aunty Helen Kenolio. We go down the house, we go meet and they talk in Hawaiian and they try to teach me, the mother try to teach me. But my mind was work and go fishing and bring home kau kau, that's how my mind was working. I know my father was having hard time, military man, eh. At that time when we moved to this island he only had $32.00 a month so it's hard time you know what I mean, support 6 of us that's why we go work. My sister- she go during the war-my father was military police we caught her with the hula skirt up on Market Street taking picture with the serviceman and she was 20. "Oh you get home. Boy, don't let daddy grab you!" (Laughter)
KT- She was trying to make some money, right?
HC- Make some money, yes. But see my brother and myself and you remember. He was working for the park department then he went fly to Molokai they died in a plane crash. You know, he was running for Councilman?
KT- Yep.
HC- Him, my brother and myself we can go into the military camp and go polish shoes and go polish buckles and all that and we make our own spending money and come home and you give 'em to your mother. Handful of quarters or dimes or nickels or whatever, you make what you can. That was our chance to do that. That's when Wailuku Elementary School was the





headquarters company, my father was stationed there so he get us to go and go shine shoes up there and everything.
KT- So that school they build just like bunkers.
HC- Yes, yes, yes.
KT- So that was the headquarters?
HC- Yes, the headquarters, the military headquarters so nobody know eh. (Laughter) Then had the Iao School but here was Wailuku Elementary School because get the rock in the front yeah, so that's how it is.
KT- Well, I think you've answered all the questions I appreciate you taking the time out to answer.
HC- Well you know, when we lived up in Wailuku next to the Wailuku Gym we stayed there for a little while. Then I used to take the bicycle go on Vineyard Street to the bakery and pick up fresh loaf bread and buns. You know the kind square buns? You know, and bring home that's what we eat before we go school. Five o'clock I go paddle the bicycle go there and cheap that time they even put the butter inside the bread already! Oh the ono the bread, you like rip 'em and…smell good the bakery.
KT- But early you had to go?
HC- Five o'clock yeah, just the right time.
KT- What time school starts?
HC- Oh school start was 8.
KT- So you get up early to go?
HC- Oh, I'm an early bird. Even now still 4 o'clock in the morning I get up, I'm up already.
KT- When you get up what do you do?
HC- I check on this bed here that needs to be cleaned. I tell Leilani come here change everything because somebody be coming in, that's how I am. Then I spray the room because she have to help me clean the room up and get all the old oil out because I don't use the old oil because come tacky, you know stuck to the body. But see I use other cream I get from New York, it's good for everything. Cost money but can't help it. You do your work right you'll be all right.
KT- Well I appreciate you helping Kimokeo.
HC- Well, I remember the old house where his office used to be, you know the Whaler's Foundation?
KT- Yep.
HC- Used to be the koa house down there and had the stores on the side and then the Whaler's had this old boats come inside The Boston Whailers come inside. And get the railroad track on the side of the rocks and had a big winch a hand crank and that's how it was. Then they come, they exchange with food. They glean the bladder where they cook the oil in this big wok-big, big wok. I remember seeing all that there. And then the old house I remember how the people used to go upstairs not from inside you know, from the outside they walk upstairs.
KT- What was upstairs?
HC- Rooms, rooms, had rooms upstairs. And then when the war broke out the military went in there and they bust up the place. Get plenty old books and all that inside there but you know how these haoles is, they don't care. And that's the way it was down in Kihei.
KT- That's a great story for us to write up. We want to go type it out and come back, read it back to you so that it's correct what you said we can include in the report that we're writing.
HC- Yes, all right. I still think a lot of things in Kihei area yet because Kihei was a beautiful place. And old Azeka's Store started right across Kalama Park where Kentucky Fried Chicken

is. That's where the old Azeka's Store used to be, the first one with meat and all that. And then where the restaurant there, I don't know what restaurant is there now with Kentucky Fried Chicken but on that property there used to be an old plantation house. The wahine deliver the liquor to your house and you pay her. Uncle Alec Akina used to order from her all the time. (Laughter) Even they have when in the Akina's place, Alec Akina but he leased it out to Naomi from Maalaea, yeah? You remember that?
KT- Yep.
HC- And then across of that used to be Kamaole I used to have a big pier the neighbor went put for they can climb up the rope, the net go up or they climb down to go into the landing boats. I remember all that.
KT- Wow, them were the days.
HC- That's right. And the Navy went fix up the place there and then they had officers quarters on the hill where-I don't know who bought that house there from the State or whatever, you know, where Aunty Helen used to stay. Helen Kenolio and the girl and the boy, yeah? I know the girl married Alo, I'm not sure from Wailuku. The boy is not married I think he still in the old house yet the boy. Akina, I used to help Akina a lot you know, Alec Akina.
KT- To do what?
HC- We pay buses and all that when I was a young boy. Yes, Alec Akina and then with the brother Frank Akina who had the construction trucks-the marine trucks when he was hauling rocks down in Pier 1. I still remember all that, I used to help him fix the trucks too. He bring 'em to me I fix 'em.
KT- So they're the ones that had the business here in Kihei?
HC- Yes, yes, yes. They had the business in Kihei. Frank had the, doing the trucks to haul the rocks to Pier 1. And then when the harbor broke they hauled all the rocks down there from the plantation. And then Alec had the bus. His first bus was the banana bus, you know only Kihei School. He no go to Baldwin High School until afterwards then he bought some bigger buses when he went to Baldwin High School.
KT- Now it's a big company.
HC- Yes and Butchie runs that and with his wife Sandy. That's Alma's sister from Waiehu. I know all them, you know, I still get good memory yet I think.
KT- You sound like it, you're telling me everything.
HC- I went go down to with my niece, went down to go Foodland but you know I get my handicap sign so I can go. Coming back we come back to the South Kihei Road I look all these buildings coming up by Debbie's place. "Oh" I said I shake my head, "Why the County allow all these things here now?" Why they up the road first right? Leave the beach side alone and the makai side alone. That's all the investors coming and then our water is shut down slowly and then we gotta cut back 10% I hear. Cannot do nothing like that so I don't know what this earth is going to turn to, too much people. And these investors, that's all they like the looking for money, money, money, money and the poor people no can afford. So the County looking for money, the people cannot get the money how they going move into those kind houses? So the County have to learn how to slow down and that's how I feel. I don't know how you feel but?
KT- We got to have you run for office.
HC- I'm too old already. (Laughing) I just like see Obama get in. I want him in. I think he's going to get in but I dream he going be assassinated. Funny I feel that energy, he got to watch himself.





## *Interview: Lehua Clubb*

**By Keli'i Tau'a**



*October 31, 2008*

**KT: Keli'i Tau'a**
**LC- Consultant**

KT- First give me your complete name.
LC-My name is Jenavive Monika Kaleilehua Clubb.
KT- Where does the Clubb come from?
LC- My ex-husband, I was married for 12 years. All of my children are from him.
KT- So what is your maiden name?
LC- My maiden name is Ke'aulana.
KT- Ah, and this is what island name?
LC- Oahu, Laie.
KT- Okay. So, we don't…
LC- But my mother is a Mahi, from here.
KT- Oh, that's what I wanted to…
LC- Yeah, and my tutu is a Wilcox from Ulupalakua.
KT- So that's really a connecting point because on our telephone conversation you and I had you were relating Mahi along the Maalaea.
LC- Iao Valley.
KT- Iao Valley, also some at the Pali going towards Oluwalu you made mention of that.
LC- No, not me.
KT- Oh okay, Iao Valley. So there's a company up there Iao Ag, I forgot the name, but she's a Mahi.
LC- Maybe Margaret, I don't know, I really don't know.
KT- But what is the business up there?

LC- To be honest I have no idea. I have never gone there, I don't know anybody over there.
KT- Okay, no problem. Let's come back to why we're here. As I shared with you we're writing up a cultural assessment for Honuaula Development Company because they have been asked to develop a road from Kilohana which is the road right as we come up from Mapu up to where we are sitting in the neighborhood of Mapu. From Kilohana all the way to Wailea Ike. Therefore one of the requirements is to do a cultural assessment and part of that cultural assessment definition is to interview people like you who have lived on the aina and know a little bit about the area. So from the time, when did you move into this area?
LC- Into the Meadows, about '76.
KT- '76?
LC- Yeah we bought this place.
KT- When did the Meadows open up?
LC- I think probably in the mid 60's.
KT- So there were very few houses then?
LC- Yeah. What happened is okay my-what do you call my, the man I lived with since 1970 but we're not married, what do you call-my significant other. Okay. He came, he's a carpenter, and he came here to build. By the way he built that house and this house and I also have a house in Hawaiian Homestead you know. And I was thinking maybe I should take you down there for the interview maybe it would be closer for you but then I thought oh well, never mind because over here is okay.
KT- So Hawaiian Homes is Waiehu?
LC- The first one, in fact I'm the founder of the first one where you see all the owner builders.
KT- I applaud you because it's a good stopping point for many young families to get going and put their lives and their finances together.
LC- But that is how I met Everett you know in 1995.
KT- Oh, and that's what put you into your present employment?
LC- Oh no, no I worked over here 20 years already, yeah.
KT- But you had a close relationship with him.
LC- Through that. Let me start because it seems like you're jumping around because be go in chronological order then I feel better I'm okay. I was born in in Honolulu, you want the year?
KT- So where is that?
LC- in Honolulu in Palama.
KT- Okay.
LC- Okay and we lived there until my mom decided to sell and we moved up to Kaimuki, okay father had died already. And so we moved up to Kaimuki and from Kaimuki her and tutu had a hukihuki thing because they both went how do you say together in a house, buying together-partnership. And so they got into an argument and so mama sold her half out and then we moved to Nanakuli. So I did not know, I went into a culture shock, it was very bad. It made me feel very, very emotional.
KT- Describe that.
LC- A culture shock? Oh boy.
KT- Well, from your perspective, why was it a culture shock?
LC- Because when we moved to Nanakuli we didn't have no electricity; we used to have an outside toilet, we used newspaper for wipe your okole; and we used to have to go down to the park to go get water to wash the dishes and if you wanted to cook with the water you had to wait for that water to settle the brackish to go down.





KT- Wow it was still in that year?
LC- Yeah so that was in what…I don't know 40 something.
KT- So was that Homelands?
LC- Yeah my mother had 2 acres. And then she gave 1 acre away because it was too much and now today it's a half-acre and my brother lives on it. Buffalo Keaulana is my brother. He's very famous, he's a famous surfer in Makaha.
KT- We're smiling because we were there with him in Japan.
LC- Oh yeah!
KT- Yeah, last year.
LC- Oh, he's so sweet, he's a man of few words though.
KT- Yeah, so he brought his entire ohana I'm surprised you weren't there.
LC- No, he tells me to go keep his wife company but wala'au nui(talk a lot) so I just don't.
KT- I've known him since Hokule'a.
LC- Oh yes that's right he was one of the first guys yeah. My brother and I are very close, we really love each other.
KT- So he hung on to be staying there…
LC- Yeah he's on my mother's property. And in '70 something Austin-his name is Austin(my significant other) came here to build a house for-maybe you know him Bill Crabtree. He was a teacher at Maui High School. His house is the second to the last when you're coming in over there. So he said, and we lived in Makaha on the beach we had a house on the beach but he said, "You want to come to Kihei? You want to come it's really nice over here." I said, "Whatever for! The kids don't-we don't want to move." He said, "No it's just like Makaha. It's dry, plenty kiawe trees, and the water is very pristine. It's really nice, you'll love it and there's air, plenty air comes from the Kula mountain." So I said, "Well I'll try it." So summertime I came and it was summer but it was nice and as long as you were in the shade it was nice and cool. So then I talked to the kids and of course they didn't want to come because you know when you're settled yeah born and raised they didn't want to. But anyways, eventually they did come and we have been here ever since and they all love it and I have to give him a lot of credit because… Because of his carpentry I have what I have today and he has been a big part of our family. But for myself I decided to go into politics because I'm the chairman of the Union at our hotel. And like I said it's been 20 years there and I got involved in politics that way through the Union. Then I found out that without politics you can be turned down, I mean you know you just have to, I mean politics is why you have your job, you know. And so I thought I would get involved that way. I tried OHA but I was very inexperienced, I just said well you know let's give it a try and see what happens and of course nothing happened. But I went to Nanakuli and everybody was there for me you know because of my brother. Anyway it didn't- it was just like a phase of like a beginning of getting into politics and then I think it was a few years later when the Union asked me to run and put my name out because Nishiki was going to be against me anyway. So he said if you got your name out and the following year I could run because Michelle Anderson was-we didn't know at the time that she was going to take his place. If you have to erase stuff you can you know. I don't know how you do that but…
KT- Whatever you say and you feel it's okay, it's going to come like that.
LC- Okay. And so when I was out there holding signs and putting out brochures and the Union helped me a lot, and because you know we're special interest I mean everybody's special interest. They like to say they're special interest groups, every group is a special interest group,

it doesn't matter where you come from if you're in a group you're special interest. Um, but when I was running…
KT- So may I now ask you some things that I would like to see get on this interview?
LC- Okay.
KT- So you're here representing you as a special interest group but I'm going to pose it this way as a Kanaka maoli-as a Hawaiian. Therefore, it behooves us, Kimokeo and I to ask you the kind of questions that would relate to how you feel about the 'aina that you are kind of your kuleana because you're a participant in this aina. So going to that again we are getting information from people about this place. So culturally, what have you picked up that is significant in this ahupua'a, in Honuaula that you have learned or you have experienced?
LC- For one thing, in Honuaula my tutu owned 80 acres from Ulupalakua down.
KT- Oh, okay so who is this?
LC- This is Annie Wilcox. And that is William daughter and my tutu is Maholeokalani she was one of the princess' that he married. And the reason I know that is because Mr. Purdy, years ago when they used to have rodeos- he, I rode a horse with him and he showed me where the acreage was and it is in Honuaula as you come down from Ulupalakua. But my uncle sold it he's, you know, whatever. But at that time Kihei was nothing just bald, just nothing. In fact when we moved here it was only the road. That's all the developer put in here was the road and then the land, you know it was going for super cheap. So anyways, culturally…
KT- So just for information sake, because Kimokeo and I are doing what we're doing we are coming across many significant sites of settlements from ancient times. So you came during the time, your ohana came during the time that it didn't appear like there was too much here but there was really a lot…
LC- But when you went to look you saw a lot within.
KT- There is, there is. So it's okay from what you've said but I'm just trying to put history together for this report that your timeframe if you weren't able to just look in front of you and just see things. Now we're working in Mākena, they're cutting back all the kiawe and people are saying, "Oh my gosh." And you should go, you should go where the golf course is and what we're pulling out of there.
LC- Yeah I see. I heard that Kimo was up there.
KT- Yeah, he and I are. That's where I'm going after because he and I are partners.
LC- Yeah I know you are and I knew he was moving the rocks but I didn't…
KT- They were moving the rocks for Maluaka but he just gave me an update and now they're not going to move it from above the golf course which is F9 they call that but now we're further south and there is some amazing cultural stuff…
LC- Further south, yeah. But there was a lot from Pu'uolai all the way up coming around. You know there's a lot it was very, very populated there were thousands of people living there.
KT- Right, villages, villages galore.
LC- Yeah it was villages, you know, mountain and fish so that I know from my tutu.
KT- So did tutu talk to you about it?
LC- Oh yeah, in fact the word Mākena she said that has no real meaning because Mākena was the name of a Captain that owned a ship and the Hawaiian people liked him and he was an Irishman. So that's where the word Mākena came from but it was Captain Mākena.
KT- So I wonder if that's where Mākena came from too, you know.





LC- Yeah I think so, Captain Mākena. But I don't, you know I'm not a historian or whatever so I can't follow up but most of us Hawaiian stuff we go by word of mouth, nothing is really on palapala.(paper)
KT- So that's a very important point you made in why we do these kind of cultural interviews because written word by non-Hawaiians they don't get the depth or the feel of the people so they never captured. And even though it's generations down because it's passed down like how you're pointing out-one word out of you, in my eye's, would be more valuable than tons of writings from others who just try to look at surface.
LC- Well I'm one of those too. But I think my age can tell you that there's a lot of things that I know that this generation doesn't know and that's what you're probably after.
KT- Right. So reflect upon what you've heard, what people were saying about this significant place.
LC- Yeah my mom-my tutu talked about Ulupalakua and how they used to, they were the gardeners or the ones that had the fruit or whatever and they would trade with the fishermen in Mākena because Mākena was a very progressive fishery, I mean that's where you got the fish from. So that's where the trade was, the taro patch, the loi's and stuff like that in those days. And I think that people had to eventually leave because of the volcano when the lava came down and everything was dispersed. The little things that my tutu told me, or my mother told me, is just about that except I think because my tutu had a- I think, I know of four uncles: Fred Wilcox, Edward Wilcox, Paul Wilcox and another Wilcox but they were all my mother's brothers. And she was a girl and at 15 years old my tutu pulled her and went to live in Honolulu because there was nothing here for them. So myself, I don't know that much about Maui because I wasn't born and raised here I only know what my mother and my tutu told me. As far as Honuaula and them doing the research and stuff like that I admire Kumu Tau'a for doing that and bringing enlightenment to us the people. Because when I look out there I only see bushes, you know, I don't see anything else but they walk the area and they can speak about the area because they know about the cultural stuff that I don't know because I'm more modern.
KT- But Lehua, kupuna.
LC- Tell me where you want me to go now because I'm drifting.
KT- The tidbits that we have discussed really will be valuable. For example…
LC- Okay dad, thank you for the OFF because I told him to get OFF because the flies was around the place.
KT- (Laughter) She's so modern here.
LC- I am, I am modern and it's hard for me because I don't hang around- you know I don't hang around you guys. You see when I was raised in Nanakuli my Uncle Tommy Hiona was a kumu hula, you ever heard of him?
KT- Of course.
LC- Okay, he was a hula teacher and he lived with my tutu on Emma Street in Honolulu and we used to be afraid because he would chant, you know they do hula chants and for us when you're little and you hear that kind of stuff you get scared and you run away.
KT- So during that lifetime you're no different than me growing up here in Kula. When I started hearing the…(chanting sounds) it was chicken skin spooky.
LC- Exactly.
KT- But now because information has gotten down and we've learned what it is the fear is removed because knowledge takes away fear.

LC- Yeah, and it does and it gives you the confidence. You know because for me it reminds me, if you were to do a chant it would remind me and it just covers your body you know. Because for some reason or other something like that happened.
KT- Here is a question: Maui Meadows now is a quaint neighborhood of… you know how many people live in Maui Meadows?
LC- No.
KT-Can we venture that there might be 200 homes or more?
LC- Oh, even more than that.
KT- Okay so let's go up a couple of hundred. From that amount and that number anywhere from 200-500…
LC- When we moved here there was only about 40 houses.
KT- Okay. So do you know of any other Hawaiian families that live here?
LC- To be honest, no.
KT- Okay, you don't know and you don't see, right?
LC- No.
KT- Again that's very significant.
LC- I see there might be a Filipino-there's filipino's here but I have not seen or met because I'm thinking as the roads go. Johanna, you know Johanna? I don't think she is…is she Hawaiian?
KT- I'm not sure.
LC- Johanna Amorin, I think she's Filipino but she belongs to the Kaahumanu ladies so she must have some Hawaiian. Yeah that't the only one that I know of.
KT- How old is she?
LC- I think she's my age maybe younger.
KT- You see her around?
LC- Well because we're with the Kaahumanu ladies, the club.
KT- If there's a chance that you come into contact can you let me know if she'd be interested in doing what we're doing because we're gathering information.
LC- Oh sure, she's like me. In fact she was on the planning commission. Yeah and that was her last year and she's very involved in community stuff. I am a part of the committee on aging so there's a lot of things that we enact things for the kupuna mostly for their safety and well being.
KT- So you are at retirement age, why are you still working?
LC- Because I want to.
KT- Which is another attitude which is non-Hawaiian because Hawaiian would prefer not to be working, right?
LC- Yeah that's true, that's not a Hawaiian thing. Umm, and the other non-Hawaiian thing is I never took care of my grandchildren because I was a working mother. I would baby sit once and a while or something like that and he would watch the kids or something because he was working. And I used to tell my kids you're allowed to have only 2 each-any of you have any more than that I disown you. I have 5 children, they each have 2 kids but one disobeyed me but she had 2 boys then she had a girl so I forgave her. (Laughing) But it was because I have 5 children and I had to take care of them by myself and I knew what it was like, hard times yeah. I know what it is to be without and I know how it is to have and I misquoted myself to you when I said I know how to be poor and I know how to be rich. But I know how to have and I know what is have not. In Nankuli when we first moved there it was like a have not and but you cope with it, you know. I mean you do, you go down the beach you pick up opihi, limu you pick up lipoa, you know. And then my brother would catch manini and any kind of fish and bring it





home you know just whatever to eat. You don't have it nowadays, my kids don't have it: you know Ina, you know ina-wana,(urchin) you know those, well you're from Kula so I don't know if you know that.
KT- Of course, I should have brought it for you!
LC- All the old stuff, you know, and there's no one except that when my son in-law or daughter or whoever go to Hana then they'll bring out some opihi from the people, that kind of stuff. And I know all the old, you know the limu and things like that but my kids-well only this one, this is my keokeo one you know. And my mother, when she was alive, would take her to the beach in Makaha and they would go and pick up limu and she knows about that kind of stuff but the other ones weren't interested. And then my boys go spear fishing and…
KT- So you don't walk the beaches over here?
LC- I did at one time but now my legs…
KT- So when you were going what types of environment plans…
LC- You really want me to say?
KT- Well, you don't have to tell me where but…
LC- No, no not where but I walked the trail from Marriott now, the one used to be called Intercontinental.
KT- Yeah.
LC- And all the way to Kea Lani, they have a sidewalk over there and it's been there for years. But do you know that the reefs are dead?
KT- Yup.
LC- It's just completely, it's all pink and you see little or maybe ina in the little rocks and that's it but the rest is just 'um, it's not there. And then when I was running for office I went to look at the reefs and the law is that after every 15,000 or 1,500 feet there was supposed to be a gateway or a trail to the ocean. In Mākena they block it all you can't-they block you don't know where it is they take the sign down. But I was able to go into this place in this yard sort of because this Hawaiian boy was working on a house behind and then the haole guy threw me out and said I didn't belong there. But what it is is the house is like almost close to the ocean and there's a law that you're supposed to be so many feet back but this house was almost close to the water. But it's on a flag lot and then I found out that that's what they do, they gate their homes because they don't want you to know that they have swimming pools even that's right close to the ocean. If you were on a boat you could probably see it from the outside but that's how it is in Mākena right now when you see the houses that are gated you already know that something in there is not supposed to be. But as far as Honuaula and cultural things I believe, Tau'a, that with you and Kimo going there and finding these things that I never saw or actually I never was really into it because ever since my tutu and my mother's gone I never went into the Hawaiiana because my uncle- we spoke Hawaiian- I always remember You know that kind of things or else little things like that if you remember but if you speak I'll catch a word or two from it and then I'll know, you know. Like when I took the elders up to the golf course to see where Everette was going to rezone and I think Kimo was surprised because I said, and he looked at me like that, you know, because he was talking about a heiau over there and he was telling the one old lady said she had to use the bathroom and so I didn't know, you know, how do you say-shall I say it or should…So then I thought of my Hawaiian and then he understood and then he said, "Okay the bathroom is over there." So I politely cut into his testimony or whatever he was talking about. But I was very happy to be involved with old folks because they have a lot of history. You know when I was little in my home, or when I went to visit my tutu or my uncles house or my tutu's house in

those days it's so strange because Maui people when I speak to them for instance Akahi (who wants to be the king) he said oh his mother used to tell him go outside because they didn't want him to learn Hawaiian. That is absolutely a no, no where I come from. Our parents wanted us to learn to speak because the po'e(people) came and told us you couldn't, you ban the language right they didn't want you to but my family was, they were very cultural. My uncle still did the dance, he didn't-he wasn't disobeying but he still kept his culture and my mother and my tutu and my aunts used to all speak Hawaiian in the living room, wherever. If they didn't want you to hear what they were saying they would say, they would tell you what is the word-your young ears are not, you're not supposed to be here.
KT- Kuli ka pepeiao. I know, I need to work on my Hawaiian, Kumu…:O
LC- Yes and they would tell you to please leave the room but it wasn't because they didn't want to teach you Hawaiian. They spoke Hawaiian and then they spoke to you Hawiaian and then they expected you to speak back. I mean that was the way it was even though the po'e came here and said, you know you're not supposed to use that language. In our household my mother and my grandmother still spoke Hawaiian and wanted us to do it because they used to call it mother tongue they never called it the language or olelo Hawaii. It was always your mother tongue, "You learn to speak your mother tongue." That was my mother's words and when, if they were in the living room talking, or we used to call it the parlor remember those days? Umm, if I came in the front door you have to bend down and make sure and say kalamai because they cannot block your eyesight. If I'm talking to Tau'a right now my grandchild is supposed to bow down and say excuse me until he was out of sight. That was the kind of culture that I was brought up in it was all about respect. There's something else but mostly I remember respect and my kids, I have raised them the same way, it's all about respect-respect your elders and that was the strictest.
KT- So how do you see that applying to respecting..
LC- The land.
KT- Here, especially the area that we're talking about from Kilohana to Wailea Ike.
LC- To me Tau'a my personal opinion is I never was into that kind of stuff because Hawaiian Homes was given the kaka lands, you know the kukai lands, you couldn't plant on it because that what it was about. If you couldn't plant sugarcane on it, it wasn't worth it. Just like now Waiohuli, you couldn't plant pineapple and sugarcane and that's why the Hawaiians have but now they're million dollar estates up there. So I never really went into looking at the land culturally until I came here because in Nanakuli I already knew that there was bad lands, you know you couldn't plant you had to bring in dirt if you wanted that kind of stuff. But I didn't know anything about cultural until I came here and the things that you and Kimo are doing is very important in a sense that that's all we have left. So if you want to keep that as sacred, whether it was just a house before that was on there or anything, it's significant of the past and so if we can hold it then that's the right thing to do and that's what I believe. And I believe that very strongly because that's all we have. You took my language away; once you take my language away you take my culture away. I never taught my kids Hawaiian because…
KT- Where did you learn what you just said because it's been repeated now in this era by those who are teaching language and culture? But did you grow up with that philosophy?
LC- No I didn't grow up with it I grew up with the culture.
KT- Just that idea that just came out of your mouth.
LC- When you lose your language you lose your culture?
KT- Right.





LC- Where did I hear it?
KT- It's something that you just adopted recently.
LC- To me it's just common sense, yes.
KT- Well I'm glad because there are many kupuna of the past have said that and I just want to keep reinforcing that the reader of this report or if it's an oral report will be hearing it.
LC- Will be?
KT- Will be hearing what you've just said. So we've extended our stay here but are there any other things that you want to say.
LC- I don't know what do you want me to say?
KT- I think you've said very valuable things that we will include into the report but the question is anything else that is related to this particular area that we're researching.
LC- I think, Tau'a, like what you said, what you and Kimo are doing is a blessed-even in a sense that you are taking time out in your life to do something like that for the future of our children to learn and to know that there are or there once was remnants of our past. And that to me is wonderful because I never came close to that kind of stuff and that's what I mean when I say that I'm very modern. You know when a Hawaiian like when they have those, how do you say, those yeah when they fight and they always grumble here and they grumble there and they want to be in the Hawaiian kingdom and they want to be this and that. When you walk from Kula down to Wailuku-when you walk; when you own (or when you have because we never owned anything) when you have a lo'i and you're working your taro patch; when you go in the water and you catch the fish the way the old folks did *then* you can tell me that you're a part of that society of the way that it used to be. But down come to me and hold a flag upside down and ride by in your car and have a television and have electricity in your home because that's where I know what poor was. That's what made me more of a Hawaiian because of the way that we lived at that time to see that okay now we have to go and pick the ulu from the tree; we have to go look for the mountain apple and we have to plant what we need to here when we were in Nanakuli. You may say that that was poor, I was poor living that way but that was a way of life of survival and there was, when you really think about it now, it was nothing because it's just the way that you had to live and there's nothing wrong with that. Maybe my kids would be ashamed if they had to bring their kids home or their friends home because there's the haves and the have-not's or whatever but I didn't look at that but I'm glad that I went through a life of that kind of living and then now here I am. So when you come to me or when I hear these clubs that, "Oh Lehua, you gotta sign here you want to be the Hawaiian Kingdom or you want to be this or whatever." I don't believe that anymore unless you show me that you are truly one. Because to me Tau'a you are Hawaiian I tell you why because you speak the language and you are doing everything within your lifestyle within your position to bring some of the past back to us. Even me talking to you I have some past, I'm sorry if I'm not bringing enough of it but I'm so happy that you're doing this because children have to know what their kupuna's went through. Some people maybe had a harder life than me because I was born right after the war and I remember my mother put me under the sewing machine, you know the kind with the paddle, so that when the bomb come I'll be okay underneath the sewing machine. And I saw the bombs and the flairs and stuff and my brother Bruff went on the roof and my mother got mad because the warden came and the warden came he had that black thing on his arm with a flashlight and he said, "You get down." You know all that kind of stuff and those were the days and I lived through all of that but you know of forget it. You live day by day and nowadays I think people live day by day because they have to live check by check and I'm just fortunate that I don't have to work but I want to work

because it keeps my mind sharp. If I stay home, what I going pull weeds? Forget it I'm not gonna! But I still eat poi and I eat sardines and it's really strange because-why is it that we're all into cans? After the war we started canned sardines and the corned beef and all that but yet our forefathers had raw fish. You know you caught from the ocean and the ina and wana and I still remember that but yet we still had spam and corned beef and I just wondering if that came from out of the war?
KT- Yes it did and those are killers so that's why our people are dropping.
LC- Diabetes and all of that. But thank you so much for even thinking about me Tau'a. It makes me feel like gee, what does he want? What does Tau'a want with me because I have no significance, I'm not nobody special but I am outspoken and I do fight for what I think is right.
KT- That's the Hawaiian way of just comfortably saying without being ho'o- that you like life and you've enjoyed life.



# APPENDIX I.

# Traffic Impact Analysis Report

# TRAFFIC IMPACT ANALYSIS REPORT
# PI'ILANI HIGHWAY WIDENING
WAILEA, MAUI, HAWAII

## FINAL

July 21, 2009
Revised October 29, 2009

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# TRAFFIC IMPACT ANALYSIS REPORT
# PI'ILANI HIGHWAY WIDENING
Wailea, Maui, Hawaii

## FINAL


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July 21, 2009
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CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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# FINAL

# TRAFFIC IMPACT ASSESSMENT REPORT

# PIILANI HIGHWAY WIDENING

## Wailea, Maui, Hawaii

## I. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the traffic impacts along Piilani Highway between Kilohana Drive and Wailea Ike Drive. This assessment is based upon the traffic impacts resulting from proposed developments in the vicinity of Piilani Highway between Kilohana Drive and Wailea Ike Drive.

### A. Background

The developers of Honuaula, Wailea Resort and Makena Resort have reached an agreement with the State of Hawaii Department of Transportation (SDOT) to widen Piilani Highway from two-lanes to four-lanes between Kilohana Drive and Wailea Ike Drive. Hereinafter, the Piilani Highway Widening shall be referred to as Project.





### B. Location

The stretch of Piilani Highway that is being widened is an approximate 1.5 mile long stretch along the southern shore of Maui with the terminus of Piilani Highway in the Wailea Resort. The following subdivisions border the Piilani Highway Widening:

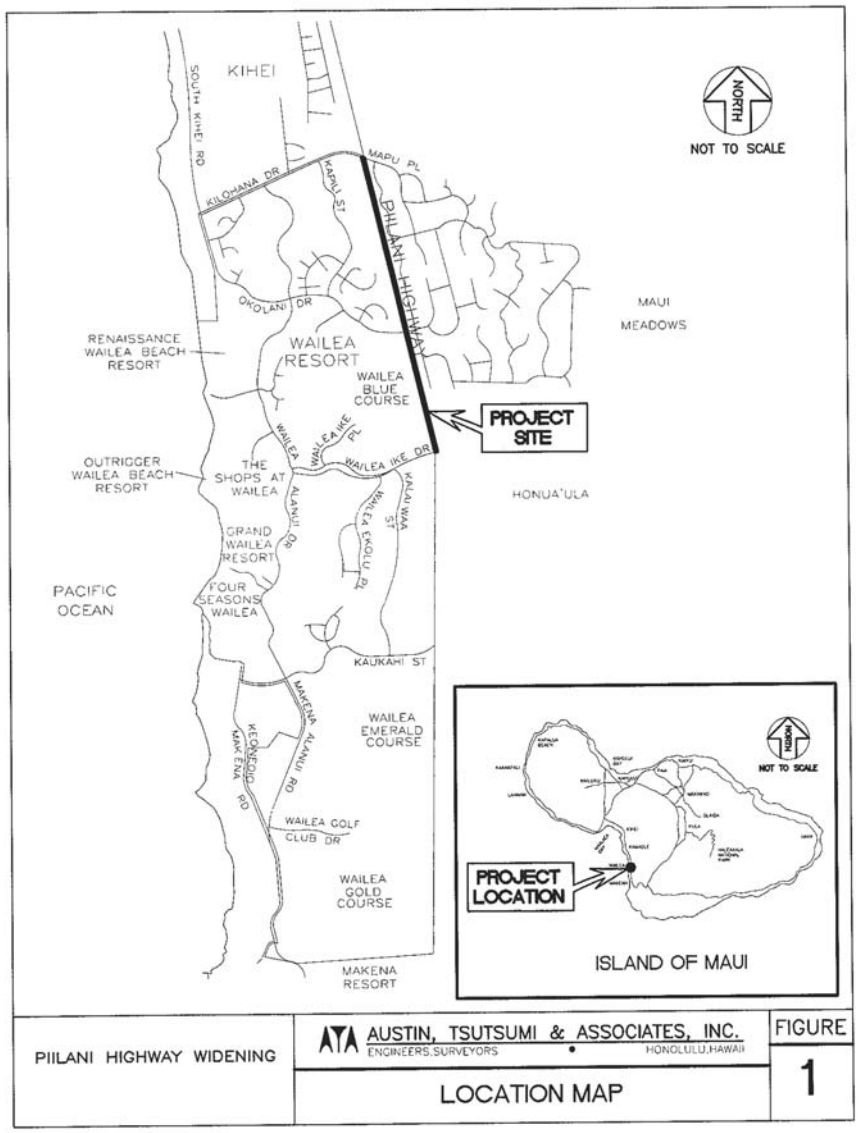
- Maui Meadows Subdivision and the proposed Honuaula (formerly known as Wailea 670) development to the east.
- Wailea Resort to the west.

Figure 1 shows the location of the studied segment of Piilani Highway that will be widened.

### C. Study Methodology

This study will address the following:

1. Existing traffic operating conditions at key intersections within the study area.
2. Traffic Projections for Year 2016 and 2022 includes traffic generated by an annual defacto growth rate consistent with the Maui Travel Demand Forecasting Model and known developments in the vicinity of the Project. These known developments in consideration are projects within Honuaula, Wailea Resort, and Makena Resort that are currently under construction or are known new/future developments that are expected to affect traffic demand and operations within the study area.
3. Identify potential traffic conditions for Year 2016 projected traffic without the Piilani Highway Widening, Year 2016 and 2022 with Piilani Highway Widening.
4. Recommendations for roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the surrounding developments.




| PIILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS.SURVEYORS • HONOLULU,HAWAII | FIGURE 1 |
|---|---|---|
| | LOCATION MAP | |



## II. EXISTING CONDITIONS

### A. Roadway System

The following are brief descriptions of the existing roadway network in the vicinity of the Project:

Figure Piilani Highway - is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Piilani Highway begins at its intersection with South//North Kihei Road and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway further south. Left-turn storage lanes are generally provided at major intersections on Piilani Highway. The posted speed limit on Piilani Highway is generally 40 miles per hour (mph). The speed limit on Piilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

Kilohana Drive - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Piilani Highway, intersecting Piilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. The posted speed limit on Kilohana Drive is 25 mph.

Mapu Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway to Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

Okolani Drive - is a four-lane, divided, east/west roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided roadway east of Wailea Alanui Drive to its intersection with Piilani Highway directly across of Mikioi Place. The posted speed limit on Okolani Drive is 30 mph.

Mikioi Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Piilani Highway, across Okolani Drive, to Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

Wailea Ike Drive - is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph. Wailea Ike Drive, from its intersection with Wailea Ekolu Place to Wailea Alanui Drive, has a major drainage channel in its median area.

**B. Study Intersections**

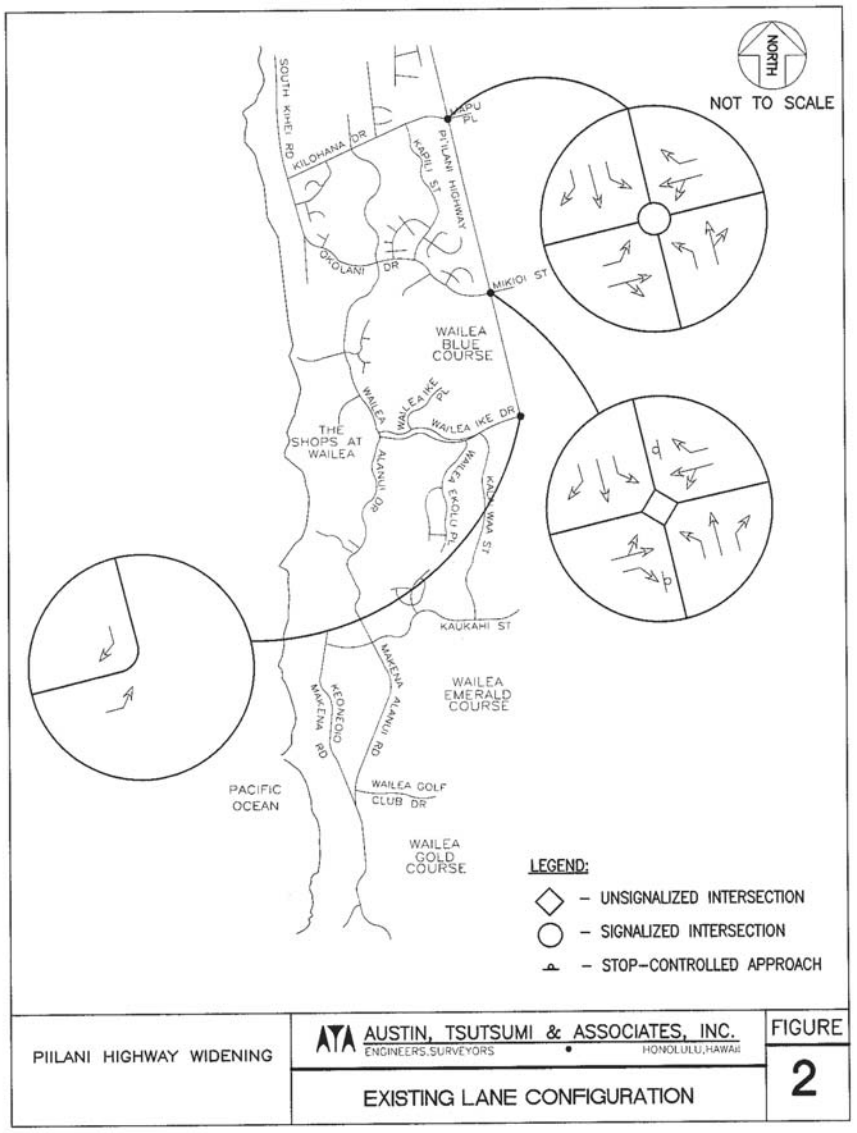
Piilani Highway/Kilohana Drive/Mapu Place - forms a signalized cross-intersection. The lane configuration at each approach is as follows:

- Northbound approach: Striped as an exclusive left-turn lane and a shared through/right-turn lane.
- Southbound approach: Striped as an exclusive left-turn lane, a through lane and an exclusive right-turn lane.
- Eastbound approach: Striped as a shared left-turn/through lane and an exclusive right-turn lane.
- Westbound approach: Striped as a shared left-turn/through lane and a channelized right-turn lane. However, during observations, the westbound approach operates as a shared left-turn/through lane and an exclusive right-turn lane.

Piilani Highway/Okolani Drive/Mikioi Place - forms a two-way stop-controlled cross-intersection with Okolani Drive and Mikioi Place as the stop-controlled approaches. The lane configuration at each approach is as follows:

- Northbound and southbound approaches: Striped as an exclusive left-turn lane, a through lane, and an exclusive right-turn lane.
- Eastbound and westbound approaches: Striped as a shared left-turn/through lane and an exclusive right-turn lane. However, during observations, the westbound approach operates as a shared left-turn/through lane and an exclusive right-turn lane.





Piilani Highway/Wailea Ike Drive – does not have any intersection control and provides the following lane configuration at each approach:

- Southbound approach: Striped as an exclusive free right-turn lane.
- Eastbound approach: Striped as an exclusive free left-turn lane.

Figure 2 shows the existing roadway system and the existing lane configuration at the study intersections.

**C. Existing Traffic Volumes**

The following are the study intersections, in which data was collected:

- Piilani Highway/Kilohana Drive/Mapu Place (Signalized)
- Piilani Highway/Okolani Drive/Mikioi Place (Unsignalized)

The AM and PM Peak hour turning movement data utilized in this report were collected on Tuesday June 24, 2008 and Wednesday June 25, 2008. Based on traffic count data, the peak hours of traffic were determined to be from 7:00 AM to 8:00 AM and 4:00 PM to 5:00 PM on the weekdays. Traffic count data was not collected at the Piilani Highway/Wailea Ike Drive because existing volumes at this intersection are free flowing through volumes only. The traffic count data is provided in Appendix A. Traffic count data was taken when public schools were in summer session for the following reasons:

- Wailea is a resort community and caters to visitor traffic which is highest during the summer months.
- The nearest school to Wailea is located more than a mile north of the Piilani Highway/Kilohana Drive intersection.
- Existing peak hour volumes entering and exiting the Maui Meadows Subdivision (Piilani Highway/Kilohana Drive/Mapu Place and Piilani Highway/Okolani Drive/Mikioi Place intersections) during the AM peak hour of traffic were similar to the existing volumes obtained from the Traffic Impact Analysis Report for Wailea Resort 2005 Update (count data taken in October 2004). This comparison shows that for Maui Meadows, a local residential subdivision with no recent expansion,



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traffic volumes are similar during the summer break and school session. The PM peak hour of traffic occurred after school hours.

**D. Existing Traffic Conditions Analysis and Observations**

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, delays and corresponding Levels of Service were utilized in this study. LOS definitions for signalized intersections are provided in Appendix B.

**Methodology**

Analysis for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare Highway Capacity Manual (HCM) reports. The reports contain quantitative delay results, as based on intersection lane geometry, signal timing, and hourly traffic volume.

**Field Observations**

The general paths vehicles utilize when traveling between areas north of Wailea and south in Makena are Piilani Highway, Wailea Ike Drive, and Wailea Alanui Drive. Therefore, the Wailea Alanui Drive/Wailea Ike Drive intersection turning movement volumes are the higher volumes.

During the AM peak hour of traffic, queuing was observed on the northbound through movement at the Piilani Highway/Kilohana Drive/Mapu Place intersection, however, all vehicles were able to clear the intersection within one signal cycle length. During the PM peak hour of traffic, the northbound and southbound through movement volumes were noticeably higher than the AM Peak hour of traffic at the Piilani Highway/Kilohana Drive/Mapu Place intersection. The through traffic at this intersection was higher, but experienced little delay, with vehicles clearing the intersection within one signal cycle.

The eastbound and westbound volumes at the Piilani Highway/Okolani Drive/Mikioi Place intersection remained fairly low with no more than 3 vehicles queued at the stop sign.

**Results of Intersection Analysis**

The analysis and observations described below are based on prevailing conditions during the time at which the data was collected. Hereinafter, observations that are expressed as ongoing and current shall represent the conditions that prevailed at the time at which the data was collected.

Piilani Highway/Kilohana Drive/Mapu Place

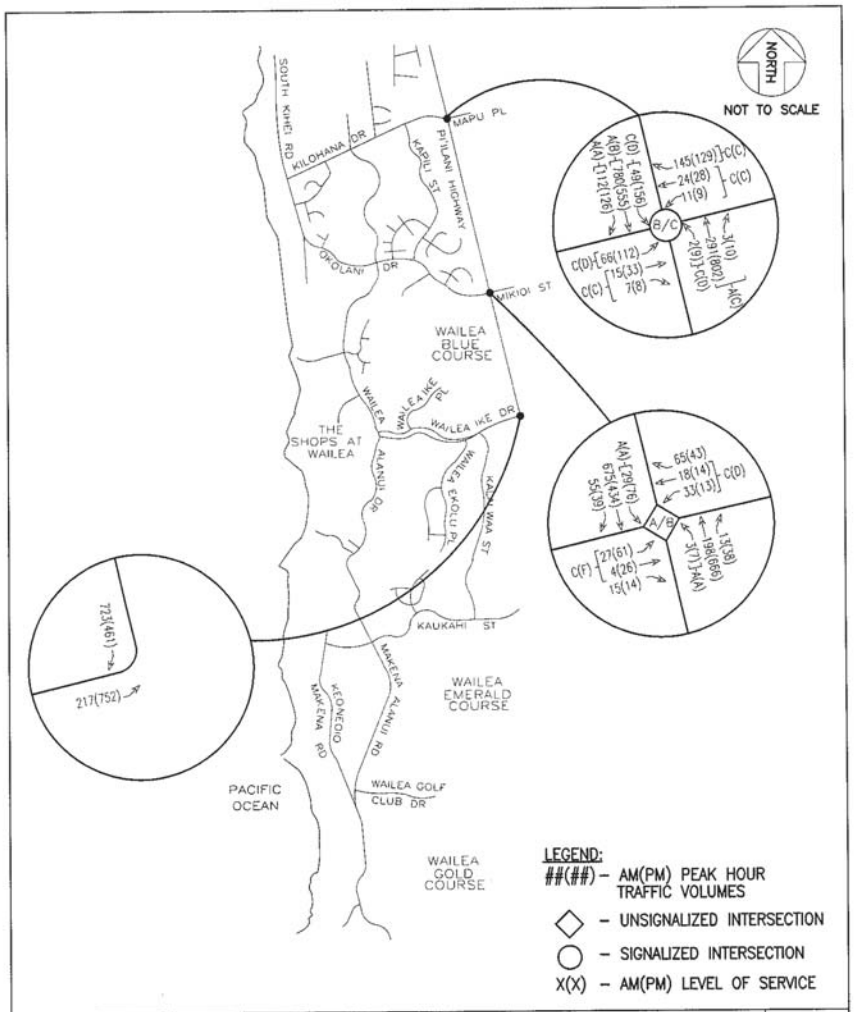
At the signalized intersection of Piilani Highway/Kilohana Drive/Mapu Place, all movements operate overall at LOS D or better during the AM and PM peak hours of traffic.

Piilani Highway/Okolani Drive/Mikioi Place

At the unsignalized intersection of Piilani Highway/Okolani Drive/Mikioi Place, the eastbound left-turn movement operates at LOS F during the PM peak hour of traffic due to minimal gaps in the northbound and southbound approaches. However, as a condition of the Kai Malu Development, a traffic signal is proposed at the Piilani Highway/Okolani Drive/Mikioi Place intersection to alleviate the eastbound left-turn delay. All other movements operate at LOS D or better during the AM and PM peak hours of traffic.

Figure 3 shows the existing traffic volumes and LOS at the study intersections.






| PI'ILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII | FIGURE |
|---|---|---|
| | EXISTING CONDITIONS TRAFFIC VOLUMES AND LEVELS OF SERVICE | 3 |

## III. FUTURE TRAFFIC FORECAST

The Year 2016 was selected to reflect the completion year of Phase I of Honuaula which includes the creation of a tee-intersection at the Piilani Highway/Wailea Ike Drive intersection. Year 2022 was selected to reflect the full build-out of known developments in the vicinity of the Project. Traffic projections were formulated by applying a defacto growth rate and trips generated by known developments in the vicinity of the Project.

### A. Defacto Growth Rate

The growth rate of an area is the percentage by which an area will grow over a period of time. The Maui Travel Demand Forecasting Model was utilized to determine a defacto growth rate in the vicinity of the Project. Since Honuaula, Wailea Resort, and Makena Resort are the main projects proposed in the Wailea/Makena area, data from the Maui Travel Demand Forecasting Model was adjusted to project growth excluding these three projects. The results from the Maui Travel Demand Forecasting Model show a defacto growth rate of approximately 0.5 percent per year. Therefore, a defacto growth rate of 4.0 percent for Year 2016 and 7.2 percent for Year 2022 was applied to existing traffic volumes.

### B. Traffic Forecasts for Known Developments

Peak hour vehicular trips were estimated by applying appropriate trip generation rates from the Trip Generation, 8th Edition, published by the Institute of Transportation Engineers (ITE) and the Resort Residential Trip Generation Rate Development prepared by Parsons Brinkerhoff Quade & Douglas, Inc. dated October 2, 2006 as accepted by the SDOT, (herein after referred to as PB resort rate). Appendix F shows the PB resort rate document. Vehicular trips generated from the known developments were distributed to the roadway network based on distribution obtained from the Maui Travel Demand Forecasting Model.



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Honuaula is generally comprised of the area east of Piilani Highway and Wailea Ike Drive, south of Maui Meadows Subdivision and north of Makena Road. By Year 2016, Honuaula proposes to construct 26,000 square feet of Office Space, 74,000 square feet of Commercial space, 75 Multi-Family Affordable Units, 158 Multi-Family Market Rate Units, 40 Multi-Family Townhouse Units, and 127 Single-Family Units. By Year 2022, Honuaula proposes to construct an additional 375 Multi-Family Affordable Units, 42 Multi-Family Luxury Units, 60 Multi-Family Townhouse Units, and 273 Single-Family Units. Table 1 shows the proposed development for Honuaula. An estimation of the percentage of internal trip capture was obtained from the ITE Trip Generation Handbook, Second Edition, which was determined to be approximately 15 percent. The internal trip capture was only applied to the PM peak hour of traffic since commercial areas are typically closed during the AM peak hour of traffic. The 15 percent internal trip capture rate was applied to the number of residential trips and the result was applied to the commercial trips, in order to match the number of internal trips traveling between the residential areas and commercial areas. Internal trips are assumed within Honuaula.

Wailea Resort is generally comprised of the area west of Piilani Highway, north of Makena Road, east of Makena Ala Nui Road and the Pacific Ocean, and south of Kilohana Drive. Currently, Wailea Resort has constructed most of its parcels. By Year 2016, the Wailea Resort proposes to construct 12,000 square feet of Grocery space, 30,850 square feet of Retail space, 12,200 square feet of Office space, 8,340 square feet of Restaurant space, 64 Multi-Family Units, and 234 Single-Family Units. By Year 2022, the Wailea Resort proposes to construct additional 100 Multi-Family Units. Table 2 shows the proposed development on the remaining parcels of Wailea Resort.

**Table 1**
**Proposed Development for Honua'ula**

| Land Use | Units | Quantity |
|---|---|---|
| **Year 2016** | | |
| VMX (Office Building) | SF GFA | 26,000 |
| VMX (Commercial) | SF GFA | 74,000 |
| MF Affordable | DU | 75 |
| MF Luxury | DU | 158 |
| MF Townhouse | DU | 40 |
| SF Lots | DU | 127 |
| | | |
| **Year 2022** | | |
| MF Affordable | DU | 375 |
| MF Luxury | DU | 42 |
| MF Townhouse | DU | 60 |
| SF Lots | DU | 273 |
| | | |
| **TOTAL VMX (SF GFA)** | | 100,000 |
| **TOTAL RESIDENTIAL (DU)** | | 1150 |

DU = Dwelling Units
SF = Single-Family
MF = Multi-Family
VMX = Village Mixed Use
SF GFA = Square Feet of Gross Floor Area

**Table 2**
**Proposed Development on the Remaining Parcels of The Wailea Resort**

| Land Use | Units | Quantity |
|---|---|---|
| **Year 2016** | | |
| SF-8 (SF Affordable Units) | DU | 95 |
| MF-6 (SF Lots) | DU | 57 |
| MF-10 (SF Lots) | DU | 10 |
| MF-10 (Condominiums) | DU | 36 |
| MF-10 (Grocery) | SF GFA | 12,000 |
| MF-10 (Retail) | SF GLA | 30,850 |
| MF-10 (Office) | SF GFA | 12,200 |
| MF-10 (Restaurant) | SF GFA | 8,340 |
| MF-16 (SF Units) | DU | 18 |
| MF-7 (MF Units) | DU | 75 |
| SF-S (SF Lots) | DU | 38 |
| SF-11 (SF Lots) | DU | 16 |
| MF-15 (MF Lots) | DU | 72 |
| MF-12/13/SF-7A (MF Units) | DU | 300 |
| MF-12/13/SF-7A (Hotel Rooms) | ROOMS | 60 |
| MF-12/13/SF-7A (Retail) | SF GLA | 20,000 |
| MF-9 Hoolei (MF Units) | DU | 120 |
| MF-8 Kai Malu (MF Units) | DU | 153 |
| Wailea Gateway (Specialty Retail) | SF GLA | 32,000 |
| Grand Wailea Resort Renovations | ROOMS | 310 |
| Wailea Blue Golf Club (Shopping Center) | SF GLA | 23,000 |
| Wailea Blue Golf Club (18-Hole Golf Course) | HOLES | 18 |
| 1 Resort & Residences, Wailea (Hotel Rooms) | DU | 290 |
| 1 Resort & Residences, Wailea (Condominiums) | DU | 40 |
| | | |
| **Year 2022** | | |
| Business I (MF Units) | DU | 100 |
| Business 2 (Storage) | SF GLA | 50,000 |
| Business 2 (Office) | SF GLA | 40,000 |
| | | |
| **TOTAL DWELLING UNITS (DU)** | | 1,150 |
| **TOTAL RESORT HOTEL UNITS** | | 640 |
| **TOTAL COMMERCIAL/BUSINESS (SF GFA & GLA)** | | 228,390 |

DU = Dwelling Units
SF = Single Family
MF = Multi Family
SF GFA = Square Feet of Gross Floor Area
SF GLA = Square Feet of Gross Leasable Area

Within the Wailea Resort, some individual parcels were under construction at the time of data collection or existing developments that are proposed to be renovated.

- Under construction were the Kai Malu (MF-8) and Wailea Gateway Projects. Since traffic studies for these Wailea Resort developments were completed, trip generation volumes and distribution were obtained from the Traffic Impact Analysis Report for Wailea MF-8, dated May 13, 2004 and the Traffic Impact Analysis Report for Wailea Gateway, dated March 6, 2006, both prepared by Phillip Rowell and Associates. Since the data collection efforts, both projects have been completed. Kai Malu (MF-8) is located south of Okolani Drive, east of Wailea Alanui Drive, and west of Piilani Highway, with access from Okolani Drive. Kai Malu (MF-8) proposed to construct 153 multi-family units. Wailea Gateway is located on the northwest corner of the Piilani Highway/Wailea Ike Drive intersection with access from Wailea Ike Drive. Wailea Gateway proposed to construct 32,000 square feet of commercial space to be utilized by businesses, restaurants, and retail shops.
- The existing Grand Wailea Resort proposes to renovate two existing restaurants, construct 310 additional hotel rooms, an additional bar, a new cultural center and garden, and additional parking spaces by Year 2016. The Grand Wailea Resort is located south of the Shops at Wailea, east of the Pacific Ocean and west of Wailea Ala Nui Drive. Trip generation volumes and distribution were obtained from the Traffic Impact Report for the Grand Wailea Resort Renovation, dated January 2009, prepared by Wilson Okamoto Corporation.
- The 1 Resort & Residences (formerly Renaissance Wailea Resort) proposes to redevelop the existing 349 hotel units to provide 290 resort hotel units and 40 residential condominium/townhouse units by Year 2016. The 1 Resort & Residences is located north of Wailea Elua, east of the Pacific Ocean, south of Wailea Ekahi, and west of Wailea Alanui Drive. At the time of data collection, the former Renaissance Wailea Resort parcel remained vacant and therefore, trip generation volumes for the proposed redevelopment were obtained from the Traffic Impact Report 1 Resort & Residences, Wailea, dated March 2009, prepared by Wilson Okamoto Corporation.
- The existing Wailea Blue Golf Course, currently located off of Kaukahi Street, proposes to relocate the existing clubhouse, and provide approximately 8,000 square feet of commercial space, 10,000 square feet of office space, and 5,000 square feet of restaurant space by Year 2016. The Wailea Blue Golf Course clubhouse and additional commercial/office/restaurant space is proposed to be located at the southeast corner of the Wailea Alanui Drive/Wailea Ike Drive intersection, near the existing Matteo's Restaurant.

Makena Resort is comprised of the area east of the Pacific Ocean and south of Makena Road. By Year 2016, Makena Resort proposes to construct 312 Multi-Family Luxury Units and 87 Single-Family Luxury Units. By Year 2022, Makena Resort proposes to construct additional 167 Multi-Family Luxury Units and 283 Single-Family Luxury Units. Table 3 shows the proposed development for Makena Resort.

Table 4 shows the Known Developments Land Uses and Trip Generation for Year 2016 and Table 5 shows the Known Developments Trip Generation Rates for the known developments which utilized the ITE Trip Generation, 8th Edition and PB resort rates.



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**Table 3**
**Proposed Development for Makena Resort**

| Land Use | Units | Quantity |
|---|---|---|
| **Year 2016** | | |
| M-2/M-3 (SF Resort) | DU | 28 |
| M-4 (MF Resort) | DU | 29 |
| M-5 (MF Resort) | DU | 110 |
| M-7 (MF Resort) | DU | 35 |
| M-9 (MF Resort) | DU | 10 |
| M-12 (MF Resort) | DU | 54 |
| S-5 (SF Resort) | DU | 1 |
| S-6 (SF Resort) | DU | 40 |
| Hotel (MF Resort) | DU | 44 |
| Maluaka (SF Resort) | DU | 13 |
| Maluaka (MF Resort) | DU | 2 |
| H-2 (SF Resort) | DU | 6 |
| H-2 (MF Resort) | DU | 28 |
| **Year 2022** | | |
| M-5 (MF Resort) | DU | 22 |
| M-6 (MF Resort) | DU | 69 |
| M-8 (MF Resort) | DU | 12 |
| M-9 (MF Resort) | DU | 13 |
| S-2 (SF Resort) | DU | 17 |
| S-4 (SF Resort) | DU | 22 |
| S-7 (SF Resort) | DU | 4 |
| M-1 (SF Resort) | DU | 9 |
| M-10 (MF Resort) | DU | 31 |
| M-11 (MF Resort) | DU | 20 |
| S-1 (SF Resort) | DU | 90 |
| S-3 (SF Resort) | DU | 28 |
| U-1 (SF Resort) | DU | 113 |
| **TOTAL RESIDENTIAL (DU)** | | 850 |

DU = Dwelling Units
SF = Single Family Homes
MF = Multi Family Homes

**Table 4**
**Known Development's Land Uses and Trip Generation in Year 2016**

| | AM PEAK HOUR | | | PM PEAK HOUR | | |
|---|---|---|---|---|---|---|
| | IN | OUT | TOTAL | IN | OUT | TOTAL |
| YEAR 2016 WAILEA RESORT * | | | | | | |
| SF-8 | 20 | 57 | 77 | 64 | 37 | 101 |
| MF-6 | 13 | 37 | 50 | 41 | 23 | 64 |
| MF-10 | 118 | 98 | 216 | 207 | 242 | 449 |
| MF-16 | 6 | 17 | 23 | 15 | 8 | 23 |
| MF-7 | 8 | 34 | 42 | 33 | 15 | 48 |
| SF-S | 10 | 27 | 37 | 28 | 16 | 44 |
| SF-11 | 6 | 15 | 21 | 14 | 7 | 21 |
| MF-15 | 7 | 33 | 40 | 31 | 15 | 46 |
| MF-12/13/SF-7A | 49 | 118 | 167 | 227 | 174 | 401 |
| MF-9 | 11 | 49 | 60 | 47 | 23 | 70 |
| Wailea Blue Golf Club | 72 | 34 | 106 | 140 | 149 | 289 |
| **SUBTOTAL** | **320** | **519** | **839** | **847** | **709** | **1556** |
| YEAR 2016 MAKENA RESORT ** | | | | | | |
| M-2/M-3 | 8 | 5 | 13 | 7 | 6 | 13 |
| M-4 | 3 | 4 | 7 | 4 | 6 | 10 |
| M-5 | 10 | 15 | 25 | 18 | 20 | 38 |
| M-7 | 4 | 4 | 8 | 5 | 7 | 12 |
| M-9 | 2 | 1 | 3 | 1 | 3 | 4 |
| M-12 | 5 | 7 | 12 | 9 | 10 | 19 |
| S-5 | 1 | 0 | 1 | 1 | 0 | 1 |
| S-6 | 12 | 7 | 19 | 10 | 9 | 19 |
| Hotel | 4 | 6 | 10 | 7 | 8 | 15 |
| Maluaka | 5 | 2 | 7 | 3 | 4 | 7 |
| H-2 | 5 | 5 | 10 | 6 | 7 | 13 |
| **SUBTOTAL** | **59** | **56** | **115** | **71** | **80** | **151** |
| YEAR 2016 HONUA'ULA *** | | | | | | |
| VMX (General Office Building) | 57 | 7 | 64 | 19 | 89 | 108 |
| VMX (Commercial) | 100 | 62 | 162 | 303 | 313 | 616 |
| MF Affordable Housing | 8 | 34 | 42 | 33 | 15 | 48 |
| MF Townhouse | 5 | 20 | 25 | 20 | 9 | 29 |
| SF Detached Housing | 35 | 24 | 59 | 30 | 29 | 59 |
| MF Luxury Villas | 15 | 21 | 36 | 28 | 26 | 54 |
| **SUBTOTAL** | **220** | **168** | **388** | **433** | **481** | **914** |
| **YEAR 2016 TOTAL** | **599** | **743** | **1342** | **1351** | **1270** | **2621** |

* Wailea Resort Trips generated by these developments were estimated by applying appropriate rates contained in the Institute of Transportation Engineers, Trip Generation, 8th Edition.
** Makena Resort Trips generated by these developments were estimated by applying Parsons Brinckerhoff's (PB) 2006 single-family and multi-family resort residential trip rates.
*** Both ITE Trip Generation Rates and PB rates were used to generate trips

*Note: Does not include trips generated by Kai Malu Project (MF-8), Wailea Gateway, Grand Wailea Resort Renovations and 1 Resort & Residences, Wailea. Volumes obtained by Traffic Studies.*

**C. Planned Roadway Project**

As a condition for the development of the Kai Malu Project (MF-8) the Piilani Highway/Okolani Drive/Mikioi Place intersection will be signalized and the eastbound approach will be restriped to provide an exclusive left-turn lane and a shared through/right-turn lane. At the time of the data collection efforts, the Kai Malu Project was under construction. Since then, construction has been completed and some of the units have recently been occupied.

## III. TRAFFIC CONDITIONS AND ANALYSIS

### A. Year 2016 WITHOUT Project Traffic and Analysis

Since it is a condition of the Kai Malu Project (MF-8), it is assumed that the signalization and re-striping of the Piilani Highway/Okolani Drive/Mikioi Street intersection will be completed by Year 2016. The following are conditions of the study intersections due to the defacto growth rate and known developments.

Piilani Highway/Kilohana Drive/Mapu Place

With a defacto growth rate of 0.5 percent per year along Piilani Highway and the known developments in the vicinity of the Project, the Piilani Highway/Kilohana Drive/Mapu Place signalized intersection will operate at LOS F and over capacity conditions. Currently, Piilani Highway is a four-lane roadway and narrows to a two-lane roadway at the Piilani Highway/Kilohana Drive/Mapu Place intersection where it remains as a two-lane roadway to its terminus at Wailea Ike Drive.

Piilani Highway/Okolani Drive/Mikioi Street

The Piilani Highway/Okolani Drive/Mikioi Street signalized intersection southbound through movement will operate at LOS F and over capacity conditions during the AM peak hour of traffic. During the PM peak hour of traffic, the northbound through and southbound left-turn movements will operate at LOS F and over capacity conditions.

Piilani Highway/Wailea Ike Drive

With completion of Honuaula Phase I, the east leg of the Piilani Highway/Wailea Ike Drive intersection will be constructed forming a tee-



**Table 5**
**Known Development's Trip Generation Rates**

| Land Use | Independent Variable (X) | Average Daily Weekday Rate | AM Peak Hour of Traffic | | PM Peak Hour of Traffic | |
|---|---|---|---|---|---|---|
| | | | Rate | % Entering | Rate | % Entering |
| Single-Family Detached Housing (ITE Land Use 210) | DU | Ln(T) = 0.92Ln(X) + 2.71 | T = 0.70(X) + 9.74 | 25% | Ln(T) = 0.90Ln(X) + 0.51 | 63% |
| Residential Condominium/Townhosue (ITE Land Use 230) | DU | Ln(T) = 0.87Ln(X) + 2.46 | Ln(T) = 0.80Ln(X) + 0.26 | 61% | Ln(T) = 0.82Ln(X) + 0.32 | 67% |
| Supermarket (ITE Land Use 850) | 1000 SF GFA | Ln(T) = 66.95Ln(X) + 1391.56 | 3.59 | 63% | 10.5 | 51% |
| Retail (ITE Land Use 814) | 1000 SF GFA | Ln(T) = 42.78Ln(X) + 37.66 | Ln(T) = 4.91Ln(X) + 115.59 | 48% | Ln(T) = 2.40Ln(X) + 21.48 | 44% |
| General Office Building (ITE Land Use 710) | 1000 SF GFA | Ln(T) = 0.77Ln(X) + 3.65 | Ln(T) = 0.80Ln(X) + 1.55 | 88% | Ln(T) = 1.12Ln(X) + 78.81 | 17% |
| Restaurant (ITE Land Use 932) | 1000 SF GFA | 127.15 | 11.52 | 52% | 11.15 | 59% |
| Shopping Center (ITE Land Use 820) | 1000 SF GFA | Ln(T) = 0.65Ln(X) + 5.83 | 1.00 | 61% | Ln(T) = 0.67Ln(X) + 3.37 | 49% |
| Mini-Warehouse (ITE Land Use 151) | 1000 SF GFA | Ln(T) = 1.01Ln(X) + 0.82 | 0.15 | 59% | Ln(T) = 1.02Ln(X) - 1.49 | 51% |
| Office Park (ITE Land Use 750) | 1000 SF GFA | T = 10.42(X) + 409.04 | T = 1.37(X) + 124.36 | 89% | T = 1.22(X) + 95.83 | 14% |
| Golf Course (ITE Land Use 430) | HOLES | 35.74 | 2.23 | 79% | 2.78 | 45% |
| Multi-Family Resort Residential * (PB Trip Generated Rate) | DU | N/A | 0.22 | 40% | 0.34 | 49% |
| Single-Family Resort Residential * (PB Trip Generated Rate) | DU | N/A | 0.46 | 58% | 0.46 | 50% |

DU = Dwelling Units
SF GFA = Square Feet of Gross Floor Area
T = Number of Trip Ends
X = Independent Variable

Source: Institute of Transportation Engineers, Trip Generation, 8th Edition.
Source: * Parsons Brinckerhoff's 2006 single-family and multi-family resort residential trip rates.

intersection, with Piilani Highway being the stem of the tee. Due to a high southbound right-turn (1210 and 880 during the AM and PM peak hour of traffic, respectively) and eastbound left-turn (525 and 1305 during the AM and PM peak hour of traffic, respectively) the intersection will warrant a traffic signal, in accordance with the HCM. However, without the Project, the signalized intersection of Piilani Highway/Wailea Ike Drive will operate at LOS F and over capacity conditions during the PM Peak hour of traffic.

Without the construction of Honuaula, the Piilani Highway/Wailea Ike Drive intersection will not require any intersection control and will have the following lane configuration:

- Southbound approach: Provide an exclusive free right-turn lane.
- Eastbound approach: Provide an exclusive free left-turn lane.

Figure 4 shows the Year 2016 Without Project Traffic Volumes and LOS at the study intersections.

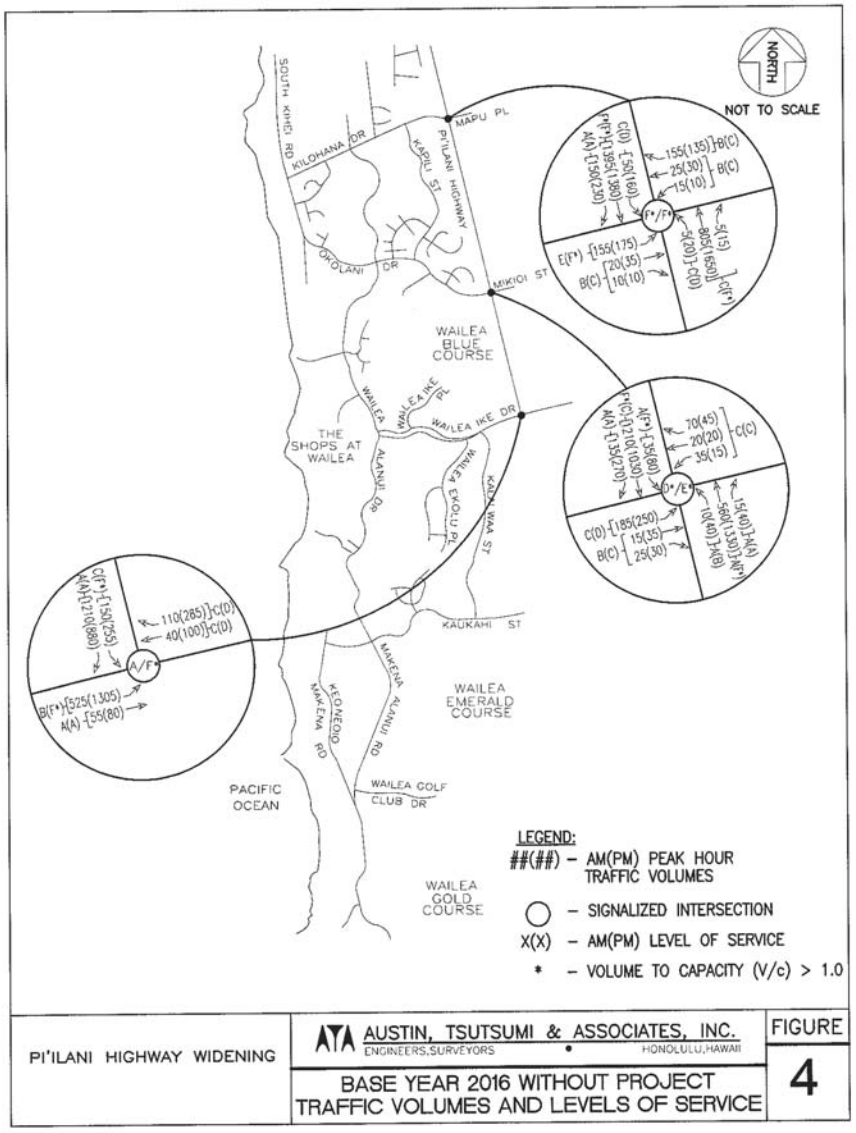
**B. Year 2016 WITH Project Traffic and Analysis**

Since the study intersections will operate at over capacity conditions as a result of defacto growth and known developments, the Project is required by Year 2016. Therefore, the following are the recommended lane configuration (see Appendix E for recommended lane configurations) at the study intersections with the Project:

Piilani Highway/Kilohana Drive/Mapu Place

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Provide a shared left-turn/through and an exclusive right-turn lane (with a permissive signal phase).






| PI'ILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS,SURVEYORS • HONOLULU,HAWAII | FIGURE |
|---|---|---|
| | BASE YEAR 2016 WITHOUT PROJECT TRAFFIC VOLUMES AND LEVELS OF SERVICE | 4 |

Piilani Highway/Okolani Drive/Mikioi Place

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and a shared through/right-turn lane.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Remain as a shared left-turn/through/right-turn lane (with a permissive signal phase).

Piilani Highway/Wailea Ike Drive

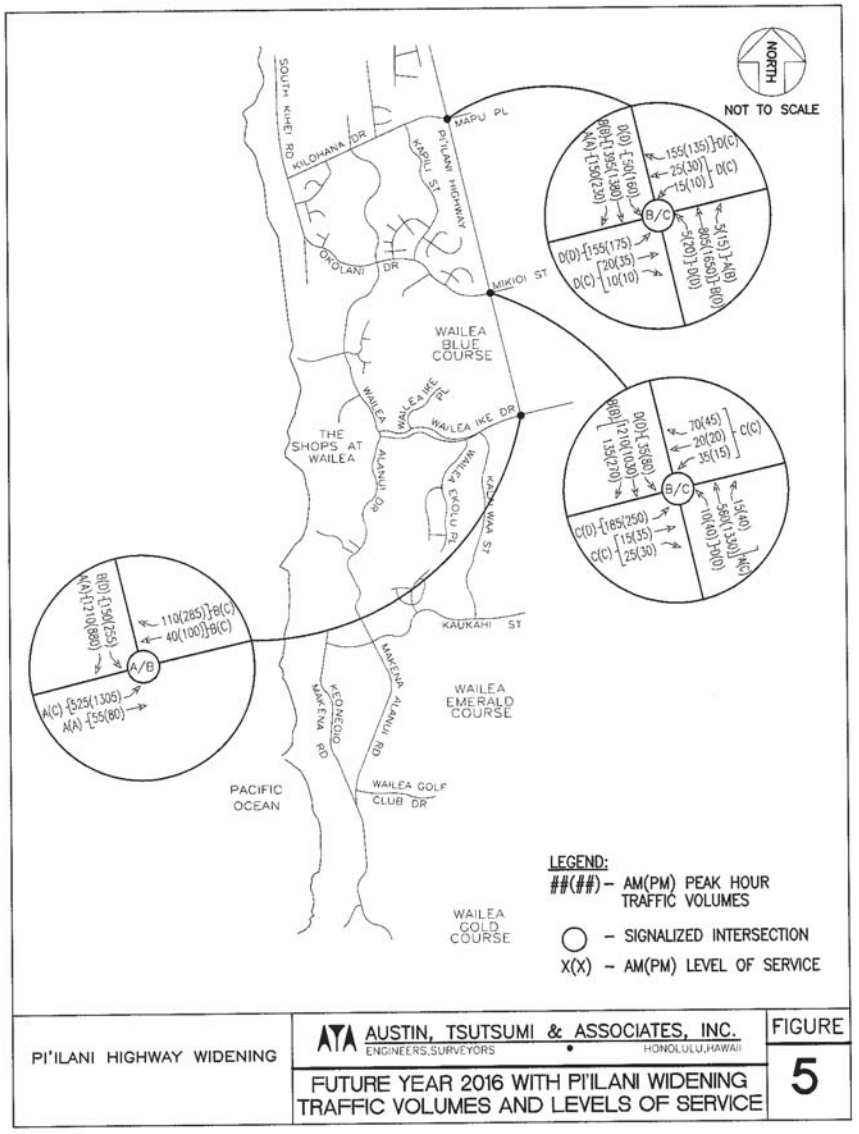
- Southbound approach: Provide an exclusive left-turn lane and an exclusive right-turn lane. Allow the Piilani Highway southbound right-turn to be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
- Eastbound approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and an exclusive through lane. Also, provide an acceleration lane on the north leg to accommodate two eastbound left-turn lanes.
- Westbound Approach: Provide an exclusive through lane, and an exclusive right-turn lane.

With the Project and the recommended lane configurations at the study intersections, the intersections of Piilani Highway/Kilohana Drive/Mapu Place, Piilani Highway/Okolani Drive/Mikioi Place and Piilani Highway/Wailea Ike Drive will operate at LOS D or better during both the AM and PM peak hours of traffic.

Figure 5 shows the Year 2016 With Project Traffic Volumes and LOS at the study intersections.

Appendix D shows the level-of-service summary table at the study intersections and Appendix E shows a figure detailing the recommended lane configurations.






| PI'ILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS,SURVEYORS • HONOLULU,HAWAII | FIGURE |
|---|---|---|
| | FUTURE YEAR 2016 WITH PI'ILANI WIDENING TRAFFIC VOLUMES AND LEVELS OF SERVICE | 5 |

## C. Year 2022 WITH Project Traffic and Analysis

With the build-out of known developments in the vicinity of the Project, traffic volumes were estimated for Year 2022. Table 6 shows the Additional Known Developments Land Uses and Trip Generation for Year 2022. The following are conditions of the study intersections in Year 2022 WITH the Project:

Piilani Highway/Kilohana Drive/Mikioi Place

The eastbound left-turn and southbound left-turn movements at the Piilani Highway/Kilohana Drive/Mapu Place intersection will operate at LOS E during the PM peak hour of traffic.

Providing additional capacity for the eastbound left-turn movement (double eastbound left-turn lanes) requires improvements to provide an exclusive westbound left-turn lane and a protected left-turn signal phase (8-phase signal cycle) for the eastbound and westbound left-turn movements. However, by introducing an additional signal phase, the eastbound approach will continue to operate at LOS E conditions. Providing a split phase (6-signal phase) for the eastbound and westbound approaches will continue to operate at LOS E conditions.

The Piilani Highway/Kilohana Drive/Mapu Place intersection serves as the northern access point to the Maui Meadows subdivision which is comprised of single-family homes. As mentioned above, during the PM peak hour of traffic, the southbound left-turn movement will operate at LOS E conditions. By providing double southbound left-turn lanes, all movements will operate at LOS D or better during the PM peak hour of traffic. However, the Highway Capacity Manual (HCM) recommends that double left-turn lanes be provided where the left-turn volume exceeds 300 vehicles during the peak hour, in which, approximately 50 vehicles and 160 vehicles will utilize the southbound left-turn movement during the AM and PM peak hour of traffic, respectively. Additionally, some vehicles may opt to utilize the southbound left-turn at Piilani Highway/Okolani Drive/Mikioi Place intersection, rather than Piilani Highway/Kilohana Drive/Mapu Place, since it will be signalized. Therefore, additional improvements are not recommended at the Piilani Highway/Kilohana Drive/Mapu Place intersection.



**Table 6**
**Additional Known Development's Land Uses and Trip Generation in Year 2022**

| | AM PEAK HOUR | | | PM PEAK HOUR | | |
|---|---|---|---|---|---|---|
| | IN | OUT | TOTAL | IN | OUT | TOTAL |
| YEAR 2022 WAILEA RESORT * | | | | | | |
| Business I | 9 | 43 | 52 | 41 | 20 | 61 |
| Business 2 | 165 | 23 | 188 | 27 | 131 | 158 |
| **SUBTOTAL** | **174** | **66** | **240** | **68** | **151** | **219** |
| YEAR 2022 MAKENA RESORT ** | | | | | | |
| M-5 | 2 | 3 | 5 | 3 | 5 | 8 |
| M-6 | 7 | 9 | 16 | 11 | 14 | 25 |
| M-8 | 2 | 1 | 3 | 2 | 3 | 5 |
| M-9 | 2 | 1 | 3 | 2 | 3 | 5 |
| S-2 | 5 | 3 | 8 | 4 | 4 | 8 |
| S-4 | 7 | 4 | 11 | 6 | 5 | 11 |
| S-7 | 2 | 0 | 2 | 1 | 1 | 2 |
| M-1 | 3 | 2 | 5 | 3 | 2 | 5 |
| M-10 | 3 | 4 | 7 | 5 | 6 | 11 |
| M-11 | 2 | 3 | 5 | 3 | 4 | 7 |
| S-1 | 25 | 17 | 42 | 21 | 21 | 42 |
| S-3 | 8 | 5 | 13 | 7 | 6 | 13 |
| U-1 | 31 | 21 | 52 | 26 | 26 | 52 |
| **SUBTOTAL** | **99** | **73** | **172** | **94** | **100** | **194** |
| YEAR 2022 HONUA'ULA *** | | | | | | |
| SF Detached Housing | 74 | 52 | 126 | 64 | 62 | 126 |
| MF Market Rate Villas | 5 | 5 | 10 | 9 | 7 | 16 |
| MF Townhouse | 8 | 33 | 41 | 32 | 14 | 46 |
| MF Affordable Housing | 32 | 153 | 185 | 147 | 70 | 217 |
| **SUBTOTAL** | **119** | **243** | **362** | **252** | **153** | **405** |
| **YEAR 2022 TOTAL** | **392** | **382** | **774** | **414** | **404** | **818** |

DU = Dwelling Units
SF = Single-Family
MF = Multi-Family
VMX = Village Mixed Use

* Trips generated by these developments were estimated by applying appropriate rates contained in the Institute of Transportation Engineers, Trip Generation, 8th Edition.
** Makena Resort Trips generated by these developments were estimated by applying Parsons Brinckerhoff's 2006 single-family and multi-family resort residential trip rates.
*** Both ITE Trip Generation Rates and PB rates were used to generate trips

Piilani Highway/Okolani Drive/Mikioi Place

The Piilani Highway/Okolani Drive/Mikioi Place will continue to operate at LOS D or better conditions during the AM and PM peak hours of traffic.

Piilani Highway/Wailea Ike Drive

Phase II of Honuaula proposes to form the south leg of the Piilani Highway/Wailea Ike Drive intersection, forming a cross intersection. As a part of the Honuaula Project, Piilani Highway will be extended to intersect with an extension of Kaukahi Street. The following lane configuration is recommended at the Piilani Highway/Wailea Ike Drive (Appendix E shows the recommended lane configurations) with the construction of the south leg:

- Northbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
- Southbound Approaches: Provide two exclusive left-turn lanes (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane. Also, it is recommended that the Piilani Highway southbound right-turn to be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive. It is projected that a higher volume will be utilizing the southbound left-turn movement (175 vehicles and 290 vehicles during the AM and PM peak hours of traffic, respectively) as opposed to the southbound through movement (70 vehicles and 130 vehicles during the AM and PM peak hours of traffic, respectively) during the AM and PM peak hours of traffic due to the layout of the Honuaula Project. Additionally, the HCM recommends that double left-turn lanes be provided where the left-turn volume exceeds 300 vehicles during the peak hour
- Eastbound Approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane.





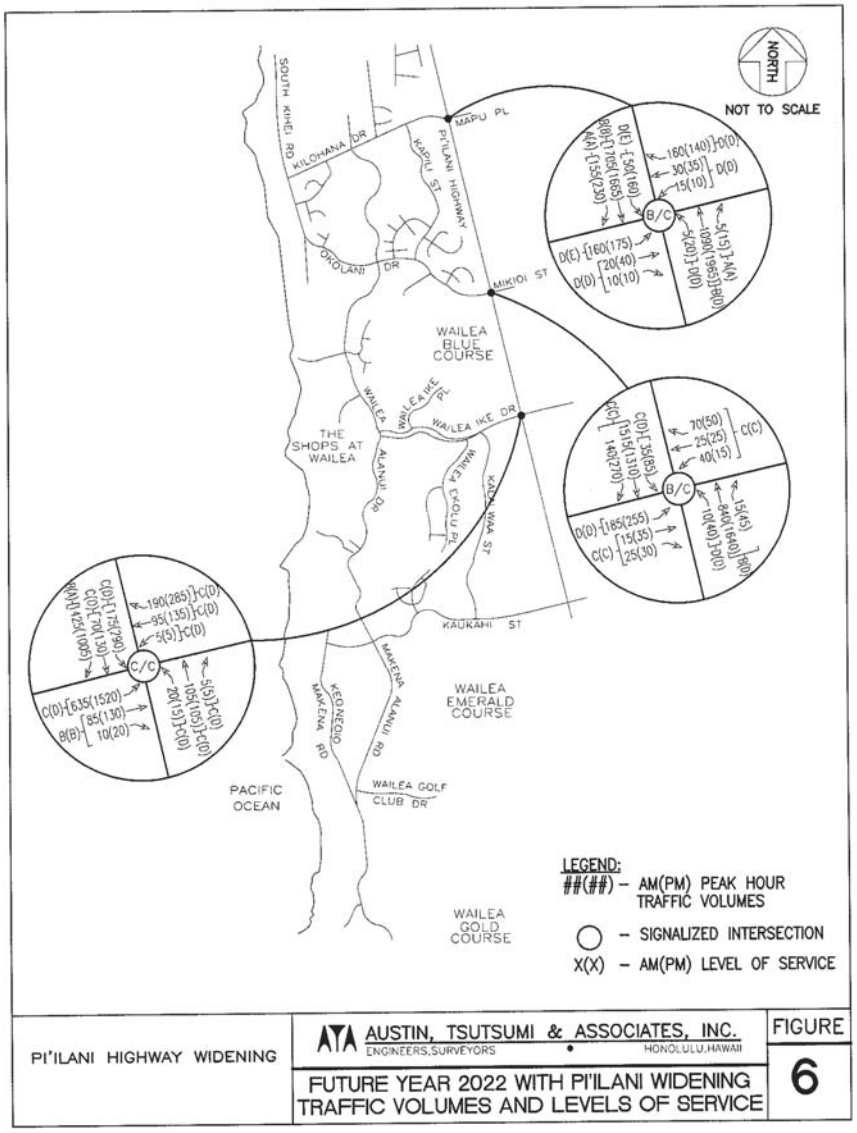
The extension of Piilani Highway is planned to be a two way, north-south, two-lane roadway intersecting with an extension on Kaukahi Street. Kaukahi Street is proposed to be a controlled access within the Honuaula Development. Honuaula proposes three additional unsignalized intersections along the Piilani Highway extension.

Appendix D shows the level-of-service table summary at all the study intersections and Appendix E shows a figure detailing the recommended lane configurations.

Figure 6 shows the Year 2022 With Project Traffic Volumes and LOS at the study intersections.

**D. Modern Roundabouts**

Due to zoning conditions and Special Management Area conditions, the Piilani Highway/Kilohana Drive/Mapu Place, Piilani Highway/Okolani Drive/Mikioi Place, Piilani Highway/Wailea Ike Drive intersections are conditioned to be signalized intersections. Therefore, the option of modern roundabouts is not studied.




| PI'ILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII | FIGURE 6 |
|---|---|---|
| | FUTURE YEAR 2022 WITH PI'ILANI WIDENING TRAFFIC VOLUMES AND LEVELS OF SERVICE | |



## V. Summary and Recommendations

### A. Summary

Honuaula, Wailea Resort, and Makena Resort reached an agreement with SDOT to widen Piilani Highway between Kilohana Drive and Wailea Ike Drive from two-lanes to four-lanes.

Existing Conditions

Field observations show that at the signalized intersection of Piilani Highway/Kilohana Drive/Mapu Place, vehicles would queue, however clear the intersection within one signal cycle length. At the unsignalized Piilani Highway/Okolani Drive/Mikioi Place intersection, approximately one to three vehicles queued on the stop-controlled approach. However, improvements to the Piilani Highway/Okolani Drive/Mikioi Place intersection is a condition for the development of the Kai Malu Project (MF-8) within the Wailea Resort. Improvements to the intersection include installation of a traffic signal system and providing the eastbound approach with an exclusive left-turn lane and a shared through/right-turn lane.

Year 2016 WITHOUT the Project

Traffic volume projections for Year 2016 utilizes a vehicular de facto growth rate of 0.5 percent per year and traffic generated by known developments which include Honuaula, Wailea Resort and Makena Resort projects. The improvements to Piilani Highway/Okolani Drive/Mikioi Place intersection, as a result of the Kai Malu Project (MF-8), are assumed to be completed by Year 2016.

Analysis of Year 2016 traffic conditions without the project indicates that some individual movements at the Piilani Highway/Kilohana Drive/Mapu Place, Piilani Highway/Okolani Drive/Mikioi Place, and Piilani Highway/Wailea Ike Drive signalized intersections will operate at LOS F during the AM and PM peak hours of traffic. Phase I of Honuaula proposes to construct the east leg of the Piilani Highway/Wailea Ike Drive intersection, forming a tee-intersection.

Future Years with Project

Full-build out of known developments in the vicinity of the Project is anticipated by Year 2022. Analyses show that with the recommendations of this report implemented, the Piilani Highway/Kilohana Drive/Mapu Place intersection eastbound left-turn and southbound left-turn movements will operate at LOS E during the PM peak hour of traffic. However, increasing capacity on the eastbound approach will require additional traffic signal phases or split phasing on the eastbound and westbound approach which results in LOS E conditions. The Piilani Highway/Kilohana Drive/Mapu Place intersection serves as the northern access point to the Maui Meadows subdivision which is comprised of single-family homes. As mentioned above, during the PM peak hour of traffic, the southbound left-turn movement will operate at LOS E conditions. By providing double southbound left-turn lanes, all movements will operate at LOS D or better during the PM peak hour of traffic. However, the Highway Capacity Manual (HCM) recommends that double left-turn lanes be provided where the left-turn volume exceeds 300 vehicles during the peak hour, in which, approximately 50 vehicles and 160 vehicles will utilize the southbound left-turn movement during the AM and PM peak hour of traffic, respectively. Additionally, some vehicles may opt to utilize the southbound left-turn at Piilani Highway/Okolani Drive/Mikioi Place intersection, rather than Piilani Highway/Kilohana Drive/Mapu Place, since it will be signalized.

Phase II of Honuaula proposes extend Piilani Highway to intersect with the extension of Kaukahi Street forming the south leg of the Piilani Highway/Wailea Ike Drive intersection. All other study intersections will operate at LOS D or better during the AM and PM peak hours of traffic.



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**B. Recommendations**

The following are the recommended lane configuration (Appendix E shows the recommended Lane Configurations) and with the widening of Piilani Highway:

Piilani Highway/Kilohana Drive/Mapu Place

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Provide a shared left-turn/through lane and an exclusive right-turn lane.

Piilani Highway/Okolani Drive/Mikioi Place

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and a shared through/right-turn lane.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Remain as a shared left-turn/through/right-turn lane (with a permissive signal phase).

Piilani Highway/Wailea Ike Drive

- Without Honuaula, intersection control will not be required and the following lane configuration is recommended:
  - Southbound approach: Provide an exclusive free right-turn lane.
  - Eastbound approach: Provide an exclusive free left-turn lane.

- By Year 2016 or when access to Phase I of Honuaula is constructed:
  - With projected traffic volumes, the intersection will warrant a traffic signal, in accordance with the HCM, therefore, it is recommended to signalize the intersection.
  - Southbound approach: Provide an exclusive left-turn lane and an exclusive right-turn lane. Allow the Piilani Highway southbound right-turn to be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
  - Eastbound approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and an exclusive through lane.
  - Westbound Approach: Provide an exclusive through lane, and an exclusive right-turn lane
- By Year 2022 or when Piilani Highway is extended:
  - Northbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
  - Southbound Approaches: Provide two exclusive left-turn lanes (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane. Also, it is recommended that the Piilani Highway southbound right-turn be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
  - Eastbound Approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and a shared through/right-turn lane.



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  - Westbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane.

## REFERENCES

1. Institute of Transportation Engineers, Trip Generation, 8th Edition
2. Institute of Transportation Engineers, Trip Generation Handbook, and ITE Recommended Practice, 2001
3. Phillip Rowell and Associates, Traffic Impact Analysis Report for Wailea Gateway, March 6, 2006.
4. Phillip Rowell and Associates, Traffic Impact Analysis Report for Wailea MF-8, May 13, 2004.
5. Transportation Research Board, Highway Capacity Manual, 2000.
6. Wilson Okamoto Corporation, Traffic Impact Report for 1 Resort & Residences, Wailea, March 2009.
7. Wilson Okamoto Corporation, Traffic Impact Report for the Grand Wailea Resort Renovation, January 2009.



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# APPENDICES

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# APPENDIX A

## TRAFFIC COUNT DATA

Austin, Tsutsumi and Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817
*Ph: 533-3646 Fax: 526-1267*

File Name : Piilani - Kilohana AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 1

**Groups Printed- Unshifted**

| | Piilani From North | | | | Kilohana From East | | | | Piilani From South | | | | Kilohana From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 06:30 AM | 18 | 155 | 4 | 0 | 28 | 2 | 0 | 0 | 0 | 73 | 1 | 4 | 0 | 1 | 11 | 2 | 299 |
| 06:45 AM | 17 | 169 | 11 | 0 | 29 | 3 | 2 | 0 | 0 | 53 | 0 | 2 | 2 | 5 | 15 | 1 | 309 |
| Total | 35 | 324 | 15 | 0 | 57 | 5 | 2 | 0 | 0 | 126 | 1 | 6 | 2 | 6 | 26 | 3 | 608 |
| 07:00 AM | 30 | 166 | 6 | 0 | 39 | 8 | 3 | 0 | 2 | 71 | 1 | 3 | 2 | 1 | 9 | 1 | 342 |
| 07:15 AM | 30 | 198 | 10 | 0 | 35 | 7 | 1 | 0 | 0 | 76 | 1 | 0 | 2 | 5 | 19 | 0 | 384 |
| 07:30 AM | 21 | 208 | 11 | 0 | 35 | 5 | 3 | 1 | 0 | 67 | 0 | 2 | 1 | 3 | 23 | 1 | 381 |
| 07:45 AM | 31 | 208 | 22 | 0 | 36 | 4 | 4 | 0 | 1 | 77 | 0 | 0 | 2 | 6 | 15 | 0 | 406 |
| Total | 112 | 780 | 49 | 0 | 145 | 24 | 11 | 1 | 3 | 291 | 2 | 5 | 7 | 15 | 66 | 2 | 1513 |
| 08:00 AM | 23 | 153 | 9 | 0 | 38 | 1 | 1 | 1 | 0 | 67 | 1 | 1 | 1 | 4 | 18 | 0 | 318 |
| 08:15 AM | 13 | 135 | 23 | 0 | 39 | 7 | 3 | 0 | 3 | 68 | 0 | 1 | 3 | 12 | 21 | 0 | 328 |
| Grand Total | 183 | 1392 | 96 | 0 | 279 | 37 | 17 | 2 | 6 | 552 | 4 | 13 | 13 | 37 | 131 | 5 | 2767 |
| Apprch % | 11 | 83.3 | 5.7 | 0 | 83.3 | 11 | 5.1 | 0.6 | 1 | 96 | 0.7 | 2.3 | 7 | 19.9 | 70.4 | 2.7 | |
| Total % | 6.6 | 50.3 | 3.5 | 0 | 10.1 | 1.3 | 0.6 | 0.1 | 0.2 | 19.9 | 0.1 | 0.5 | 0.5 | 1.3 | 4.7 | 0.2 | |

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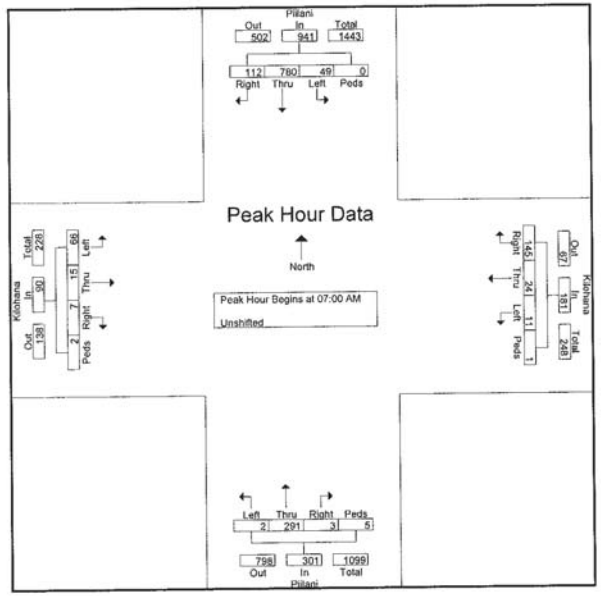
File Name : Piilani - Kilohana AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 2

| | Piilani From North | | | | | Kilohana From East | | | | | Piilani From South | | | | | Kilohana 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 07:00 AM to 07:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | 30 | 166 | 6 | 0 | 202 | 39 | 8 | 3 | 0 | 50 | 2 | 71 | 1 | 3 | 77 | 2 | 1 | 9 | 1 | 13 | 342 |
| 07:15 AM | 30 | 198 | 10 | 0 | 238 | 35 | 7 | 1 | 0 | 43 | 0 | 76 | 1 | 0 | 77 | 2 | 5 | 19 | 0 | 26 | 384 |
| 07:30 AM | 21 | 208 | 11 | 0 | 240 | 35 | 5 | 3 | 1 | 44 | 0 | 67 | 0 | 2 | 69 | 1 | 3 | 23 | 1 | 28 | 381 |
| 07:45 AM | 31 | 208 | 22 | 0 | 261 | 36 | 4 | 4 | 0 | 44 | 1 | 77 | 0 | 0 | 78 | 2 | 6 | 15 | 0 | 23 | 406 |
| Total Volume | 112 | 780 | 49 | 0 | 941 | 145 | 24 | 11 | 1 | 181 | 3 | 291 | 2 | 5 | 301 | 7 | 15 | 66 | 2 | 90 | 1513 |
| % App. Total | 11.9 | 82.9 | 5.2 | 0 | | 80.1 | 13.3 | 6.1 | 0.6 | | 1 | 96.7 | 0.7 | 1.7 | | 7.8 | 16.7 | 73.3 | 2.2 | | |
| PHF | .903 | .938 | .557 | .000 | .901 | .929 | .750 | .688 | .250 | .905 | .375 | .945 | .500 | .417 | .965 | .875 | .625 | .717 | .500 | .804 | .932 |

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File Name : Piilani - Okolani AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 1

**Groups Printed- Unshifted**

| | Piilani From North | | | | Okolani From East | | | | Piilani From South | | | | Okolani From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 06:30 AM | 10 | 147 | 5 | 0 | 23 | 1 | 1 | 0 | 2 | 46 | 0 | 1 | 1 | 2 | 11 | 0 | 250 |
| 06:45 AM | 10 | 162 | 4 | 0 | 18 | 1 | 10 | 0 | 1 | 33 | 0 | 0 | 1 | 2 | 5 | 0 | 247 |
| Total | 20 | 309 | 9 | 0 | 41 | 2 | 11 | 0 | 3 | 79 | 0 | 1 | 2 | 4 | 16 | 0 | 497 |
| 07:00 AM | 16 | 148 | 4 | 0 | 20 | 4 | 11 | 0 | 2 | 44 | 0 | 0 | 0 | 1 | 6 | 0 | 256 |
| 07:15 AM | 12 | 155 | 10 | 0 | 16 | 6 | 4 | 0 | 2 | 50 | 2 | 0 | 4 | 0 | 6 | 0 | 267 |
| 07:30 AM | 14 | 192 | 9 | 0 | 16 | 5 | 5 | 0 | 5 | 49 | 0 | 0 | 3 | 1 | 8 | 0 | 307 |
| 07:45 AM | 13 | 180 | 6 | 0 | 12 | 3 | 13 | 0 | 4 | 55 | 1 | 1 | 8 | 2 | 7 | 0 | 305 |
| Total | 55 | 675 | 29 | 0 | 64 | 18 | 33 | 0 | 13 | 198 | 3 | 1 | 15 | 4 | 27 | 0 | 1135 |
| 08:00 AM | 13 | 136 | 8 | 0 | 9 | 9 | 11 | 0 | 1 | 52 | 2 | 0 | 2 | 3 | 8 | 0 | 254 |
| Grand Total | 88 | 1120 | 46 | 0 | 114 | 29 | 55 | 0 | 17 | 329 | 5 | 2 | 19 | 11 | 51 | 0 | 1886 |
| Apprch % | 7 | 89.3 | 3.7 | 0 | 57.6 | 14.6 | 27.8 | 0 | 4.8 | 93.2 | 1.4 | 0.6 | 23.5 | 13.6 | 63 | 0 | |
| Total % | 4.7 | 59.4 | 2.4 | 0 | 6 | 1.5 | 2.9 | 0 | 0.9 | 17.4 | 0.3 | 0.1 | 1 | 0.6 | 2.7 | 0 | |

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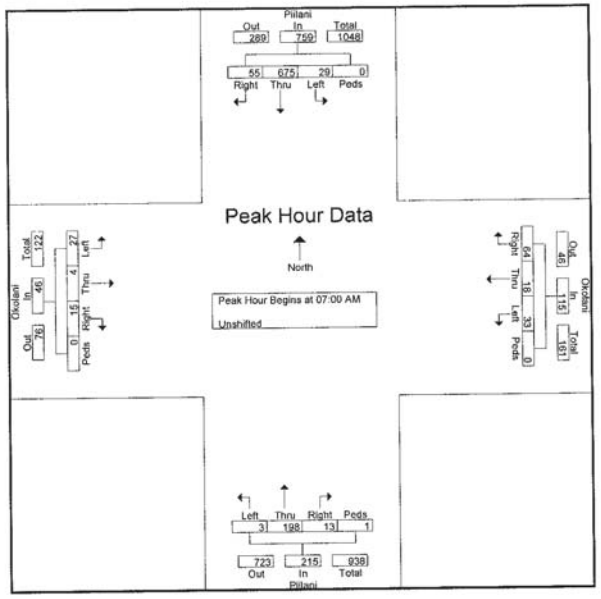
File Name : Piilani - Okolani AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 2

| | Piilani From North | | | | | Okolani From East | | | | | Piilani From South | | | | | Okolani 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 06:30 AM to 08:00 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | **16** | 148 | 4 | 0 | 168 | **20** | 4 | 11 | 0 | **35** | 2 | 44 | 0 | 0 | 46 | 0 | 1 | 6 | 0 | 7 | 256 |
| 07:15 AM | 12 | 155 | **10** | 0 | 177 | 16 | 6 | 4 | 0 | 26 | 2 | 50 | **2** | 0 | 54 | 4 | 0 | 6 | 0 | 10 | 267 |
| 07:30 AM | 14 | **192** | 9 | 0 | **215** | 16 | 5 | 5 | 0 | 26 | **5** | 49 | 0 | 0 | 54 | 3 | 1 | **8** | 0 | 12 | **307** |
| 07:45 AM | 13 | 180 | 6 | 0 | 199 | 12 | 3 | **13** | 0 | 28 | 4 | **55** | 1 | **1** | **61** | **8** | **2** | 7 | 0 | **17** | 305 |
| Total Volume | 55 | 675 | 29 | 0 | 759 | 64 | 18 | 33 | 0 | 115 | 13 | 198 | 3 | 1 | 215 | 15 | 4 | 27 | 0 | 46 | 1135 |
| % App. Total | 7.2 | 88.9 | 3.8 | 0 | | 55.7 | 15.7 | 28.7 | 0 | | 6 | 92.1 | 1.4 | 0.5 | | 32.6 | 8.7 | 58.7 | 0 | | |
| PHF | .859 | .879 | .725 | .000 | .883 | .800 | .750 | .635 | .000 | .821 | .650 | .900 | .375 | .250 | .881 | .469 | .500 | .844 | .000 | .676 | .924 |

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File Name : Piilani - Kilohana PM merged
Site Code : 00000000
Start Date : 6/24/2008
Page No : 1

Groups Printed- Unshifted

| | Piilani From North | | | | Kilohana From East | | | | Piilani From South | | | | Kilohana From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 03:15 PM | 28 | 152 | 23 | 0 | 21 | 3 | 2 | 0 | 3 | 154 | 0 | 0 | 1 | 6 | 26 | 0 | 419 |
| 03:30 PM | 26 | 111 | 21 | 1 | 22 | 3 | 1 | 0 | 4 | 178 | 5 | 0 | 3 | 11 | 30 | 0 | 416 |
| 03:45 PM | 17 | 140 | 19 | 0 | 16 | 3 | 4 | 0 | 27 | 107 | 8 | 0 | 2 | 9 | 29 | 0 | 381 |
| Total | 71 | 403 | 63 | 1 | 59 | 9 | 7 | 0 | 34 | 439 | 13 | 0 | 6 | 26 | 85 | 0 | 1216 |
| 04:00 PM | 19 | 145 | 38 | 0 | 27 | 6 | 3 | 0 | 2 | 229 | 2 | 0 | 4 | 9 | 31 | 0 | 515 |
| 04:15 PM | 36 | 126 | 43 | 0 | 31 | 7 | 1 | 0 | 1 | 220 | 5 | 1 | 1 | 12 | 28 | 1 | 513 |
| 04:30 PM | 28 | 117 | 36 | 1 | 39 | 8 | 2 | 0 | 5 | 190 | 0 | 0 | 2 | 5 | 36 | 0 | 469 |
| 04:45 PM | 43 | 104 | 39 | 0 | 32 | 7 | 3 | 0 | 2 | 163 | 2 | 1 | 1 | 7 | 17 | 0 | 421 |
| Total | 126 | 492 | 156 | 1 | 129 | 28 | 9 | 0 | 10 | 802 | 9 | 2 | 8 | 33 | 112 | 1 | 1918 |
| 05:00 PM | 24 | 104 | 44 | 0 | 36 | 9 | 2 | 0 | 1 | 190 | 3 | 0 | 0 | 9 | 17 | 0 | 439 |
| 05:15 PM | 32 | 101 | 27 | 0 | 38 | 8 | 0 | 0 | 0 | 158 | 3 | 0 | 5 | 10 | 21 | 0 | 403 |
| Grand Total | 253 | 1100 | 290 | 2 | 262 | 54 | 18 | 0 | 45 | 1589 | 28 | 2 | 19 | 78 | 235 | 1 | 3976 |
| Apprch % | 15.4 | 66.9 | 17.6 | 0.1 | 78.4 | 16.2 | 5.4 | 0 | 2.7 | 95.5 | 1.7 | 0.1 | 5.7 | 23.4 | 70.6 | 0.3 | |
| Total % | 6.4 | 27.7 | 7.3 | 0.1 | 6.6 | 1.4 | 0.5 | 0 | 1.1 | 40 | 0.7 | 0.1 | 0.5 | 2 | 5.9 | 0 | |

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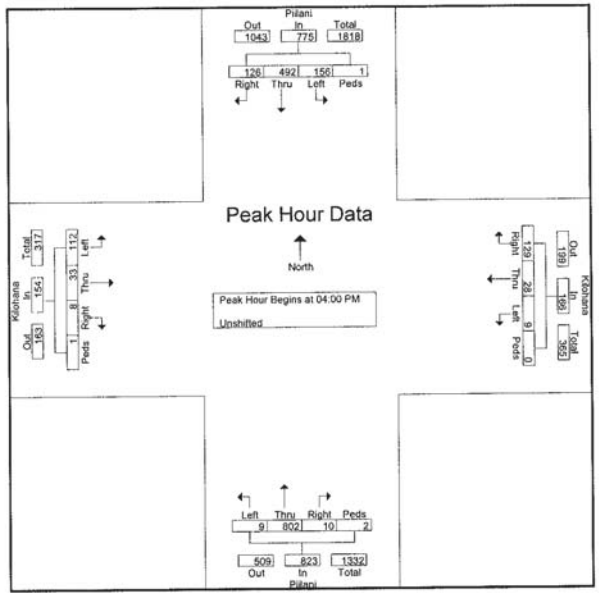
File Name : Piilani - Kilohana PM merged
Site Code : 00000000
Start Date : 6/24/2008
Page No : 2

| | Piilani From North | | | | | Kilohana From East | | | | | Piilani From South | | | | | Kilohana 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 04:00 PM to 04:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 19 | **145** | 38 | 0 | 202 | 27 | 6 | **3** | 0 | 36 | 2 | **229** | 2 | 0 | **233** | **4** | 9 | 31 | 0 | **44** | **515** |
| 04:15 PM | 36 | 126 | **43** | 0 | **205** | 31 | 7 | 1 | 0 | 39 | 1 | 220 | **5** | **1** | 227 | 1 | **12** | 28 | **1** | 42 | 513 |
| 04:30 PM | 28 | 117 | 36 | **1** | 182 | **39** | **8** | 2 | 0 | **49** | **5** | 190 | 0 | 0 | 195 | 2 | 5 | **36** | 0 | 43 | 469 |
| 04:45 PM | 43 | 104 | 39 | 0 | 186 | 32 | 7 | 3 | 0 | 42 | 2 | 163 | 2 | 1 | 168 | 1 | 7 | 17 | 0 | 25 | 421 |
| Total Volume | 126 | 492 | 156 | 1 | 775 | 129 | 28 | 9 | 0 | 166 | 10 | 802 | 9 | 2 | 823 | 8 | 33 | 112 | 1 | 154 | 1918 |
| % App Total | 16.3 | 63.5 | 20.1 | 0.1 | | 77.7 | 16.9 | 5.4 | 0 | | 1.2 | 97.4 | 1.1 | 0.2 | | 5.2 | 21.4 | 72.7 | 0.6 | | |
| PHF | .733 | .848 | .907 | .250 | .945 | .827 | .875 | .750 | .000 | .847 | .500 | .876 | .450 | .500 | .883 | .500 | .688 | .778 | .250 | .875 | .931 |

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File Name : Piilani - Okolani PM
Site Code : 00000000
Start Date : 6/24/2008
Page No : 1

**Groups Printed- Unshifted**

| | Piilani From North | | | | Okolani From East | | | | Piilani From South | | | | Okolani From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 03:30 PM | 8 | 103 | 13 | 0 | 12 | 3 | 3 | 0 | 11 | 174 | 2 | 0 | 1 | 2 | 7 | 0 | 339 |
| 03:45 PM | 15 | 123 | 13 | 0 | 10 | 1 | 4 | 0 | 8 | 152 | 0 | 0 | 4 | 4 | 18 | 0 | 352 |
| Total | 23 | 226 | 26 | 0 | 22 | 4 | 7 | 0 | 19 | 326 | 2 | 0 | 5 | 6 | 25 | 0 | 691 |
| 04:00 PM | 13 | 104 | 25 | 0 | 13 | 1 | 1 | 0 | 17 | 206 | 2 | 1 | 3 | 5 | 16 | 0 | 407 |
| 04:15 PM | 6 | 93 | 25 | 0 | 12 | 1 | 6 | 0 | 3 | 172 | 3 | 0 | 6 | 6 | 15 | 0 | 348 |
| 04:30 PM | 10 | 97 | 12 | 1 | 10 | 8 | 2 | 0 | 13 | 167 | 2 | 0 | 3 | 6 | 18 | 0 | 349 |
| 04:45 PM | 10 | 77 | 14 | 0 | 8 | 4 | 4 | 0 | 5 | 121 | 0 | 0 | 2 | 9 | 12 | 0 | 266 |
| Total | 39 | 371 | 76 | 1 | 43 | 14 | 13 | 0 | 38 | 666 | 7 | 1 | 14 | 26 | 61 | 0 | 1370 |
| 05:00 PM | 13 | 69 | 16 | 0 | 15 | 4 | 4 | 0 | 12 | 172 | 1 | 0 | 1 | 3 | 9 | 0 | 319 |
| 05:15 PM | 5 | 70 | 20 | 0 | 15 | 3 | 3 | 0 | 7 | 130 | 3 | 0 | 2 | 3 | 10 | 0 | 271 |
| Grand Total | 80 | 736 | 138 | 1 | 95 | 25 | 27 | 0 | 76 | 1294 | 13 | 1 | 22 | 38 | 105 | 0 | 2651 |
| Apprch % | 8.4 | 77.1 | 14.5 | 0.1 | 64.6 | 17 | 18.4 | 0 | 5.5 | 93.5 | 0.9 | 0.1 | 13.3 | 23 | 63.6 | 0 | |
| Total % | 3 | 27.8 | 5.2 | 0 | 3.6 | 0.9 | 1 | 0 | 2.9 | 48.8 | 0.5 | 0 | 0.8 | 1.4 | 4 | 0 | |

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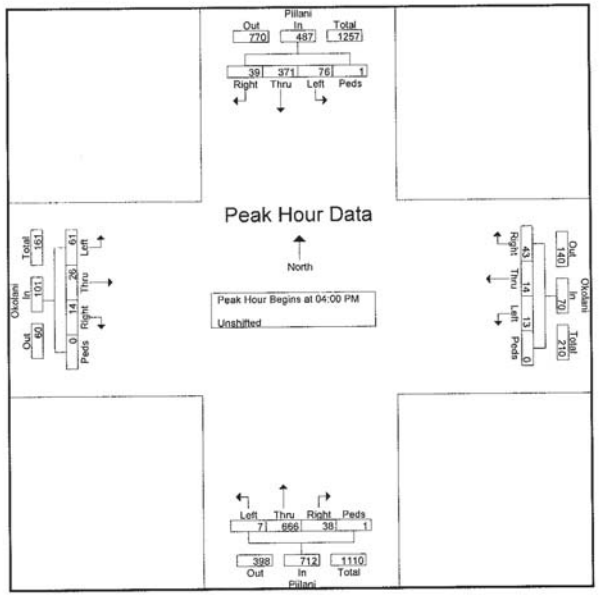
File Name : Piilani - Okolani PM
Site Code : 00000000
Start Date : 6/24/2008
Page No : 2

| | Piilani From North | | | | | Okolani From East | | | | | Piilani From South | | | | | Okolani 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 04:00 PM to 04:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | **13** | **104** | **25** | 0 | **142** | **13** | 1 | 1 | 0 | 15 | **17** | **206** | 2 | **1** | **226** | 3 | 5 | 16 | 0 | 24 | **407** |
| 04:15 PM | 6 | 93 | 25 | 0 | 124 | 12 | 1 | **6** | 0 | 19 | 3 | 172 | **3** | 0 | 178 | **6** | 6 | 15 | 0 | **27** | 348 |
| 04:30 PM | 10 | 97 | 12 | **1** | 120 | 10 | **8** | 2 | 0 | **20** | 13 | 167 | 2 | 0 | 182 | 3 | 6 | **18** | 0 | 27 | 349 |
| 04:45 PM | 10 | 77 | 14 | 0 | 101 | 8 | 4 | 4 | 0 | 16 | 5 | 121 | 0 | 0 | 126 | 2 | 9 | 12 | 0 | 23 | 266 |
| Total Volume | 39 | 371 | 76 | 1 | 487 | 43 | 14 | 13 | 0 | 70 | 38 | 666 | 7 | 1 | 712 | 14 | 26 | 61 | 0 | 101 | 1370 |
| % App. Total | 8 | 76.2 | 15.6 | 0.2 | | 61.4 | 20 | 18.6 | 0 | | 5.3 | 93.5 | 1 | 0.1 | | 13.9 | 25.7 | 60.4 | 0 | | |
| PHF | .750 | .892 | .760 | .250 | .857 | .827 | .438 | .542 | .000 | .875 | .559 | .808 | .583 | .250 | .788 | .583 | .722 | .847 | .000 | .935 | .842 |

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# APPENDIX B

## LEVEL OF SERVICE CRITERIA

## APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

### LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2000)

The level of service criteria for unsignalized intersections is defined as the average total delay, in seconds per vehicle. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. 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 Total Delay (sec/veh) |
|---|---|
| A | ≤ 10 |
| B | >10 and ≤15 |
| C | >15 and ≤25 |
| D | >25 and ≤35 |
| E | >35 and ≤50 |
| F | > 50 |

### 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.



# APPENDIX C

LEVEL OF SERVICE CALCULATIONS

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# APPENDIX C

## LEVEL OF SERVICE CALCULATIONS

- Existing Conditions



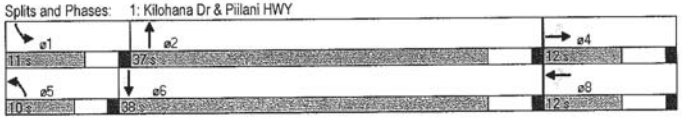
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 66 | 15 | 11 | 24 | 145 | 2 | 291 | 49 | 780 | 112 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 37.0 | 11.0 | 38.0 | 38.0 |
| Total Split (%) | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 16.7% | 61.7% | 18.3% | 63.3% | 63.3% |
| Yellow Time (s) | 4.0 | 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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | Max | None | Max | Max |
| Act Effct Green (s) | 6.7 | 6.7 | | 6.7 | 6.7 | 5.7 | 37.3 | 6.5 | 41.6 | 41.6 |
| Actuated g/C Ratio | 0.12 | 0.12 | | 0.12 | 0.12 | 0.10 | 0.66 | 0.11 | 0.73 | 0.73 |
| v/c Ratio | 0.45 | 0.11 | | 0.20 | 0.49 | 0.01 | 0.26 | 0.26 | 0.62 | 0.10 |
| Control Delay | 34.1 | 20.7 | | 26.5 | 10.8 | 24.5 | 7.4 | 27.5 | 9.8 | 1.6 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 34.1 | 20.7 | | 26.5 | 10.8 | 24.5 | 7.4 | 27.5 | 9.8 | 1.6 |
| LOS | C | C | | C | B | C | A | C | A | A |
| Approach Delay | | 30.7 | | 13.9 | | | 7.5 | | 9.8 | |
| Approach LOS | | C | | B | | | A | | A | |

**Intersection Summary**

Cycle Length: 60
Actuated Cycle Length: 56.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 11.0
Intersection Capacity Utilization 59.7%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service B

Splits and Phases: 1: Kilohana Dr & Piilani HWY



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 66 | 15 | 7 | 11 | 24 | 145 | 2 | 291 | 3 | 49 | 780 | 112 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1770 | | | 1834 | 1583 | 1770 | 1860 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.89 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1364 | 1770 | | | 1649 | 1583 | 1770 | 1860 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 72 | 16 | 8 | 12 | 26 | 158 | 2 | 316 | 3 | 53 | 848 | 122 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 144 | 0 | 0 | 0 | 0 | 0 | 41 |
| Lane Group Flow (vph) | 72 | 17 | 0 | 0 | 38 | 14 | 2 | 319 | 0 | 53 | 848 | 81 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 5.5 | 5.5 | | | 5.5 | 5.5 | 1.1 | 37.6 | | 4.0 | 40.5 | 40.5 |
| Effective Green, g (s) | 5.5 | 5.5 | | | 5.5 | 5.5 | 1.1 | 37.6 | | 4.0 | 40.5 | 40.5 |
| Actuated g/C Ratio | 0.09 | 0.09 | | | 0.09 | 0.09 | 0.02 | 0.62 | | 0.07 | 0.66 | 0.66 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 123 | 159 | | | 148 | 142 | 32 | 1145 | | 116 | 1235 | 1049 |
| v/s Ratio Prot | | 0.01 | | | | | 0.00 | 0.17 | | c0.03 | c0.46 | |
| v/s Ratio Perm | c0.05 | | | | 0.02 | 0.01 | | | | | | 0.05 |
| v/c Ratio | 0.59 | 0.11 | | | 0.26 | 0.10 | 0.06 | 0.28 | | 0.46 | 0.69 | 0.08 |
| Uniform Delay, d1 | 26.7 | 25.5 | | | 25.9 | 25.5 | 29.5 | 5.5 | | 27.5 | 6.4 | 3.7 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.9 | 0.3 | | | 0.9 | 0.3 | 0.8 | 0.6 | | 2.8 | 3.1 | 0.1 |
| Delay (s) | 33.6 | 25.8 | | | 26.8 | 25.8 | 30.3 | 6.1 | | 30.3 | 9.5 | 3.8 |
| Level of Service | C | C | | | C | C | C | A | | C | A | A |
| Approach Delay (s) | | 31.7 | | | 26.0 | | | 6.2 | | | 9.9 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM Average Control Delay | 12.4 | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | 0.68 | | | |
| Actuated Cycle Length (s) | 61.1 | Sum of lost time (s) | | 14.0 |
| Intersection Capacity Utilization | 59.7% | ICU Level of Service | | B |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 27 | 4 | 15 | 33 | 18 | 65 | 3 | 198 | 13 | 29 | 675 | 55 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 29 | 4 | 16 | 36 | 20 | 71 | 3 | 215 | 14 | 32 | 734 | 60 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | 2 | | | 2 | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1028 | 1018 | 734 | 1021 | 1018 | 215 | 734 | | | 215 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1028 | 1018 | 734 | 1021 | 1018 | 215 | 734 | | | 215 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 83 | 98 | 96 | 82 | 92 | 91 | 100 | | | 98 | | |
| cM capacity (veh/h) | 178 | 231 | 420 | 199 | 231 | 825 | 871 | | | 1355 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 50 | 126 | 3 | 215 | 14 | 32 | 734 | 60 |
| Volume Left | 29 | 36 | 3 | 0 | 0 | 32 | 0 | 0 |
| Volume Right | 16 | 71 | 0 | 0 | 14 | 0 | 0 | 60 |
| cSH | 274 | 479 | 871 | 1700 | 1700 | 1355 | 1700 | 1700 |
| Volume to Capacity | 0.18 | 0.26 | 0.00 | 0.13 | 0.01 | 0.02 | 0.43 | 0.04 |
| Queue Length 95th (ft) | 16 | 26 | 0 | 0 | 0 | 2 | 0 | 0 |
| Control Delay (s) | 23.9 | 17.8 | 9.1 | 0.0 | 0.0 | 7.7 | 0.0 | 0.0 |
| Lane LOS | C | C | A | | | A | | |
| Approach Delay (s) | 23.9 | 17.8 | 0.1 | | | 0.3 | | |
| Approach LOS | C | C | | | | | | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| Average Delay | 3.0 | | | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | | A | |
| Analysis Period (min) | 15 | | | | |

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 112 | 33 | 9 | 28 | 129 | 9 | 802 | 156 | 555 | 126 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 10.0 | 49.0 | 16.0 | 55.0 | 55.0 |
| Total Split (%) | 27.8% | 27.8% | 27.8% | 27.8% | 27.8% | 11.1% | 54.4% | 17.8% | 61.1% | 61.1% |
| Yellow Time (s) | 4.0 | 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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Min | Max | Min | Max | Max |
| Act Effct Green (s) | 12.6 | 12.6 | | 12.6 | 12.6 | 5.8 | 44.7 | 11.2 | 50.2 | 50.2 |
| Actuated g/C Ratio | 0.15 | 0.15 | | 0.15 | 0.15 | 0.07 | 0.54 | 0.14 | 0.61 | 0.61 |
| v/c Ratio | 0.59 | 0.16 | | 0.15 | 0.39 | 0.08 | 0.88 | 0.71 | 0.53 | 0.13 |
| Control Delay | 44.1 | 26.2 | | 30.9 | 9.0 | 39.4 | 30.0 | 52.4 | 12.4 | 2.0 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 44.1 | 26.2 | | 30.9 | 9.0 | 39.4 | 30.0 | 52.4 | 12.4 | 2.0 |
| LOS | D | C | | C | A | D | C | D | B | A |
| Approach Delay | | 39.3 | | 13.9 | | | 30.1 | | 18.3 | |
| Approach LOS | | D | | B | | | C | | B | |

**Intersection Summary**

Cycle Length: 90
Actuated Cycle Length: 82.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 24.5
Intersection Capacity Utilization 76.0%
Analysis Period (min) 15

Intersection LOS: C
ICU Level of Service D

Splits and Phases: 1: Kilohana Dr & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 112 | 33 | 8 | 9 | 28 | 129 | 9 | 802 | 10 | 156 | 555 | 126 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.97 | | | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1807 | | | 1840 | 1583 | 1770 | 1859 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.93 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1362 | 1807 | | | 1735 | 1583 | 1770 | 1859 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 122 | 36 | 9 | 10 | 30 | 140 | 10 | 872 | 11 | 170 | 603 | 137 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 54 |
| Lane Group Flow (vph) | 122 | 37 | 0 | 0 | 40 | 21 | 10 | 883 | 0 | 170 | 603 | 83 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 12.6 | 12.6 | | | 12.6 | 12.6 | 5.8 | 44.7 | | 11.2 | 50.1 | 50.1 |
| Effective Green, g (s) | 12.6 | 12.6 | | | 12.6 | 12.6 | 5.8 | 44.7 | | 11.2 | 50.1 | 50.1 |
| Actuated g/C Ratio | 0.15 | 0.15 | | | 0.15 | 0.15 | 0.07 | 0.54 | | 0.14 | 0.61 | 0.61 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 208 | 276 | | | 265 | 242 | 124 | 1007 | | 240 | 1131 | 961 |
| v/s Ratio Prot | | 0.02 | | | | | 0.01 | c0.47 | | c0.10 | 0.32 | |
| v/s Ratio Perm | c0.09 | | | | 0.02 | 0.01 | | | | | | 0.05 |
| v/c Ratio | 0.59 | 0.14 | | | 0.15 | 0.09 | 0.08 | 0.88 | | 0.71 | 0.53 | 0.09 |
| Uniform Delay, d1 | 32.5 | 30.2 | | | 30.3 | 30.0 | 35.9 | 16.5 | | 34.1 | 9.4 | 6.7 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.2 | 0.2 | | | 0.3 | 0.2 | 0.3 | 10.6 | | 9.2 | 1.8 | 0.2 |
| Delay (s) | 36.7 | 30.5 | | | 30.6 | 30.2 | 36.1 | 27.1 | | 43.3 | 11.2 | 6.9 |
| Level of Service | D | C | | | C | C | D | C | | D | B | A |
| Approach Delay (s) | | 35.0 | | | 30.3 | | | 27.2 | | | 16.6 | |
| Approach LOS | | D | | | C | | | C | | | B | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 23.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.80 | | |
| Actuated Cycle Length (s) | 82.5 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 76.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 61 | 26 | 14 | 13 | 14 | 43 | 7 | 666 | 38 | 76 | 434 | 39 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 66 | 28 | 15 | 14 | 15 | 47 | 8 | 724 | 41 | 83 | 472 | 42 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | 2 | | | 2 | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1384 | 1376 | 472 | 1390 | 1376 | 724 | 472 | | | 724 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1384 | 1376 | 472 | 1390 | 1376 | 724 | 472 | | | 724 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 27 | 78 | 97 | 84 | 88 | 89 | 99 | | | 91 | | |
| cM capacity (veh/h) | 91 | 131 | 592 | 90 | 131 | 426 | 1090 | | | 879 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|---|---|---|---|---|---|---|---|---|
| Volume Total | 110 | 76 | 8 | 724 | 41 | 83 | 472 | 42 |
| Volume Left | 66 | 14 | 8 | 0 | 0 | 83 | 0 | 0 |
| Volume Right | 15 | 47 | 0 | 0 | 41 | 0 | 0 | 42 |
| cSH | 115 | 288 | 1090 | 1700 | 1700 | 879 | 1700 | 1700 |
| Volume to Capacity | 0.95 | 0.26 | 0.01 | 0.43 | 0.02 | 0.09 | 0.28 | 0.02 |
| Queue Length 95th (ft) | 152 | 26 | 1 | 0 | 0 | 8 | 0 | 0 |
| Control Delay (s) | 141.7 | 27.7 | 8.3 | 0.0 | 0.0 | 9.5 | 0.0 | 0.0 |
| Lane LOS | F | D | A | | | A | | |
| Approach Delay (s) | 141.7 | 27.7 | 0.1 | | | 1.3 | | |
| Approach LOS | F | D | | | | | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 11.9 | | | |
| Intersection Capacity Utilization | 60.7% | ICU Level of Service | B | |
| Analysis Period (min) | 15 | | | |



AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

# APPENDIX C

## LEVEL OF SERVICE CALCULATIONS

- Base Year 2016 Traffic Operation without Project

Timings
1: Kilohana Dr & Piilani HWY

Austin, Tsutsumi & Associates, Inc.
6/26/2009

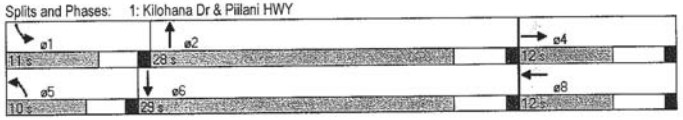
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 155 | 20 | 15 | 25 | 155 | 5 | 805 | 50 | 1395 | 150 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 28.0 | 11.0 | 29.0 | 29.0 |
| Total Split (%) | 23.5% | 23.5% | 23.5% | 23.5% | 23.5% | 19.6% | 54.9% | 21.6% | 56.9% | 56.9% |
| Yellow Time (s) | 4.0 | 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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | Max | None | Max | Max |
| Act Effct Green (s) | 7.1 | 7.1 | | 7.1 | 7.1 | 5.8 | 26.6 | 6.5 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.15 | 0.15 | | 0.15 | 0.15 | 0.12 | 0.55 | 0.14 | 0.60 | 0.60 |
| v/c Ratio | 0.84 | 0.12 | | 0.18 | 0.44 | 0.02 | 0.85 | 0.22 | 1.35 | 0.16 |
| Control Delay | 59.0 | 16.1 | | 20.6 | 8.6 | 19.8 | 24.3 | 21.1 | 182.6 | 2.0 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 59.0 | 16.1 | | 20.6 | 8.6 | 19.8 | 24.3 | 21.1 | 182.6 | 2.0 |
| LOS | E | B | | C | A | B | C | C | F | A |
| Approach Delay | | 51.9 | | 11.0 | | | 24.3 | | 160.6 | |
| Approach LOS | | D | | B | | | C | | F | |

Intersection Summary

Cycle Length: 51
Actuated Cycle Length: 48
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 103.1
Intersection Capacity Utilization 97.0%
Analysis Period (min) 15

Intersection LOS: F
ICU Level of Service F

Splits and Phases: 1: Kilohana Dr & Piilani HWY






HCM Signalized Intersection Capacity Analysis
1: Kilohana Dr & Piilani HWY

Austin, Tsutsumi & Associates, Inc.
6/26/2009

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 155 | 20 | 10 | 15 | 25 | 155 | 5 | 805 | 5 | 50 | 1395 | 150 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1770 | | | 1829 | 1583 | 1770 | 1861 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.86 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1358 | 1770 | | | 1611 | 1583 | 1770 | 1861 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 168 | 22 | 11 | 16 | 27 | 168 | 5 | 875 | 5 | 54 | 1516 | 163 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 145 | 0 | 0 | 0 | 0 | 0 | 69 |
| Lane Group Flow (vph) | 168 | 24 | 0 | 0 | 43 | 23 | 5 | 880 | 0 | 54 | 1516 | 94 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 7.1 | 7.1 | | | 7.1 | 7.1 | 1.1 | 27.3 | | 2.6 | 28.8 | 28.8 |
| Effective Green, g (s) | 7.1 | 7.1 | | | 7.1 | 7.1 | 1.1 | 27.3 | | 2.6 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.14 | 0.14 | | | 0.14 | 0.14 | 0.02 | 0.54 | | 0.05 | 0.56 | 0.56 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 189 | 246 | | | 224 | 220 | 38 | 996 | | 90 | 1052 | 894 |
| v/s Ratio Prot | | 0.01 | | | | | 0.00 | 0.47 | | c0.03 | c0.81 | |
| v/s Ratio Perm | c0.12 | | | | 0.03 | 0.01 | | | | | | 0.06 |
| v/c Ratio | 0.89 | 0.10 | | | 0.19 | 0.11 | 0.13 | 0.88 | | 0.60 | 1.44 | 0.11 |
| Uniform Delay, d1 | 21.6 | 19.1 | | | 19.4 | 19.2 | 24.5 | 10.4 | | 23.7 | 11.1 | 5.1 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 35.9 | 0.2 | | | 0.4 | 0.2 | 1.6 | 11.2 | | 10.8 | 203.9 | 0.2 |
| Delay (s) | 57.4 | 19.3 | | | 19.8 | 19.4 | 26.1 | 21.7 | | 34.4 | 215.0 | 5.4 |
| Level of Service | E | B | | | B | B | C | C | | C | F | A |
| Approach Delay (s) | | 51.2 | | | 19.5 | | | 21.7 | | | 189.7 | |
| Approach LOS | | D | | | B | | | C | | | F | |

Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 119.6 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.18 | | |
| Actuated Cycle Length (s) | 51.0 | Sum of lost time (s) | 9.0 |
| Intersection Capacity Utilization | 97.0% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

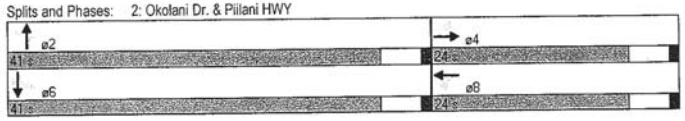
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 185 | 15 | 35 | 20 | 10 | 560 | 15 | 35 | 1210 | 135 |
| Turn Type | Perm | | Perm | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 8 | | 2 | | 2 | 6 | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 2 | 2 | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| Total Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 |
| Total Split (%) | 36.9% | 36.9% | 36.9% | 36.9% | 63.1% | 63.1% | 63.1% | 63.1% | 63.1% | 63.1% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min | Min | Min | Min |
| Act Effct Green (s) | 14.2 | 14.2 | | 14.2 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 |
| Actuated g/C Ratio | 0.23 | 0.23 | | 0.23 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| v/c Ratio | 0.68 | 0.11 | | 0.33 | 0.09 | 0.53 | 0.02 | 0.09 | 1.15 | 0.14 |
| Control Delay | 33.6 | 10.6 | | 11.5 | 8.9 | 10.0 | 3.4 | 7.1 | 94.0 | 1.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.6 | 10.6 | | 11.5 | 8.9 | 10.0 | 3.4 | 7.1 | 94.0 | 1.8 |
| LOS | C | B | | B | A | A | A | A | F | A |
| Approach Delay | | 29.6 | | 11.5 | | 9.8 | | | 82.8 | |
| Approach LOS | | C | | B | | A | | | F | |

**Intersection Summary**

Cycle Length: 65
Actuated Cycle Length: 63.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 55.3
Intersection Capacity Utilization 88.9%
Analysis Period (min) 15

Intersection LOS: E
ICU Level of Service E

Splits and Phases: 2: Okolani Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 185 | 15 | 25 | 35 | 20 | 70 | 10 | 560 | 15 | 35 | 1210 | 135 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.91 | | | 0.92 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1687 | | | 1698 | | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.71 | 1.00 | | | 0.91 | | 0.10 | 1.00 | 1.00 | 0.35 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1314 | 1687 | | | 1564 | | 192 | 1863 | 1583 | 655 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 201 | 16 | 27 | 38 | 22 | 76 | 11 | 609 | 16 | 38 | 1315 | 147 |
| RTOR Reduction (vph) | 0 | 21 | 0 | 0 | 59 | 0 | 0 | 0 | 6 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 201 | 22 | 0 | 0 | 77 | 0 | 11 | 609 | 10 | 38 | 1315 | 91 |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 14.2 | 14.2 | | | 14.2 | | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 |
| Effective Green, g (s) | 14.2 | 14.2 | | | 14.2 | | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 |
| Actuated g/C Ratio | 0.23 | 0.23 | | | 0.23 | | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 296 | 380 | | | 352 | | 118 | 1149 | 976 | 404 | 1149 | 976 |
| v/s Ratio Prot | | 0.01 | | | | | | 0.33 | | | c0.71 | |
| v/s Ratio Perm | c0.15 | | | | 0.05 | | 0.06 | | 0.01 | 0.06 | | 0.06 |
| v/c Ratio | 0.68 | 0.06 | | | 0.22 | | 0.09 | 0.53 | 0.01 | 0.09 | 1.14 | 0.09 |
| Uniform Delay, d1 | 22.4 | 19.2 | | | 19.9 | | 4.9 | 6.9 | 4.7 | 4.9 | 12.1 | 4.9 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.1 | 0.1 | | | 0.3 | | 0.3 | 0.5 | 0.0 | 0.1 | 75.7 | 0.0 |
| Delay (s) | 28.4 | 19.3 | | | 20.2 | | 5.3 | 7.4 | 4.7 | 5.0 | 87.8 | 5.0 |
| Level of Service | C | B | | | C | | A | A | A | A | F | A |
| Approach Delay (s) | | 26.8 | | | 20.2 | | | 7.3 | | | 77.6 | |
| Approach LOS | | C | | | C | | | A | | | E | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 51.8 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 1.02 | | |
| Actuated Cycle Length (s) | 63.1 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 88.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

## Timings
## 3: Wailea Ike Dr. & Piilani HWY

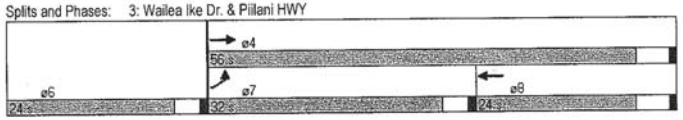
7/7/2009

| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 525 | 55 | 40 | 110 | 150 | 1210 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | | |
| Permitted Phases | | | | 8 | 6 | Free |
| Detector Phase | 7 | 4 | 8 | 8 | 6 | |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | |
| Minimum Split (s) | 10.0 | 24.0 | 24.0 | 24.0 | 24.0 | |
| Total Split (s) | 32.0 | 56.0 | 24.0 | 24.0 | 24.0 | 0.0 |
| Total Split (%) | 40.0% | 70.0% | 30.0% | 30.0% | 30.0% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lead/Lag | Lead | | Lag | Lag | | |
| Lead-Lag Optimize? | Yes | | Yes | Yes | | |
| Recall Mode | None | None | None | None | None | |
| Act Effct Green (s) | 25.4 | 32.8 | 7.3 | 7.3 | 10.7 | 50.6 |
| Actuated g/C Ratio | 0.50 | 0.65 | 0.14 | 0.14 | 0.20 | 1.00 |
| v/c Ratio | 0.64 | 0.05 | 0.17 | 0.37 | 0.45 | 0.83 |
| Control Delay | 17.4 | 4.2 | 25.5 | 9.7 | 25.5 | 5.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 17.4 | 4.2 | 25.5 | 9.7 | 25.5 | 5.9 |
| LOS | B | A | C | A | C | A |
| Approach Delay | | 16.1 | 13.9 | | 8.1 | |
| Approach LOS | | B | B | | A | |

### Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 50.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 10.7 — Intersection LOS: B
Intersection Capacity Utilization 51.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY






## HCM Signalized Intersection Capacity Analysis
## 3: Wailea Ike Dr. & Piilani HWY

7/7/2009

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 525 | 55 | 40 | 110 | 150 | 1210 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 571 | 60 | 43 | 120 | 163 | 1315 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 108 | 0 | 0 |
| Lane Group Flow (vph) | 571 | 60 | 43 | 12 | 163 | 1315 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | | |
| Permitted Phases | | | | 8 | 6 | Free |
| Actuated Green, G (s) | 25.4 | 34.6 | 5.2 | 5.2 | 8.1 | 51.7 |
| Effective Green, g (s) | 25.4 | 34.6 | 5.2 | 5.2 | 8.1 | 51.7 |
| Actuated g/C Ratio | 0.49 | 0.67 | 0.10 | 0.10 | 0.16 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 870 | 1247 | 187 | 159 | 277 | 1583 |
| v/s Ratio Prot | 0.32 | 0.03 | 0.02 | | | |
| v/s Ratio Perm | | | | 0.01 | 0.09 | c0.83 |
| v/c Ratio | 0.66 | 0.05 | 0.23 | 0.08 | 0.59 | 0.83 |
| Uniform Delay, d1 | 9.9 | 2.9 | 21.4 | 21.1 | 20.3 | 0.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.8 | 0.0 | 0.6 | 0.2 | 3.2 | 5.2 |
| Delay (s) | 11.7 | 2.9 | 22.0 | 21.3 | 23.4 | 5.2 |
| Level of Service | B | A | C | C | C | A |
| Approach Delay (s) | | 10.8 | 21.5 | | 7.2 | |
| Approach LOS | | B | C | | A | |

### Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 9.3 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 51.7 | Sum of lost time (s) | 0.0 |
| Intersection Capacity Utilization | 51.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

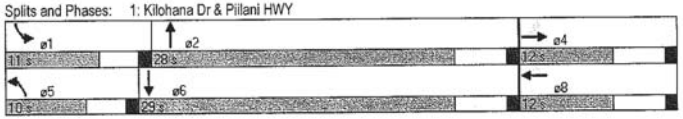
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 175 | 35 | 10 | 30 | 135 | 20 | 1650 | 160 | 1380 | 230 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 28.0 | 11.0 | 29.0 | 29.0 |
| Total Split (%) | 23.5% | 23.5% | 23.5% | 23.5% | 23.5% | 19.6% | 54.9% | 21.6% | 56.9% | 56.9% |
| Yellow Time (s) | 4.0 | 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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | Max | None | Max | Max |
| Act Effct Green (s) | 7.0 | 7.0 | | 7.0 | 7.0 | 5.8 | 24.6 | 7.0 | 33.6 | 33.6 |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | 0.11 | 0.47 | 0.13 | 0.64 | 0.64 |
| v/c Ratio | 1.05 | 0.20 | | 0.20 | 0.43 | 0.11 | 2.08 | 0.74 | 1.26 | 0.23 |
| Control Delay | 110.2 | 18.4 | | 21.9 | 9.1 | 21.6 | 508.8 | 43.3 | 142.3 | 1.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 110.2 | 18.4 | | 21.9 | 9.1 | 21.6 | 508.8 | 43.3 | 142.3 | 1.8 |
| LOS | F | B | | C | A | C | F | D | F | A |
| Approach Delay | | 91.4 | | 12.0 | | | 502.9 | | 115.1 | |
| Approach LOS | | F | | B | | | F | | F | |

**Intersection Summary**

Cycle Length: 51
Actuated Cycle Length: 52.7
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 2.08
Intersection Signal Delay: 278.7
Intersection LOS: F
Intersection Capacity Utilization 124.6%
ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 1: Kilohana Dr & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 175 | 35 | 10 | 10 | 30 | 135 | 20 | 1650 | 15 | 160 | 1380 | 230 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.97 | | | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1800 | | | 1840 | 1583 | 1770 | 1860 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.90 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1357 | 1800 | | | 1682 | 1583 | 1770 | 1860 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 190 | 38 | 11 | 11 | 33 | 147 | 22 | 1793 | 16 | 174 | 1500 | 250 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 0 | 129 | 0 | 1 | 0 | 0 | 0 | 97 |
| Lane Group Flow (vph) | 190 | 39 | 0 | 0 | 44 | 18 | 22 | 1808 | 0 | 174 | 1500 | 153 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | | | | 6 |
| Actuated Green, G (s) | 7.0 | 7.0 | | | 7.0 | 7.0 | 1.2 | 27.8 | | 7.0 | 33.6 | 33.6 |
| Effective Green, g (s) | 7.0 | 7.0 | | | 7.0 | 7.0 | 1.2 | 27.8 | | 7.0 | 33.6 | 33.6 |
| Actuated g/C Ratio | 0.13 | 0.13 | | | 0.13 | 0.13 | 0.02 | 0.50 | | 0.13 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 170 | 226 | | | 211 | 199 | 38 | 927 | | 222 | 1122 | 953 |
| v/s Ratio Prot | | 0.02 | | | | | 0.01 | c0.97 | | c0.10 | c0.81 | |
| v/s Ratio Perm | c0.14 | | | | 0.03 | 0.01 | | | | | | 0.10 |
| v/c Ratio | 1.12 | 0.17 | | | 0.21 | 0.09 | 0.58 | 1.95 | | 0.78 | 1.34 | 0.16 |
| Uniform Delay, d1 | 24.4 | 21.8 | | | 21.9 | 21.6 | 27.0 | 14.0 | | 23.7 | 11.1 | 4.9 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 104.1 | 0.4 | | | 0.5 | 0.2 | 19.6 | 431.9 | | 16.4 | 157.7 | 0.4 |
| Delay (s) | 128.5 | 22.2 | | | 22.4 | 21.8 | 46.6 | 445.9 | | 40.1 | 168.8 | 5.2 |
| Level of Service | F | C | | | C | C | D | F | | D | F | A |
| Approach Delay (s) | | 106.7 | | | 21.9 | | | 441.1 | | | 135.9 | |
| Approach LOS | | F | | | C | | | F | | | F | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 262.6 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.86 | | |
| Actuated Cycle Length (s) | 55.8 | Sum of lost time (s) | 19.0 |
| Intersection Capacity Utilization | 124.6% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

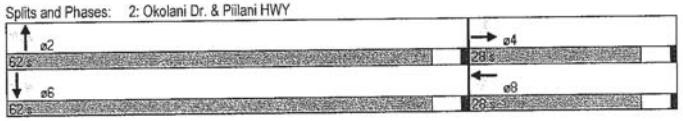
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Volume (vph) | 250 | 35 | 15 | 20 | 40 | 1330 | 40 | 80 | 1030 | 270 |
| Turn Type | Perm | | Perm | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | 8 | | 2 | | | 6 | |
| Permitted Phases | 4 | | 8 | | 2 | | 2 | 6 | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 2 | 2 | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 33.0 | 33.0 | 33.0 |
| Total Split (s) | 28.0 | 28.0 | 28.0 | 28.0 | 62.0 | 62.0 | 62.0 | 62.0 | 62.0 | 62.0 |
| Total Split (%) | 31.1% | 31.1% | 31.1% | 31.1% | 68.9% | 68.9% | 68.9% | 68.9% | 68.9% | 68.9% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min | Min | Min | Min |
| Act Effct Green (s) | 20.7 | 20.7 | | 20.7 | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 |
| Actuated g/C Ratio | 0.23 | 0.23 | | 0.23 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| v/c Ratio | 0.85 | 0.17 | | 0.21 | 0.52 | 1.18 | 0.04 | 1.05 | 0.92 | 0.26 |
| Control Delay | 57.6 | 17.1 | | 14.9 | 37.2 | 110.6 | 2.1 | 139.2 | 28.0 | 1.4 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 57.6 | 17.1 | | 14.9 | 37.2 | 110.6 | 2.1 | 139.2 | 28.0 | 1.4 |
| LOS | E | B | | B | D | F | A | F | C | A |
| Approach Delay | | 49.2 | | 14.9 | | 105.5 | | | 29.2 | |
| Approach LOS | | D | | B | | F | | | C | |

**Intersection Summary**

Cycle Length: 90
Actuated Cycle Length: 89.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 64.6 — Intersection LOS: E
Intersection Capacity Utilization 98.9% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 2: Okolani Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 250 | 35 | 30 | 15 | 20 | 45 | 40 | 1330 | 40 | 80 | 1030 | 270 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.93 | | | 0.92 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1733 | | | 1705 | | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.74 | 1.00 | | | 0.95 | | 0.07 | 1.00 | 1.00 | 0.07 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1375 | 1733 | | | 1634 | | 128 | 1863 | 1583 | 128 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 272 | 38 | 33 | 16 | 22 | 49 | 43 | 1446 | 43 | 87 | 1120 | 293 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 38 | 0 | 0 | 0 | 15 | 0 | 0 | 101 |
| Lane Group Flow (vph) | 272 | 46 | 0 | 0 | 49 | 0 | 43 | 1446 | 28 | 87 | 1120 | 192 |
| Turn Type | Perm | | | Perm | | | Perm | | Perm | Perm | | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 20.7 | 20.7 | | | 20.7 | | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 |
| Effective Green, g (s) | 20.7 | 20.7 | | | 20.7 | | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 | 58.4 |
| Actuated g/C Ratio | 0.23 | 0.23 | | | 0.23 | | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 319 | 403 | | | 380 | | 84 | 1221 | 1038 | 84 | 1221 | 1038 |
| v/s Ratio Prot | | 0.03 | | | | | | c0.78 | | | 0.60 | |
| v/s Ratio Perm | c0.20 | | | | 0.03 | | 0.34 | | 0.02 | 0.68 | | 0.12 |
| v/c Ratio | 0.85 | 0.11 | | | 0.13 | | 0.51 | 1.18 | 0.03 | 1.04 | 0.92 | 0.19 |
| Uniform Delay, d1 | 32.7 | 27.0 | | | 27.1 | | 8.0 | 15.3 | 5.4 | 15.3 | 13.3 | 6.0 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 19.2 | 0.1 | | | 0.2 | | 5.2 | 91.5 | 0.0 | 108.3 | 10.8 | 0.1 |
| Delay (s) | 52.0 | 27.1 | | | 27.2 | | 13.1 | 106.9 | 5.4 | 123.6 | 24.1 | 6.1 |
| Level of Service | D | C | | | C | | B | F | A | F | C | A |
| Approach Delay (s) | | 46.8 | | | 27.2 | | | 101.4 | | | 26.4 | |
| Approach LOS | | D | | | C | | | F | | | C | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 61.6 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.10 | | |
| Actuated Cycle Length (s) | 89.1 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 98.9% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

## Timings
## 3: Wailea Ike Dr. & Piilani HWY

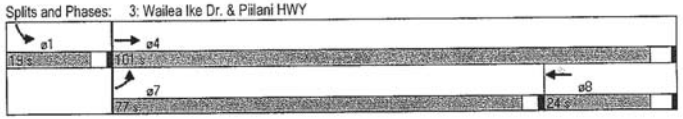
7/7/2009

| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 1305 | 80 | 100 | 285 | 255 | 880 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Detector Phase | 7 | 4 | 8 | 8 | 1 | |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 7.0 | |
| Total Split (s) | 77.0 | 101.0 | 24.0 | 24.0 | 19.0 | 0.0 |
| Total Split (%) | 64.2% | 84.2% | 20.0% | 20.0% | 15.8% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lead/Lag | Lead | | Lag | Lag | | |
| Lead-Lag Optimize? | | | | | | |
| Recall Mode | None | None | None | None | None | |
| Act Effct Green (s) | 73.1 | 90.1 | 13.0 | 13.0 | 15.0 | 114.1 |
| Actuated g/C Ratio | 0.64 | 0.79 | 0.11 | 0.11 | 0.13 | 1.00 |
| v/c Ratio | 1.25 | 0.06 | 0.51 | 0.81 | 1.19 | 0.60 |
| Control Delay | 143.0 | 2.7 | 55.9 | 31.7 | 163.4 | 1.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 143.0 | 2.7 | 55.9 | 31.7 | 163.4 | 1.7 |
| LOS | F | A | E | C | F | A |
| Approach Delay | | 134.9 | 38.0 | | 38.0 | |
| Approach LOS | | F | D | | D | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 114.1
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.25
Intersection Signal Delay: 84.2 — Intersection LOS: F
Intersection Capacity Utilization 100.6% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY






## HCM Signalized Intersection Capacity Analysis
## 3: Wailea Ike Dr. & Piilani HWY

7/7/2009

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 1305 | 80 | 100 | 285 | 255 | 880 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1418 | 87 | 109 | 310 | 277 | 957 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 200 | 0 | 0 |
| Lane Group Flow (vph) | 1418 | 87 | 109 | 110 | 277 | 957 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Actuated Green, G (s) | 73.1 | 90.1 | 13.0 | 13.0 | 15.0 | 114.1 |
| Effective Green, g (s) | 73.1 | 90.1 | 13.0 | 13.0 | 15.0 | 114.1 |
| Actuated g/C Ratio | 0.64 | 0.79 | 0.11 | 0.11 | 0.13 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1134 | 1471 | 212 | 180 | 233 | 1583 |
| v/s Ratio Prot | c0.80 | 0.05 | 0.06 | | c0.16 | |
| v/s Ratio Perm | | | | 0.07 | | c0.60 |
| v/c Ratio | 1.25 | 0.06 | 0.51 | 0.61 | 1.19 | 0.60 |
| Uniform Delay, d1 | 20.5 | 2.6 | 47.6 | 48.1 | 49.5 | 0.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 120.1 | 0.0 | 2.1 | 5.7 | 119.5 | 1.7 |
| Delay (s) | 140.6 | 2.7 | 49.7 | 53.9 | 169.1 | 1.7 |
| Level of Service | F | A | D | D | F | A |
| Approach Delay (s) | | 132.7 | 52.8 | | 39.3 | |
| Approach LOS | | F | D | | D | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 85.6 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.13 | | |
| Actuated Cycle Length (s) | 114.1 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 100.6% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS • SURVEYORS

# APPENDIX C

## LEVEL OF SERVICE CALCULATIONS

- Year 2016 Traffic Operations with Project



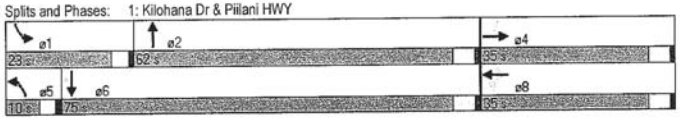
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 155 | 20 | 15 | 25 | 155 | 5 | 805 | 5 | 50 | 1395 | 150 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | 2 | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 10.0 | 62.0 | 62.0 | 23.0 | 75.0 | 75.0 |
| Total Split (%) | 29.2% | 29.2% | 29.2% | 29.2% | 29.2% | 8.3% | 51.7% | 51.7% | 19.2% | 62.5% | 62.5% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Min | Max | Max | Min | Max | Max |
| Act Effct Green (s) | 18.5 | 18.5 | | 18.5 | 18.5 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Actuated g/C Ratio | 0.17 | 0.17 | | 0.17 | 0.17 | 0.05 | 0.62 | 0.62 | 0.08 | 0.65 | 0.65 |
| v/c Ratio | 0.72 | 0.11 | | 0.15 | 0.41 | 0.05 | 0.40 | 0.01 | 0.38 | 0.66 | 0.15 |
| Control Delay | 60.3 | 27.9 | | 38.4 | 8.8 | 52.8 | 12.2 | 7.0 | 56.0 | 14.5 | 1.9 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 60.3 | 27.9 | | 38.4 | 8.8 | 52.8 | 12.2 | 7.0 | 56.0 | 14.5 | 1.9 |
| LOS | E | C | | D | A | D | B | A | E | B | A |
| Approach Delay | | 55.0 | | 14.9 | | | 12.4 | | | 14.6 | |
| Approach LOS | | D | | B | | | B | | | B | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 108.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 16.7
Intersection Capacity Utilization 65.1%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 1: Kilohana Dr & Piilani HWY



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 155 | 20 | 10 | 15 | 25 | 155 | 5 | 805 | 5 | 50 | 1395 | 150 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.95 | | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1770 | | | 1829 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.91 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1358 | 1770 | | | 1688 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 168 | 22 | 11 | 16 | 27 | 168 | 5 | 875 | 5 | 54 | 1516 | 163 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 139 | 0 | 0 | 2 | 0 | 0 | 57 |
| Lane Group Flow (vph) | 168 | 24 | 0 | 0 | 43 | 29 | 5 | 875 | 3 | 54 | 1516 | 106 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 18.5 | 18.5 | | | 18.5 | 18.5 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Effective Green, g (s) | 18.5 | 18.5 | | | 18.5 | 18.5 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Actuated g/C Ratio | 0.17 | 0.17 | | | 0.17 | 0.17 | 0.05 | 0.62 | 0.62 | 0.08 | 0.65 | 0.65 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 232 | 302 | | | 288 | 270 | 93 | 2194 | 981 | 142 | 2292 | 1025 |
| v/s Ratio Prot | | 0.01 | | | | | 0.00 | 0.25 | | c0.03 | c0.43 | |
| v/s Ratio Perm | c0.12 | | | | 0.03 | 0.02 | | | 0.00 | | | 0.07 |
| v/c Ratio | 0.72 | 0.08 | | | 0.15 | 0.11 | 0.05 | 0.40 | 0.00 | 0.38 | 0.66 | 0.10 |
| Uniform Delay, d1 | 42.5 | 37.8 | | | 38.3 | 38.0 | 48.8 | 10.4 | 7.8 | 47.3 | 11.8 | 7.2 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 10.7 | 0.1 | | | 0.2 | 0.2 | 0.2 | 0.5 | 0.0 | 1.7 | 1.5 | 0.2 |
| Delay (s) | 53.2 | 37.9 | | | 38.5 | 38.1 | 49.0 | 10.9 | 7.9 | 49.0 | 13.3 | 7.4 |
| Level of Service | D | D | | | D | D | D | B | A | D | B | A |
| Approach Delay (s) | | 50.7 | | | 38.2 | | | 11.1 | | | 13.9 | |
| Approach LOS | | D | | | D | | | B | | | B | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM Average Control Delay | 17.2 | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | 0.66 | | | |
| Actuated Cycle Length (s) | 108.4 | Sum of lost time (s) | | 14.0 |
| Intersection Capacity Utilization | 65.1% | ICU Level of Service | | C |
| Analysis Period (min) | 15 | | | |
| c Critical Lane Group | | | | |

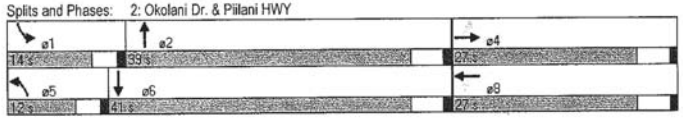




| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 185 | 15 | 35 | 20 | 10 | 560 | 35 | 1210 |
| Turn Type | Perm | | Perm | | Prot | | Prot | |
| Protected Phases | | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | 4 | | 8 | | | | | |
| Detector Phase | 4 | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 10.0 | 24.0 | 10.0 | 24.0 |
| Total Split (s) | 27.0 | 27.0 | 27.0 | 27.0 | 12.0 | 39.0 | 14.0 | 41.0 |
| Total Split (%) | 33.8% | 33.8% | 33.8% | 33.8% | 15.0% | 48.8% | 17.5% | 51.3% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Max | None | Max |
| Act Effct Green (s) | 15.7 | 15.7 | | 15.7 | 6.1 | 37.7 | 7.1 | 40.2 |
| Actuated g/C Ratio | 0.23 | 0.23 | | 0.23 | 0.09 | 0.55 | 0.10 | 0.59 |
| v/c Ratio | 0.69 | 0.10 | | 0.32 | 0.07 | 0.32 | 0.21 | 0.71 |
| Control Delay | 36.9 | 12.4 | | 13.0 | 32.8 | 11.0 | 32.7 | 14.5 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 36.9 | 12.4 | | 13.0 | 32.8 | 11.0 | 32.7 | 14.5 |
| LOS | D | B | | B | C | B | C | B |
| Approach Delay | | 32.6 | | 13.0 | | 11.4 | | 14.9 |
| Approach LOS | | C | | B | | B | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Cycle Length: 80 | | | |
| Actuated Cycle Length: 68 | | | |
| Natural Cycle: 70 | | | |
| Control Type: Actuated-Uncoordinated | | | |
| Maximum v/c Ratio: 0.71 | | | |
| Intersection Signal Delay: 15.6 | | Intersection LOS: B | |
| Intersection Capacity Utilization 63.0% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Okolani Dr. & Piilani HWY



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 185 | 15 | 25 | 35 | 20 | 70 | 10 | 560 | 15 | 35 | 1210 | 135 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.91 | | | 0.92 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1687 | | | 1698 | | 1770 | 3526 | | 1770 | 3486 | |
| Flt Permitted | 0.68 | 1.00 | | | 0.91 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1263 | 1687 | | | 1566 | | 1770 | 3526 | | 1770 | 3486 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 201 | 16 | 27 | 38 | 22 | 76 | 11 | 609 | 16 | 38 | 1315 | 147 |
| RTOR Reduction (vph) | 0 | 21 | 0 | 0 | 59 | 0 | 0 | 2 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 201 | 22 | 0 | 0 | 77 | 0 | 11 | 623 | 0 | 38 | 1454 | 0 |
| Turn Type | Perm | | | Perm | | | Prot | | | Prot | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | | | |
| Actuated Green, G (s) | 15.7 | 15.7 | | | 15.7 | | 1.2 | 38.4 | | 3.0 | 40.2 | |
| Effective Green, g (s) | 15.7 | 15.7 | | | 15.7 | | 1.2 | 38.4 | | 3.0 | 40.2 | |
| Actuated g/C Ratio | 0.22 | 0.22 | | | 0.22 | | 0.02 | 0.54 | | 0.04 | 0.57 | |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 279 | 373 | | | 346 | | 30 | 1904 | | 75 | 1971 | |
| v/s Ratio Prot | | 0.01 | | | | | 0.01 | 0.18 | | c0.02 | c0.42 | |
| v/s Ratio Perm | c0.16 | | | | 0.05 | | | | | | | |
| v/c Ratio | 0.72 | 0.06 | | | 0.22 | | 0.37 | 0.33 | | 0.51 | 0.74 | |
| Uniform Delay, d1 | 25.7 | 21.9 | | | 22.7 | | 34.6 | 9.1 | | 33.3 | 11.5 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.8 | 0.1 | | | 0.3 | | 7.4 | 0.5 | | 5.3 | 2.5 | |
| Delay (s) | 34.5 | 21.9 | | | 23.0 | | 42.0 | 9.6 | | 38.6 | 14.0 | |
| Level of Service | C | C | | | C | | D | A | | D | B | |
| Approach Delay (s) | | 32.3 | | | 23.0 | | | 10.2 | | | 14.7 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM Average Control Delay | 15.7 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 71.1 | Sum of lost time (s) | 9.0 |
| Intersection Capacity Utilization | 63.0% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

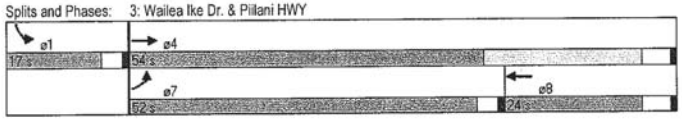




| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 525 | 55 | 40 | 110 | 150 | 1210 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Detector Phase | 7 | 4 | 8 | 8 | 1 | |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 7.0 | |
| Total Split (s) | 52.0 | 54.0 | 24.0 | 24.0 | 17.0 | 0.0 |
| Total Split (%) | 55.9% | 58.1% | 25.8% | 25.8% | 18.3% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lead/Lag | Lead | | Lag | Lag | | |
| Lead-Lag Optimize? | | | | | | |
| Recall Mode | None | None | None | None | None | |
| Act Effct Green (s) | 14.2 | 21.4 | 7.7 | 7.7 | 10.8 | 38.4 |
| Actuated g/C Ratio | 0.37 | 0.56 | 0.20 | 0.20 | 0.28 | 1.00 |
| v/c Ratio | 0.45 | 0.06 | 0.11 | 0.29 | 0.33 | 0.83 |
| Control Delay | 13.2 | 4.8 | 18.2 | 7.1 | 16.9 | 6.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 13.2 | 4.8 | 18.2 | 7.1 | 16.9 | 6.3 |
| LOS | B | A | B | A | B | A |
| Approach Delay | | 12.4 | 10.0 | | 7.5 | |
| Approach LOS | | B | B | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Cycle Length: 93 | | | |
| Actuated Cycle Length: 38.4 | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Uncoordinated | | | |
| Maximum v/c Ratio: 0.83 | | | |
| Intersection Signal Delay: 9.0 | | Intersection LOS: A | |
| Intersection Capacity Utilization 37.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 525 | 55 | 40 | 110 | 150 | 1210 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 3433 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 3433 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 571 | 60 | 43 | 120 | 163 | 1315 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 105 | 0 | 0 |
| Lane Group Flow (vph) | 571 | 60 | 43 | 15 | 163 | 1315 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Actuated Green, G (s) | 14.2 | 23.0 | 4.8 | 4.8 | 7.2 | 39.2 |
| Effective Green, g (s) | 14.2 | 23.0 | 4.8 | 4.8 | 7.2 | 39.2 |
| Actuated g/C Ratio | 0.36 | 0.59 | 0.12 | 0.12 | 0.18 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1244 | 1093 | 228 | 194 | 325 | 1583 |
| v/s Ratio Prot | 0.17 | 0.03 | 0.02 | | 0.09 | |
| v/s Ratio Perm | | | | 0.01 | | c0.83 |
| v/c Ratio | 0.46 | 0.05 | 0.19 | 0.08 | 0.50 | 0.83 |
| Uniform Delay, d1 | 9.6 | 3.5 | 15.5 | 15.2 | 14.4 | 0.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.3 | 0.0 | 0.4 | 0.2 | 1.2 | 5.2 |
| Delay (s) | 9.8 | 3.5 | 15.9 | 15.4 | 15.6 | 5.2 |
| Level of Service | A | A | B | B | B | A |
| Approach Delay (s) | | 9.2 | 15.5 | | 6.4 | |
| Approach LOS | | A | B | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM Average Control Delay | 7.8 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 39.2 | Sum of lost time (s) | 0.0 |
| Intersection Capacity Utilization | 37.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |





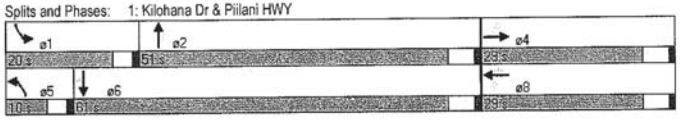
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 175 | 35 | 10 | 30 | 135 | 20 | 1650 | 15 | 160 | 1380 | 230 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | 2 | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 10.0 | 51.0 | 51.0 | 20.0 | 61.0 | 61.0 |
| Total Split (%) | 29.0% | 29.0% | 29.0% | 29.0% | 29.0% | 10.0% | 51.0% | 51.0% | 20.0% | 61.0% | 61.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Min | Max | Max | Min | Max | Max |
| Act Effct Green (s) | 17.7 | 17.7 | | 17.7 | 17.7 | 5.9 | 48.7 | 48.7 | 13.4 | 56.2 | 56.2 |
| Actuated g/C Ratio | 0.19 | 0.19 | | 0.19 | 0.19 | 0.06 | 0.52 | 0.52 | 0.14 | 0.60 | 0.60 |
| v/c Ratio | 0.74 | 0.14 | | 0.13 | 0.35 | 0.20 | 0.98 | 0.02 | 0.69 | 0.71 | 0.24 |
| Control Delay | 53.6 | 26.2 | | 31.7 | 7.9 | 48.1 | 40.5 | 8.5 | 53.4 | 16.3 | 2.0 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 53.6 | 26.2 | | 31.7 | 7.9 | 48.1 | 40.5 | 8.5 | 53.4 | 16.3 | 2.0 |
| LOS | D | C | | C | A | D | D | A | D | B | A |
| Approach Delay | | 48.0 | | 13.4 | | | 40.3 | | | 17.8 | |
| Approach LOS | | D | | B | | | D | | | B | |

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 93.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 29.2
Intersection Capacity Utilization 82.5%
Analysis Period (min) 15

Intersection LOS: C
ICU Level of Service E

Splits and Phases: 1: Kilohana Dr & Piilani HWY



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 175 | 35 | 10 | 10 | 30 | 135 | 20 | 1650 | 15 | 160 | 1380 | 230 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.97 | | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1800 | | | 1840 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.94 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1357 | 1800 | | | 1749 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 190 | 38 | 11 | 11 | 33 | 147 | 22 | 1793 | 16 | 174 | 1500 | 250 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 119 | 0 | 0 | 6 | 0 | 0 | 100 |
| Lane Group Flow (vph) | 190 | 40 | 0 | 0 | 44 | 28 | 22 | 1793 | 10 | 174 | 1500 | 150 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 17.7 | 17.7 | | | 17.7 | 17.7 | 5.9 | 48.7 | 48.7 | 13.4 | 56.2 | 56.2 |
| Effective Green, g (s) | 17.7 | 17.7 | | | 17.7 | 17.7 | 5.9 | 48.7 | 48.7 | 13.4 | 56.2 | 56.2 |
| Actuated g/C Ratio | 0.19 | 0.19 | | | 0.19 | 0.19 | 0.06 | 0.52 | 0.52 | 0.14 | 0.60 | 0.60 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 256 | 340 | | | 330 | 299 | 111 | 1837 | 822 | 253 | 2120 | 948 |
| v/s Ratio Prot | | 0.02 | | | | | 0.01 | c0.51 | | c0.10 | 0.42 | |
| v/s Ratio Perm | c0.14 | | | | 0.03 | 0.02 | | | 0.01 | | | 0.09 |
| v/c Ratio | 0.74 | 0.12 | | | 0.13 | 0.09 | 0.20 | 0.98 | 0.01 | 0.69 | 0.71 | 0.16 |
| Uniform Delay, d1 | 35.9 | 31.6 | | | 31.7 | 31.4 | 41.7 | 22.0 | 10.9 | 38.2 | 13.1 | 8.3 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 11.0 | 0.2 | | | 0.2 | 0.1 | 0.9 | 16.0 | 0.0 | 7.8 | 2.0 | 0.4 |
| Delay (s) | 46.9 | 31.7 | | | 31.9 | 31.6 | 42.6 | 38.0 | 10.9 | 45.8 | 15.1 | 8.7 |
| Level of Service | D | C | | | C | C | D | D | B | D | B | A |
| Approach Delay (s) | | 43.8 | | | 31.6 | | | 37.8 | | | 17.0 | |
| Approach LOS | | D | | | C | | | D | | | B | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM Average Control Delay | 28.3 | HCM Level of Service | C | |
| HCM Volume to Capacity ratio | 0.88 | | | |
| Actuated Cycle Length (s) | 93.8 | Sum of lost time (s) | 14.0 | |
| Intersection Capacity Utilization | 82.5% | ICU Level of Service | E | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

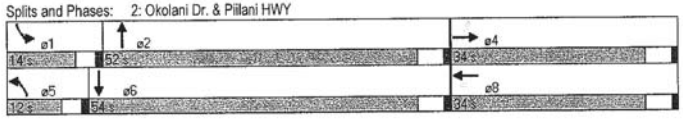




| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 250 | 35 | 15 | 20 | 40 | 1330 | 80 | 1030 |
| Turn Type | Perm | | Perm | | Prot | | Prot | |
| Protected Phases | | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | 4 | | 8 | | | | | |
| Detector Phase | 4 | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 10.0 | 24.0 | 10.0 | 24.0 |
| Total Split (s) | 34.0 | 34.0 | 34.0 | 34.0 | 12.0 | 52.0 | 14.0 | 54.0 |
| Total Split (%) | 34.0% | 34.0% | 34.0% | 34.0% | 12.0% | 52.0% | 14.0% | 54.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Max | None | Max |
| Act Effct Green (s) | 22.5 | 22.5 | | 22.5 | 7.1 | 48.5 | 8.8 | 52.2 |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.25 | 0.08 | 0.53 | 0.10 | 0.57 |
| v/c Ratio | 0.81 | 0.16 | | 0.20 | 0.31 | 0.80 | 0.51 | 0.71 |
| Control Delay | 52.0 | 17.3 | | 15.2 | 49.0 | 24.1 | 52.7 | 18.9 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 52.0 | 17.3 | | 15.2 | 49.0 | 24.1 | 52.7 | 18.9 |
| LOS | D | B | | B | D | C | D | B |
| Approach Delay | | 44.8 | | 15.2 | | 24.8 | | 20.8 |
| Approach LOS | | D | | B | | C | | C |

| Intersection Summary |
|---|
| Cycle Length: 100 |
| Actuated Cycle Length: 91.5 |
| Natural Cycle: 70 |
| Control Type: Actuated-Uncoordinated |
| Maximum v/c Ratio: 0.81 |
| Intersection Signal Delay: 24.8 — Intersection LOS: C |
| Intersection Capacity Utilization 74.7% — ICU Level of Service D |
| Analysis Period (min) 15 |

Splits and Phases: 2: Okolani Dr. & Piilani HWY



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 250 | 35 | 30 | 15 | 20 | 45 | 40 | 1330 | 40 | 80 | 1030 | 270 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1733 | | | 1705 | | 1770 | 3524 | | 1770 | 3429 | |
| Flt Permitted | 0.73 | 1.00 | | | 0.95 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1363 | 1733 | | | 1635 | | 1770 | 3524 | | 1770 | 3429 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 272 | 38 | 33 | 16 | 22 | 49 | 43 | 1446 | 43 | 87 | 1120 | 293 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 37 | 0 | 0 | 2 | 0 | 0 | 20 | 0 |
| Lane Group Flow (vph) | 272 | 46 | 0 | 0 | 50 | 0 | 43 | 1487 | 0 | 87 | 1393 | 0 |
| Turn Type | Perm | | | Perm | | | Prot | | | Prot | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | | | 22.5 | | 4.4 | 49.3 | | 7.3 | 52.2 | |
| Effective Green, g (s) | 22.5 | 22.5 | | | 22.5 | | 4.4 | 49.3 | | 7.3 | 52.2 | |
| Actuated g/C Ratio | 0.24 | 0.24 | | | 0.24 | | 0.05 | 0.53 | | 0.08 | 0.56 | |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 329 | 419 | | | 395 | | 84 | 1866 | | 139 | 1923 | |
| v/s Ratio Prot | | 0.03 | | | | | 0.02 | c0.42 | | c0.05 | c0.41 | |
| v/s Ratio Perm | c0.20 | | | | 0.03 | | | | | | | |
| v/c Ratio | 0.83 | 0.11 | | | 0.13 | | 0.51 | 0.80 | | 0.63 | 0.72 | |
| Uniform Delay, d1 | 33.5 | 27.5 | | | 27.6 | | 43.3 | 17.8 | | 41.6 | 15.1 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 15.5 | 0.1 | | | 0.1 | | 5.2 | 3.6 | | 8.5 | 2.4 | |
| Delay (s) | 49.0 | 27.6 | | | 27.8 | | 48.5 | 21.5 | | 50.1 | 17.5 | |
| Level of Service | D | C | | | C | | D | C | | D | B | |
| Approach Delay (s) | | 44.5 | | | 27.8 | | | 22.2 | | | 19.4 | |
| Approach LOS | | D | | | C | | | C | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM Average Control Delay | 23.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 93.1 | Sum of lost time (s) | 19.0 |
| Intersection Capacity Utilization | 74.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

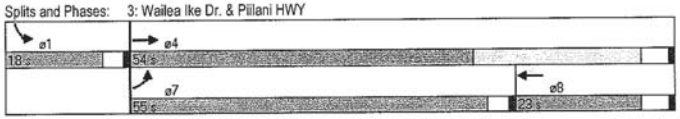




| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 1305 | 80 | 100 | 285 | 255 | 880 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Detector Phase | 7 | 4 | 8 | 8 | 1 | |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 7.0 | |
| Total Split (s) | 55.0 | 54.0 | 23.0 | 23.0 | 18.0 | 0.0 |
| Total Split (%) | 57.3% | 56.3% | 24.0% | 24.0% | 18.8% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lead/Lag | Lead | | Lag | Lag | | |
| Lead-Lag Optimize? | | | | | | |
| Recall Mode | None | None | None | None | None | |
| Act Effct Green (s) | 37.2 | 51.9 | 10.6 | 10.6 | 14.4 | 75.6 |
| Actuated g/C Ratio | 0.49 | 0.69 | 0.14 | 0.14 | 0.19 | 1.00 |
| v/c Ratio | 0.84 | 0.07 | 0.42 | 0.70 | 0.82 | 0.60 |
| Control Delay | 22.1 | 3.5 | 36.8 | 16.9 | 54.6 | 1.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.1 | 3.5 | 36.8 | 16.9 | 54.6 | 1.7 |
| LOS | C | A | D | B | D | A |
| Approach Delay | | 21.0 | 22.1 | | 13.6 | |
| Approach LOS | | C | C | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Cycle Length: 96 | | | |
| Actuated Cycle Length: 75.6 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Actuated-Uncoordinated | | | |
| Maximum v/c Ratio: 0.84 | | | |
| Intersection Signal Delay: 18.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 65.5% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 1305 | 80 | 100 | 285 | 255 | 880 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 3433 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 3433 | 1863 | 1863 | 1583 | 1770 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1418 | 87 | 109 | 310 | 277 | 957 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 221 | 0 | 0 |
| Lane Group Flow (vph) | 1418 | 87 | 109 | 89 | 277 | 957 |
| Turn Type | Prot | | | Perm | | Free |
| Protected Phases | 7 | 4 | 8 | | 1 | |
| Permitted Phases | | | | 8 | | Free |
| Actuated Green, G (s) | 37.1 | 51.9 | 10.8 | 10.8 | 14.4 | 75.3 |
| Effective Green, g (s) | 37.1 | 51.9 | 10.8 | 10.8 | 14.4 | 75.3 |
| Actuated g/C Ratio | 0.49 | 0.69 | 0.14 | 0.14 | 0.19 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | 5.0 | 5.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1691 | 1284 | 267 | 227 | 338 | 1583 |
| v/s Ratio Prot | c0.41 | 0.05 | 0.06 | | c0.16 | |
| v/s Ratio Perm | | | | 0.06 | | c0.60 |
| v/c Ratio | 0.84 | 0.07 | 0.41 | 0.39 | 0.82 | 0.60 |
| Uniform Delay, d1 | 16.5 | 3.8 | 29.3 | 29.3 | 29.2 | 0.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.8 | 0.0 | 1.0 | 1.1 | 14.3 | 1.7 |
| Delay (s) | 20.3 | 3.8 | 30.4 | 30.4 | 43.5 | 1.7 |
| Level of Service | C | A | C | C | D | A |
| Approach Delay (s) | | 19.4 | 30.4 | | 11.1 | |
| Approach LOS | | B | C | | B | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM Average Control Delay | 17.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 75.3 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



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# APPENDIX C

## LEVEL OF SERVICE CALCULATIONS

- Year 2022 Traffic Operations with Project

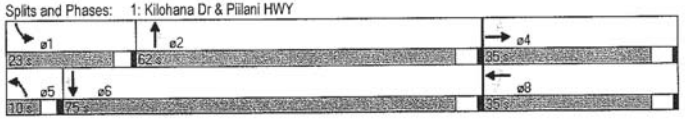
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 160 | 20 | 15 | 30 | 160 | 5 | 1090 | 5 | 50 | 1705 | 155 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | 2 | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 10.0 | 62.0 | 62.0 | 23.0 | 75.0 | 75.0 |
| Total Split (%) | 29.2% | 29.2% | 29.2% | 29.2% | 29.2% | 8.3% | 51.7% | 51.7% | 19.2% | 62.5% | 62.5% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Min | Max | Max | Min | Max | Max |
| Act Effct Green (s) | 19.2 | 19.2 | | 19.2 | 19.2 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Actuated g/C Ratio | 0.18 | 0.18 | | 0.18 | 0.18 | 0.05 | 0.62 | 0.62 | 0.08 | 0.64 | 0.64 |
| v/c Ratio | 0.73 | 0.10 | | 0.16 | 0.41 | 0.05 | 0.54 | 0.01 | 0.38 | 0.81 | 0.16 |
| Control Delay | 60.6 | 27.6 | | 38.4 | 8.6 | 53.4 | 14.6 | 7.2 | 56.5 | 19.6 | 2.9 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 60.6 | 27.6 | | 38.4 | 8.6 | 53.4 | 14.6 | 7.2 | 56.5 | 19.6 | 2.9 |
| LOS | E | C | | D | A | D | B | A | E | B | A |
| Approach Delay | | 55.4 | | 15.2 | | | 14.7 | | | 19.2 | |
| Approach LOS | | E | | B | | | B | | | B | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 109.2
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.5
Intersection Capacity Utilization 71.0%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 1: Kilohana Dr & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 160 | 20 | 10 | 15 | 30 | 160 | 5 | 1090 | 5 | 50 | 1705 | 155 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.95 | | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.98 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1770 | | | 1833 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.92 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1351 | 1770 | | | 1708 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 174 | 22 | 11 | 16 | 33 | 174 | 5 | 1185 | 5 | 54 | 1853 | 168 |
| RTOR Reduction (vph) | 0 | 9 | 0 | 0 | 0 | 143 | 0 | 0 | 2 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 174 | 24 | 0 | 0 | 49 | 31 | 5 | 1185 | 3 | 54 | 1853 | 120 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 19.2 | 19.2 | | | 19.2 | 19.2 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Effective Green, g (s) | 19.2 | 19.2 | | | 19.2 | 19.2 | 5.7 | 67.2 | 67.2 | 8.7 | 70.2 | 70.2 |
| Actuated g/C Ratio | 0.18 | 0.18 | | | 0.18 | 0.18 | 0.05 | 0.62 | 0.62 | 0.08 | 0.64 | 0.64 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 238 | 311 | | | 301 | 279 | 92 | 2180 | 975 | 141 | 2277 | 1019 |
| v/s Ratio Prot | | 0.01 | | | | | 0.00 | 0.33 | | c0.03 | c0.52 | |
| v/s Ratio Perm | c0.13 | | | | 0.03 | 0.02 | | | 0.00 | | | 0.08 |
| v/c Ratio | 0.73 | 0.08 | | | 0.16 | 0.11 | 0.05 | 0.54 | 0.00 | 0.38 | 0.81 | 0.12 |
| Uniform Delay, d1 | 42.5 | 37.5 | | | 38.1 | 37.8 | 49.1 | 12.1 | 8.1 | 47.7 | 14.6 | 7.5 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 11.0 | 0.1 | | | 0.3 | 0.2 | 0.2 | 1.0 | 0.0 | 1.7 | 3.3 | 0.2 |
| Delay (s) | 53.5 | 37.7 | | | 38.4 | 37.9 | 49.4 | 13.1 | 8.1 | 49.4 | 17.9 | 7.7 |
| Level of Service | D | D | | | D | D | D | B | A | D | B | A |
| Approach Delay (s) | | 51.0 | | | 38.0 | | | 13.2 | | | 17.9 | |
| Approach LOS | | D | | | D | | | B | | | B | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 19.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 109.1 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 71.0% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

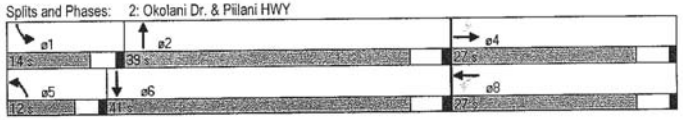
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 185 | 15 | 40 | 25 | 10 | 840 | 35 | 1515 |
| Turn Type | Perm | | Perm | | Prot | | Prot | |
| Protected Phases | | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | 4 | | 8 | | | | | |
| Detector Phase | 4 | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 10.0 | 24.0 | 10.0 | 24.0 |
| Total Split (s) | 27.0 | 27.0 | 27.0 | 27.0 | 12.0 | 39.0 | 14.0 | 41.0 |
| Total Split (%) | 33.8% | 33.8% | 33.8% | 33.8% | 15.0% | 48.8% | 17.5% | 51.3% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Max | None | Max |
| Act Effct Green (s) | 15.9 | 15.9 | | 15.9 | 6.1 | 37.1 | 7.1 | 41.8 |
| Actuated g/C Ratio | 0.23 | 0.23 | | 0.23 | 0.09 | 0.53 | 0.10 | 0.60 |
| v/c Ratio | 0.73 | 0.11 | | 0.36 | 0.07 | 0.49 | 0.21 | 0.86 |
| Control Delay | 41.0 | 12.8 | | 15.6 | 33.6 | 13.9 | 33.9 | 19.6 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.0 | 12.8 | | 15.6 | 33.6 | 13.9 | 33.9 | 19.6 |
| LOS | D | B | | B | C | B | C | B |
| Approach Delay | | 36.0 | | 15.6 | | 14.1 | | 19.9 |
| Approach LOS | | D | | B | | B | | B |

**Intersection Summary**

Cycle Length: 80
Actuated Cycle Length: 69.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 19.2
Intersection Capacity Utilization 71.6%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 2: Okolani Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 185 | 15 | 25 | 40 | 25 | 70 | 10 | 840 | 15 | 35 | 1515 | 140 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.91 | | | 0.93 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1687 | | | 1707 | | 1770 | 3530 | | 1770 | 3494 | |
| Flt Permitted | 0.65 | 1.00 | | | 0.90 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1217 | 1687 | | | 1561 | | 1770 | 3530 | | 1770 | 3494 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 201 | 16 | 27 | 43 | 27 | 76 | 11 | 913 | 16 | 38 | 1647 | 152 |
| RTOR Reduction (vph) | 0 | 21 | 0 | 0 | 52 | 0 | 0 | 1 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 201 | 22 | 0 | 0 | 94 | 0 | 11 | 928 | 0 | 38 | 1792 | 0 |
| Turn Type | Perm | | | Perm | | | Prot | | | Prot | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | | | |
| Actuated Green, G (s) | 15.9 | 15.9 | | | 15.9 | | 1.3 | 38.6 | | 4.5 | 41.8 | |
| Effective Green, g (s) | 15.9 | 15.9 | | | 15.9 | | 1.3 | 38.6 | | 4.5 | 41.8 | |
| Actuated g/C Ratio | 0.22 | 0.22 | | | 0.22 | | 0.02 | 0.53 | | 0.06 | 0.57 | |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 265 | 367 | | | 340 | | 32 | 1867 | | 109 | 2001 | |
| v/s Ratio Prot | | 0.01 | | | | | 0.01 | 0.26 | | c0.02 | c0.51 | |
| v/s Ratio Perm | c0.17 | | | | 0.06 | | | | | | | |
| v/c Ratio | 0.76 | 0.06 | | | 0.28 | | 0.34 | 0.50 | | 0.35 | 0.90 | |
| Uniform Delay, d1 | 26.8 | 22.6 | | | 23.8 | | 35.4 | 11.0 | | 32.8 | 13.7 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 11.7 | 0.1 | | | 0.4 | | 6.3 | 0.9 | | 1.9 | 6.7 | |
| Delay (s) | 38.5 | 22.7 | | | 24.2 | | 41.8 | 11.9 | | 34.8 | 20.4 | |
| Level of Service | D | C | | | C | | D | B | | C | C | |
| Approach Delay (s) | | 35.7 | | | 24.2 | | | 12.3 | | | 20.7 | |
| Approach LOS | | D | | | C | | | B | | | C | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 19.5 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.86 | | |
| Actuated Cycle Length (s) | 73.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 71.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

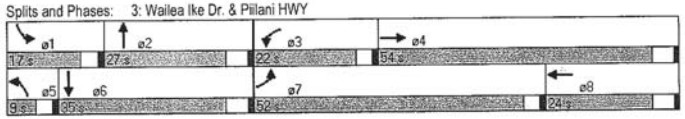
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 635 | 85 | 5 | 95 | 190 | 20 | 105 | 5 | 175 | 70 | 1425 |
| Turn Type | Prot | | Prot | | Perm | Prot | | Perm | Prot | | Free |
| Protected Phases | 7 | 4 | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | 8 | | | 2 | | | Free |
| Detector Phase | 7 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 7.0 | 27.0 | 27.0 | 7.0 | 27.0 | |
| Total Split (s) | 52.0 | 54.0 | 22.0 | 24.0 | 24.0 | 9.0 | 27.0 | 27.0 | 17.0 | 35.0 | 0.0 |
| Total Split (%) | 43.3% | 45.0% | 18.3% | 20.0% | 20.0% | 7.5% | 22.5% | 22.5% | 14.2% | 29.2% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 |
| Lead/Lag | Lead | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | |
| Recall Mode | None | None | Min | None | None | Min | Min | Min | None | Min | |
| Act Effct Green (s) | 19.2 | 20.8 | 10.7 | 9.5 | 9.5 | 5.1 | 7.9 | 7.9 | 9.5 | 12.2 | 64.5 |
| Actuated g/C Ratio | 0.30 | 0.32 | 0.17 | 0.15 | 0.15 | 0.08 | 0.12 | 0.12 | 0.15 | 0.19 | 1.00 |
| v/c Ratio | 0.68 | 0.17 | 0.02 | 0.38 | 0.51 | 0.16 | 0.26 | 0.03 | 0.38 | 0.22 | 0.98 |
| Control Delay | 24.1 | 14.4 | 32.4 | 31.6 | 9.7 | 35.6 | 30.3 | 19.8 | 29.2 | 25.6 | 21.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.1 | 14.4 | 32.4 | 31.6 | 9.7 | 35.6 | 30.3 | 19.8 | 29.2 | 25.6 | 21.3 |
| LOS | C | B | C | C | A | D | C | B | C | C | C |
| Approach Delay | | 22.8 | | 17.2 | | | 30.7 | | | 22.3 | |
| Approach LOS | | C | | B | | | C | | | C | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 64.5
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 22.3
Intersection Capacity Utilization 44.9%
Analysis Period (min) 15

Intersection LOS: C
ICU Level of Service A

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 635 | 85 | 10 | 5 | 95 | 190 | 20 | 105 | 5 | 175 | 70 | 1425 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 |
| Lane Util. Factor | 0.97 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 1833 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 1833 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 690 | 92 | 11 | 5 | 103 | 207 | 22 | 114 | 5 | 190 | 76 | 1549 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 0 | 173 | 0 | 0 | 4 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 690 | 99 | 0 | 5 | 103 | 34 | 22 | 114 | 1 | 190 | 76 | 1549 |
| Turn Type | Prot | | | Prot | | Perm | Prot | | Perm | Prot | | Free |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | 8 | | | 2 | | | Free |
| Actuated Green, G (s) | 19.2 | 19.2 | | 10.7 | 10.7 | 10.7 | 5.1 | 7.9 | 7.9 | 9.5 | 12.3 | 65.3 |
| Effective Green, g (s) | 19.2 | 19.2 | | 10.7 | 10.7 | 10.7 | 5.1 | 7.9 | 7.9 | 9.5 | 12.3 | 65.3 |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.16 | 0.16 | 0.16 | 0.08 | 0.12 | 0.12 | 0.15 | 0.19 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1009 | 539 | | 290 | 305 | 259 | 138 | 428 | 192 | 499 | 351 | 1583 |
| v/s Ratio Prot | 0.20 | 0.05 | | 0.00 | 0.06 | | 0.01 | 0.03 | | 0.06 | 0.04 | |
| v/s Ratio Perm | | | | | | 0.02 | | | 0.00 | | | c0.98 |
| v/c Ratio | 0.68 | 0.18 | | 0.02 | 0.34 | 0.13 | 0.16 | 0.27 | 0.00 | 0.38 | 0.22 | 0.98 |
| Uniform Delay, d1 | 20.4 | 17.2 | | 22.9 | 24.2 | 23.3 | 28.1 | 26.1 | 25.2 | 25.2 | 22.4 | 0.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.9 | 0.2 | | 0.0 | 0.7 | 0.2 | 0.5 | 0.3 | 0.0 | 0.5 | 0.3 | 18.1 |
| Delay (s) | 22.3 | 17.4 | | 22.9 | 24.8 | 23.6 | 28.6 | 26.4 | 25.2 | 25.7 | 22.7 | 18.1 |
| Level of Service | C | B | | C | C | C | C | C | C | C | C | B |
| Approach Delay (s) | | 21.7 | | | 24.0 | | | 26.7 | | | 19.1 | |
| Approach LOS | | C | | | C | | | C | | | B | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 20.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.98 | | |
| Actuated Cycle Length (s) | 65.3 | Sum of lost time (s) | 0.0 |
| Intersection Capacity Utilization | 44.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

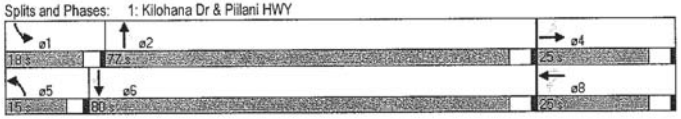
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 175 | 40 | 10 | 35 | 140 | 20 | 1965 | 15 | 160 | 1665 | 230 |
| Turn Type | Perm | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 8 | | 8 | | | 2 | | | 6 |
| Detector Phase | 4 | 4 | 8 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 10.0 | 24.0 | 24.0 | 10.0 | 24.0 | 24.0 |
| Total Split (s) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 15.0 | 77.0 | 77.0 | 18.0 | 80.0 | 80.0 |
| Total Split (%) | 20.8% | 20.8% | 20.8% | 20.8% | 20.8% | 12.5% | 64.2% | 64.2% | 15.0% | 66.7% | 66.7% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | | | | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Min | Max | Max | Min | Max | Max |
| Act Effct Green (s) | 19.0 | 19.0 | | 19.0 | 19.0 | 7.0 | 72.0 | 72.0 | 13.6 | 78.6 | 78.6 |
| Actuated g/C Ratio | 0.16 | 0.16 | | 0.16 | 0.16 | 0.06 | 0.61 | 0.61 | 0.11 | 0.66 | 0.66 |
| v/c Ratio | 0.88 | 0.18 | | 0.17 | 0.40 | 0.21 | 0.99 | 0.02 | 0.86 | 0.77 | 0.22 |
| Control Delay | 86.0 | 38.8 | | 44.8 | 10.2 | 57.8 | 41.8 | 5.5 | 86.9 | 17.2 | 1.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 86.0 | 38.8 | | 44.8 | 10.2 | 57.8 | 41.8 | 5.5 | 86.9 | 17.2 | 1.8 |
| LOS | F | D | | D | B | E | D | A | F | B | A |
| Approach Delay | | 75.6 | | 18.6 | | | 41.7 | | | 20.9 | |
| Approach LOS | | E | | B | | | D | | | C | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 118.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 32.9 — Intersection LOS: C
Intersection Capacity Utilization 91.2% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Kilohana Dr & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 175 | 40 | 10 | 10 | 35 | 140 | 20 | 1965 | 15 | 160 | 1665 | 230 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.97 | | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1806 | | | 1842 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.73 | 1.00 | | | 0.94 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1351 | 1806 | | | 1754 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 190 | 43 | 11 | 11 | 38 | 152 | 22 | 2136 | 16 | 174 | 1810 | 250 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 0 | 128 | 0 | 0 | 5 | 0 | 0 | 78 |
| Lane Group Flow (vph) | 190 | 46 | 0 | 0 | 49 | 24 | 22 | 2136 | 11 | 174 | 1810 | 172 |
| Turn Type | Perm | | | Perm | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 19.0 | 19.0 | | | 19.0 | 19.0 | 7.0 | 72.0 | 72.0 | 13.6 | 78.6 | 78.6 |
| Effective Green, g (s) | 19.0 | 19.0 | | | 19.0 | 19.0 | 7.0 | 72.0 | 72.0 | 13.6 | 78.6 | 78.6 |
| Actuated g/C Ratio | 0.16 | 0.16 | | | 0.16 | 0.16 | 0.06 | 0.61 | 0.61 | 0.11 | 0.66 | 0.66 |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 216 | 289 | | | 281 | 254 | 104 | 2148 | 961 | 203 | 2345 | 1049 |
| v/s Ratio Prot | | 0.03 | | | | | 0.01 | c0.60 | | c0.10 | 0.51 | |
| v/s Ratio Perm | c0.14 | | | | 0.03 | 0.02 | | | 0.01 | | | 0.11 |
| v/c Ratio | 0.88 | 0.16 | | | 0.17 | 0.10 | 0.21 | 0.99 | 0.01 | 0.86 | 0.77 | 0.16 |
| Uniform Delay, d1 | 48.7 | 42.9 | | | 43.0 | 42.5 | 53.2 | 23.1 | 9.2 | 51.5 | 13.8 | 7.6 |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 30.8 | 0.3 | | | 0.3 | 0.2 | 1.0 | 18.1 | 0.0 | 28.1 | 2.5 | 0.3 |
| Delay (s) | 79.4 | 43.2 | | | 43.3 | 42.6 | 54.2 | 41.2 | 9.2 | 79.7 | 16.3 | 7.9 |
| Level of Service | E | D | | | D | D | D | D | A | E | B | A |
| Approach Delay (s) | | 71.4 | | | 42.8 | | | 41.1 | | | 20.3 | |
| Approach LOS | | E | | | D | | | D | | | C | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 33.2 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.96 | | |
| Actuated Cycle Length (s) | 118.6 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 91.2% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

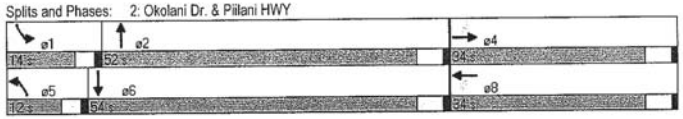
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Volume (vph) | 255 | 35 | 15 | 25 | 40 | 1640 | 85 | 1310 |
| Turn Type | Perm | | Perm | | Prot | | Prot | |
| Protected Phases | | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | 4 | | 8 | | | | | |
| Detector Phase | 4 | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 10.0 | 24.0 | 10.0 | 24.0 |
| Total Split (s) | 34.0 | 34.0 | 34.0 | 34.0 | 12.0 | 52.0 | 14.0 | 54.0 |
| Total Split (%) | 34.0% | 34.0% | 34.0% | 34.0% | 12.0% | 52.0% | 14.0% | 54.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | Max | None | Max |
| Act Effct Green (s) | 23.2 | 23.2 | | 23.2 | 7.1 | 48.3 | 8.9 | 52.1 |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.25 | 0.08 | 0.52 | 0.10 | 0.57 |
| v/c Ratio | 0.83 | 0.15 | | 0.21 | 0.31 | 0.99 | 0.54 | 0.87 |
| Control Delay | 54.1 | 17.2 | | 15.1 | 49.3 | 43.6 | 54.2 | 26.3 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 54.1 | 17.2 | | 15.1 | 49.3 | 43.6 | 54.2 | 26.3 |
| LOS | D | B | | B | D | D | D | C |
| Approach Delay | | 46.6 | | 15.1 | | 43.8 | | 27.7 |
| Approach LOS | | D | | B | | D | | C |

**Intersection Summary**

Cycle Length: 100
Actuated Cycle Length: 92.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 36.3 — Intersection LOS: D
Intersection Capacity Utilization 83.9% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Okolani Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 255 | 35 | 30 | 15 | 25 | 50 | 40 | 1640 | 45 | 85 | 1310 | 270 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.93 | | | 0.92 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1733 | | | 1709 | | 1770 | 3525 | | 1770 | 3449 | |
| Flt Permitted | 0.71 | 1.00 | | | 0.96 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1323 | 1733 | | | 1646 | | 1770 | 3525 | | 1770 | 3449 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 277 | 38 | 33 | 16 | 27 | 54 | 43 | 1783 | 49 | 92 | 1424 | 293 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 41 | 0 | 0 | 2 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 277 | 46 | 0 | 0 | 56 | 0 | 43 | 1830 | 0 | 92 | 1702 | 0 |
| Turn Type | Perm | | | Perm | | | Prot | | | Prot | | |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | | | | | | |
| Actuated Green, G (s) | 23.2 | 23.2 | | | 23.2 | | 4.4 | 49.2 | | 7.3 | 52.1 | |
| Effective Green, g (s) | 23.2 | 23.2 | | | 23.2 | | 4.4 | 49.2 | | 7.3 | 52.1 | |
| Actuated g/C Ratio | 0.25 | 0.25 | | | 0.25 | | 0.05 | 0.53 | | 0.08 | 0.56 | |
| Clearance Time (s) | 5.0 | 5.0 | | | 5.0 | | 4.0 | 5.0 | | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 328 | 429 | | | 408 | | 83 | 1851 | | 138 | 1918 | |
| v/s Ratio Prot | | 0.03 | | | | | 0.02 | c0.52 | | c0.05 | c0.49 | |
| v/s Ratio Perm | c0.21 | | | | 0.03 | | | | | | | |
| v/c Ratio | 0.84 | 0.11 | | | 0.14 | | 0.52 | 0.99 | | 0.67 | 0.89 | |
| Uniform Delay, d1 | 33.5 | 27.2 | | | 27.5 | | 43.6 | 22.0 | | 42.0 | 18.2 | |
| Progression Factor | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 17.7 | 0.1 | | | 0.2 | | 5.4 | 18.4 | | 11.5 | 6.5 | |
| Delay (s) | 51.2 | 27.4 | | | 27.6 | | 49.0 | 40.4 | | 53.5 | 24.8 | |
| Level of Service | D | C | | | C | | D | D | | D | C | |
| Approach Delay (s) | | 46.4 | | | 27.6 | | | 40.6 | | | 26.2 | |
| Approach LOS | | D | | | C | | | D | | | C | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 34.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.97 | | |
| Actuated Cycle Length (s) | 93.7 | Sum of lost time (s) | 19.0 |
| Intersection Capacity Utilization | 83.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

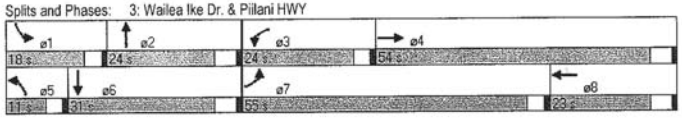
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 1520 | 130 | 5 | 135 | 285 | 15 | 105 | 5 | 290 | 130 | 1005 |
| Turn Type | Prot | | Prot | | Perm | Prot | | Perm | Prot | | Free |
| Protected Phases | 7 | 4 | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | 8 | | | 2 | | | Free |
| Detector Phase | 7 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | |
| Switch Phase | | | | | | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| Minimum Split (s) | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 7.0 | 27.0 | 27.0 | 7.0 | 27.0 | |
| Total Split (s) | 55.0 | 54.0 | 24.0 | 23.0 | 23.0 | 11.0 | 24.0 | 24.0 | 18.0 | 31.0 | 0.0 |
| Total Split (%) | 45.8% | 45.0% | 20.0% | 19.2% | 19.2% | 9.2% | 20.0% | 20.0% | 15.0% | 25.8% | 0.0% |
| Yellow Time (s) | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 |
| Lead/Lag | Lead | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | |
| Recall Mode | None | None | Min | None | None | Min | Min | Min | None | Min | |
| Act Effct Green (s) | 51.2 | 58.6 | 5.9 | 13.3 | 13.3 | 6.3 | 8.8 | 8.8 | 13.2 | 15.8 | 104.6 |
| Actuated g/C Ratio | 0.49 | 0.56 | 0.06 | 0.13 | 0.13 | 0.06 | 0.08 | 0.08 | 0.13 | 0.15 | 1.00 |
| v/c Ratio | 0.98 | 0.16 | 0.05 | 0.62 | 0.73 | 0.15 | 0.38 | 0.04 | 0.72 | 0.50 | 0.69 |
| Control Delay | 46.2 | 11.5 | 50.4 | 55.4 | 20.9 | 52.1 | 50.0 | 28.0 | 55.2 | 48.3 | 2.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 46.2 | 11.5 | 50.4 | 55.4 | 20.9 | 52.1 | 50.0 | 28.0 | 55.2 | 48.3 | 2.5 |
| LOS | D | B | D | E | C | D | D | C | E | D | A |
| Approach Delay | | 43.1 | | 32.2 | | | 49.4 | | | 17.4 | |
| Approach LOS | | D | | C | | | D | | | B | |

**Intersection Summary**

Cycle Length: 120
Actuated Cycle Length: 104.6
Natural Cycle: 135
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 32.0 — Intersection LOS: C
Intersection Capacity Utilization 77.1% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Wailea Ike Dr. & Piilani HWY








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 1520 | 130 | 20 | 5 | 135 | 285 | 15 | 105 | 5 | 290 | 130 | 1005 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 4.0 |
| Lane Util. Factor | 0.97 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 1825 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 1825 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1652 | 141 | 22 | 5 | 147 | 310 | 16 | 114 | 5 | 315 | 141 | 1092 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 0 | 222 | 0 | 0 | 5 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1652 | 159 | 0 | 5 | 147 | 88 | 16 | 114 | 0 | 315 | 141 | 1092 |
| Turn Type | Prot | | | Prot | | Perm | Prot | | Perm | Prot | | Free |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | 8 | | | 2 | | | Free |
| Actuated Green, G (s) | 51.2 | 58.6 | | 5.9 | 13.3 | 13.3 | 6.3 | 8.9 | 8.9 | 13.2 | 15.8 | 104.6 |
| Effective Green, g (s) | 51.2 | 58.6 | | 5.9 | 13.3 | 13.3 | 6.3 | 8.9 | 8.9 | 13.2 | 15.8 | 104.6 |
| Actuated g/C Ratio | 0.49 | 0.56 | | 0.06 | 0.13 | 0.13 | 0.06 | 0.09 | 0.09 | 0.13 | 0.15 | 1.00 |
| Clearance Time (s) | 4.0 | 5.0 | | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 | 4.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1680 | 1022 | | 100 | 237 | 201 | 107 | 301 | 135 | 433 | 281 | 1583 |
| v/s Ratio Prot | c0.48 | 0.09 | | 0.00 | 0.08 | | 0.01 | 0.03 | | 0.09 | 0.08 | |
| v/s Ratio Perm | | | | | | 0.06 | | | 0.00 | | | c0.69 |
| v/c Ratio | 0.98 | 0.16 | | 0.05 | 0.62 | 0.44 | 0.15 | 0.38 | 0.00 | 0.73 | 0.50 | 0.69 |
| Uniform Delay, d1 | 26.3 | 11.1 | | 46.7 | 43.3 | 42.2 | 46.6 | 45.2 | 43.8 | 44.0 | 40.8 | 0.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 18.0 | 0.1 | | 0.2 | 5.0 | 1.5 | 0.6 | 0.8 | 0.0 | 6.0 | 1.4 | 2.5 |
| Delay (s) | 44.3 | 11.2 | | 46.9 | 48.2 | 43.7 | 47.3 | 46.0 | 43.8 | 50.0 | 42.2 | 2.5 |
| Level of Service | D | B | | D | D | D | D | D | D | D | D | A |
| Approach Delay (s) | | 41.3 | | | 45.2 | | | 46.1 | | | 15.8 | |
| Approach LOS | | D | | | D | | | D | | | B | |

**Intersection Summary**

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 31.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 104.6 | Sum of lost time (s) | 4.0 |
| Intersection Capacity Utilization | 77.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

# APPENDIX D

## LEVEL-OF-SERVICE SUMMARY TABLE

AUSTIN TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS ● SURVEYORS

**Table D-1**
**LOS INTERSECTION ANALYSIS**

| Intersection | Existing 2008 | | | | | | | | Base Year 2016 WITHOUT Pitkin Widening WITH Peninsula Access | | | | | | | | Future Year 2016 WITH Pitkin Widening | | | | | | | | Future Year 2022 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | | | | PM | | | | AM | | | | PM | | | | AM | | | | PM | | | | AM | | | | PM | | | |
| | HCM Delay | HCM vol. to capac. | HCM Delay | LOS | HCM vol. to capac. | LOS | HCM Delay | LOS | HCM Delay | HCM vol. to capac. | HCM Delay | LOS | HCM vol. to capac. | LOS | HCM Delay | LOS | HCM Delay | HCM vol. to capac. | HCM Delay | LOS | HCM vol. to capac. | LOS | HCM Delay | LOS | HCM Delay | HCM vol. to capac. | HCM Delay | LOS | HCM vol. to capac. | LOS | HCM Delay | LOS |
| 1. Pitkin Highway & Peninsula Drive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EB LT | 33.6 | 0.59 | 36.7 | C | 0.59 | D | 52.4 | 0.89 | E | 125.5 | 1.12 | F | 52.2 | 0.72 | D | 46.9 | 0.74 | D | 53.5 | 0.73 | D | 79.4 | 0.88 | E | | | | | | | |
| EB THRU | 25.8 | 0.11 | 30.5 | C | 0.14 | C | 19.3 | 0.1 | B | 22.2 | 0.17 | C | 38.1 | 0.24 | C | 31.9 | 0.15 | D | 38.5 | 0.19 | C | 43.2 | 0.16 | D | | | | | | | |
| WB LT/TH | 25.8 | 0.26 | 30.6 | C | 0.15 | C | 19.8 | 0.19 | B | 21.8 | 0.09 | C | 31.6 | 0.09 | C | 37.9 | 0.13 | C | 38.4 | 0.16 | D | 43.2 | 0.16 | D | | | | | | | |
| WB RT | 30.2 | 0.06 | 36.1 | C | 0.08 | D | 36.1 | 0.13 | C | 46.6 | 0.36 | D | 49 | 0.05 | D | 42.6 | 0.2 | D | 49.4 | 0.05 | D | 56.2 | 0.21 | D | | | | | | | |
| NB LT | 6.1 | 0.28 | A | 27.1 | 0.88 | C | 21.7 | 0.88 | C | 44.9 | 1.95 | F | 79 | 0 | A | 109 | 0.01 | B | 81 | 0 | A | 92 | 0.01 | A | | | | | | | |
| NB THRU | - | - | - | - | - | - | - | - | - | - | - | - | 109 | 0.4 | B | 38 | 0.98 | D | 131 | 0.54 | B | 412 | 0.99 | D | | | | | | | |
| NB RT | - | - | - | - | - | - | - | - | - | - | - | - | 49 | 0.38 | D | 45.8 | 0.69 | D | 49.4 | 0.38 | D | 79.7 | 0.86 | E | | | | | | | |
| SB LT | 30.3 | 0.44 | 43.3 | D | 0.71 | D | 34.4 | 0.6 | C | 40.1 | 0.78 | D | 49 | 0.38 | D | 45.8 | 0.69 | D | 49.4 | 0.38 | D | 79.7 | 0.86 | E | | | | | | | |
| SB TH | 9.5 | 0.69 | 11.2 | A | 0.59 | B | 21.5 | 1.44 | F | 168.8 | 1.36 | F | 13.3 | 0.66 | B | 15.1 | 0.71 | B | 12.9 | 0.81 | B | 16.3 | 0.77 | B | | | | | | | |
| SB RT | 3.8 | 0.08 | 6.9 | A | 0.09 | A | 5.4 | 0.11 | A | 5.2 | 0.16 | A | 7.4 | 0.1 | A | 8.7 | 0.16 | A | 7.7 | 0.12 | A | 7.9 | 0.16 | A | | | | | | | |
| | 12.4 | 0.68 | B | 23.6 | 0.8 | C | 119.6 | 1.18 | F | 362.6 | 1.86 | F | 17.2 | 0.66 | B | 28.3 | 0.88 | C | 19.4 | 0.78 | B | 39.2 | 0.96 | C | | | | | | | |
| 2. Pitkin Highway & Crescent Drive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EB LT | - | - | - | - | - | - | 28.4 | 0.68 | C | 52 | 0.85 | D | 34.5 | 0.72 | C | 49 | 0.89 | D | 38.5 | 0.76 | D | 51.2 | 0.84 | D | | | | | | | |
| EB LT/TH | 29.9 | - | C | 141.7 | - | F | 193 | 0.06 | B | 273.1 | 0.11 | C | 219 | 0.06 | C | 276 | 0.11 | C | 227 | 0.06 | C | 274 | 0.11 | C | | | | | | | |
| EB RT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| EB THRT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| WB LT/TH | 12.8 | - | C | 23.7 | - | D | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| WB LT/THRT | - | - | - | - | - | - | 30.2 | 0.22 | C | 27.2 | 0.13 | C | 29 | 0.22 | C | 27.8 | 0.13 | C | 24.2 | 0.28 | C | 27.6 | 0.14 | C | | | | | | | |
| WB RT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| NB LT | 9.1 | - | A | 8.3 | - | A | 5.3 | 0.09 | A | 13.1 | 0.51 | B | 42 | 0.37 | D | 48.5 | 0.51 | D | 41.8 | 0.34 | D | 49 | 0.53 | D | | | | | | | |
| NB TH | - | - | - | - | - | - | 7.4 | 0.53 | A | 10.69 | 1.18 | F | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| NB RT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| NB THRT | - | - | - | - | - | - | - | - | - | - | - | - | 96 | 0.33 | A | 21.5 | 0.8 | C | 11.9 | 0.5 | B | 40.4 | 0.99 | D | | | | | | | |
| SB LT | 2.7 | - | A | 9.5 | - | A | 5 | 0.09 | A | 129.6 | 1.04 | F | 18.6 | 0.51 | D | 50.1 | 0.63 | D | 34.8 | 0.35 | C | 53.5 | 0.67 | D | | | | | | | |
| SB TH | - | - | - | - | - | - | 87.8 | 1.14 | F | 24.1 | 0.92 | C | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| SB RT | - | - | - | - | - | - | 4.7 | 0.01 | A | 5.4 | 0.03 | A | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| SB THRT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| | - | - | - | - | - | - | - | - | - | 6.1 | 0.19 | A | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| SB THRT | - | - | - | - | - | - | 5 | 0.09 | A | 6.1 | 0.19 | A | 14 | 0.74 | B | 17.5 | 0.72 | B | 20.4 | 0.9 | C | 24.8 | 0.89 | C | | | | | | | |
| SB TH | - | - | - | - | - | - | 87.8 | 1.14 | F | 24.1 | 0.92 | C | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| SB RT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| | 3 | - | A | 11.9 | - | B | 51.8 | 1.02 | D | 61.6 | 1.1 | E | 15.7 | 0.68 | B | 23.4 | 0.83 | C | 19.5 | 0.86 | B | 34.5 | 0.97 | C | | | | | | | |
| 3. Pitkin Highway & Dolphin Drive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EB LT | 11.7 | 0.66 | B | 14.6 | 1.25 | E | 9.8 | 0.46 | A | 20.3 | 0.84 | C | 22.3 | 0.68 | C | 44.3 | 0.98 | D | | | | | | | | | | | | | | |
| EB TH | 2.9 | 0.05 | A | 2.7 | 0.06 | A | 3.5 | 0.05 | A | 3.8 | 0.07 | A | - | - | - | - | - | - | | | | | | | | | | | | | | |
| EB THRT | - | - | - | - | - | - | - | - | - | - | - | - | 12.4 | 0.18 | B | 11.2 | 0.16 | B | | | | | | | | | | | | | | |
| WB LT | 2.2 | 0.23 | C | 4.9.7 | 0.51 | D | 15.9 | 0.19 | B | 30.4 | 0.41 | C | 22.9 | 0.02 | C | 46.9 | 0.13 | C | | | | | | | | | | | | | | |
| WB TH | - | - | - | - | - | - | - | - | - | - | - | - | 24.8 | 0.34 | C | 48.2 | 0.13 | C | | | | | | | | | | | | | | |
| WB RT | 21.3 | 0.08 | C | 53.9 | 0.61 | D | 15.4 | 0.08 | B | 30.4 | 0.99 | C | 28.6 | 0.16 | C | 47.3 | 0.15 | D | | | | | | | | | | | | | | |
| NB TH | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | | | | | | | | |
| NB LT | - | - | - | - | - | - | - | - | - | - | - | - | 26.4 | 0.27 | C | 46 | 0.38 | D | | | | | | | | | | | | | | |
| NB RT | - | - | - | - | - | - | - | - | - | - | - | - | 25.2 | 0 | C | 43.8 | 0 | D | | | | | | | | | | | | | | |
| SB LT | 23.4 | 0.59 | C | 166.1 | 1.39 | F | 15.6 | 0.5 | B | 43.5 | 0.82 | D | 25.7 | 0.38 | C | 50 | 0.73 | D | | | | | | | | | | | | | | |
| SB TH | - | - | - | - | - | - | - | - | - | - | - | - | 22.7 | 0.22 | C | 42.2 | 0.5 | D | | | | | | | | | | | | | | |
| SB RT | 5.2 | 0.85 | A | 1.7 | 0.6 | A | 5.2 | 0.85 | A | 1.7 | 0.6 | A | 18.1 | 0.98 | B | 25 | 0.69 | A | | | | | | | | | | | | | | |
| | 9.3 | 0.83 | A | 85.6 | 1.13 | F | 7.8 | 0.83 | A | 17.4 | 0.78 | B | 20.6 | 0.96 | C | 31.9 | 0.84 | C | | | | | | | | | | | | | | |

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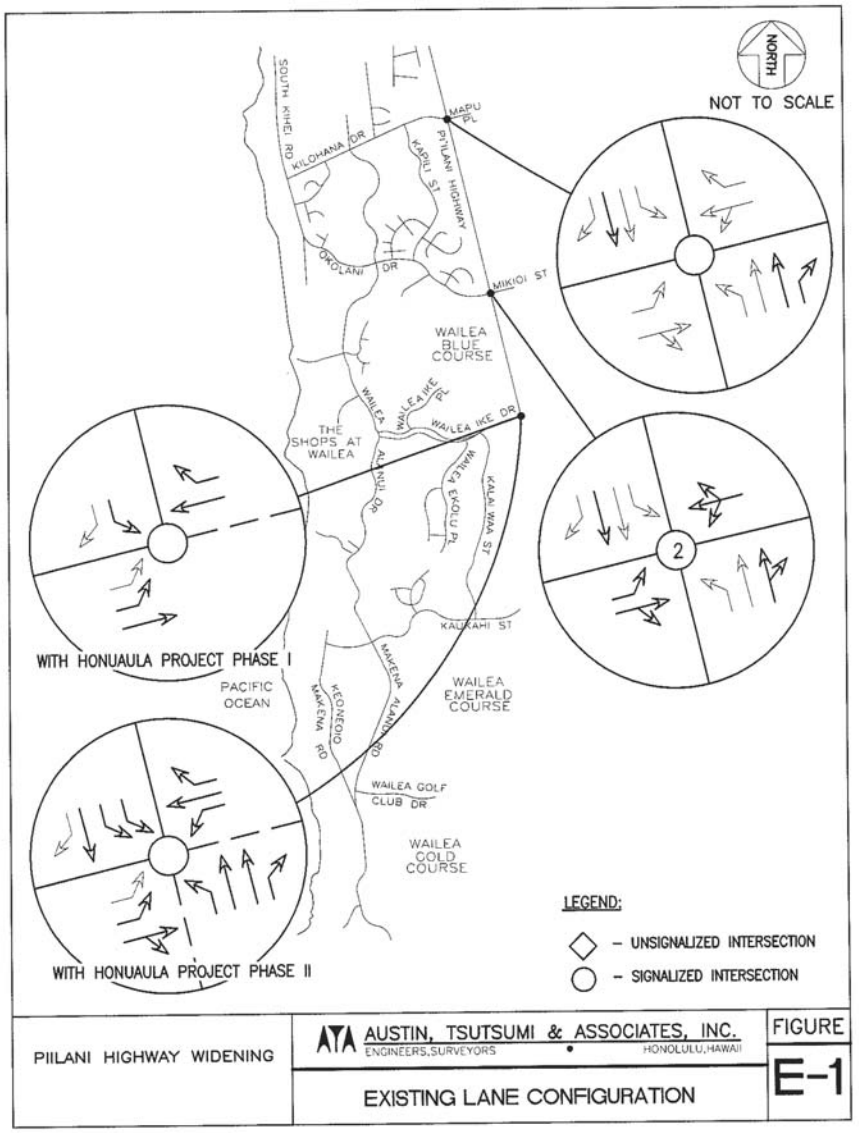
# APPENDIX E

RECOMMENDED LANE CONFIGURATIONS




| PIILANI HIGHWAY WIDENING | AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS,SURVEYORS • HONOLULU,HAWAII | FIGURE |
|---|---|---|
| | EXISTING LANE CONFIGURATION | E-1 |

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# APPENDIX F

RESORT RESIDENTIAL TRIP GENERATION RATE DEVELOPMENT



## Resort Residential Trip Generation Rate Development

### Background

At the request of the State of Hawaii Department of Transportation (HDOT), data were collected to determine if the resort residential trip generation rates documented in the Institute of Transportation Engineers publication entitled, Trip Generation, 7th Edition, were appropriate for the Wailea-Makena area on Maui.

Three major developers within the Wailea-Makena area agreed to participate in this effort and directed their traffic consultants to develop a methodology to collected trip data and use these data to determine alternative resort residential trip generation rates. The three traffic consultants involved were Austin-Tsutsumi and Associates, Parsons Brinckerhoff, and Phillip Rowell Associates.

This write-up summarizes the methodology used to develop alternative resort residential trip generation rates based on observation of existing resort residential development located in Wailea Resort.

### Methodology

In developing a methodology to research resort residential trip generation rates for the Wailea-Makena area, it was decided to collect data separately for single-family and for multi-family resort residential development. All developments used for data collection were located in the Wailea Resort area.

Effort was made to determine which multi-family resort residential developments allow units to be rented out as opposed to units that only allow owners and selected guests to occupy the units. Effort was also made through discussions with the Wailea Homeowners Association and Wailea Resort to determine which resort residential developments were primarily absentee owner units that are occupied only a few months out of the year and resident owner units that area occupied all year long.

Based on these criteria, 24-hour traffic data were collected at the accesses to resort residential between July 7, 2006 and July 17, 2006. Using the categories of resort residential identified in the previous paragraph, data were collected at the developments summarized in Table 1.

## Table 1
## Resort Residential Development Data Collection Sites

| Development Name | Residents/ Long-Term Rental | Short-Term Rental | Total Units |
|---|---|---|---|
| **Single-Family** | | | |
| Pualani Estates | 92 | 0 | 92 |
| Wailea Golf Vistas | 48 | 0 | 48 |
| Wailea Highlands | 23 | 0 | 23 |
| Wailea Golf Estates | 61 | 0 | 61 |
| Wailea Kialoa | 102 | 0 | 102 |
| **Multi-Family** | | | |
| Palms I | 19 | 139 | 150 |
| Palms II | 120 | 0 | 120 |
| Grand Champions | 73 | 128 | 201 |
| Wailea Elua | 73 | 79 | 152 |
| Fairway Villas | 118 | 0 | 118 |

Note: Fairway Villas data were available because of technical difficulties and the sale of Makena Resort.

All of the multi-family developments were used to calculate trip generation rates for resort multi-family development. This probably makes this rate conservatively high, since it contains both developments that allow short-term rentals and those that do not.

For the single-family developments, only Wailea Golf Estates and Pualani Estates were used to calculate trip generation rates. There were units in Wailea Golf Vistas and Wailea Highlands that were still under construction and it was judged that construction traffic would create an atypical trip generation rate. Wailea Kialoa was not used because it was determined through discussions with Wailea Resort and the Wailea Homeowners Association that Wailea Kialoa contained mostly residents that live in Wailea year round. This is not the typical resort residential situation in which owners usually occupy the unit only part time.

The resulting trip generation rates for resort single-family and resort multi-family are shown in Table 2.





## Table 2
## Resort Residential Trip Generation Rates

| Parcel | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | Rate | Enter/Exit % | Rate | Enter/Exit % |
| Resort Single-Family Residential | 0.46 | 58/42 | 0.46 | 50/50 |
| Resort Multi-Family Residential | 0.22 | 40/60 | 0.34 | 49/51 |

Note: Rates are vehicle trips per hour per dwelling unit.
Single Family rates based on average of Wailea Golf Estates and Pualani Estates.
Multi-Family rates based on average of Wailea Grand Champions, Palms I, Palms II, and Wailea Elua

Table 3 compares the calculated resort residential rates with the ITE published rates. As shown, the calculated resort residential rates for the single-family resort residential are about twice as high as the ITE published rates, and the calculated resort residential rates for the multi-family resort residential are slightly higher for than those published by ITE.

## Table 3
## Comparison of Calculate and ITE Published Resort Residential Trip Generation Rates

| Rate Source | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | Rate | Enter/Exit % | Rate | Enter/Exit % |
| Calculated Single-Family Residential | 0.46 | 58/42 | 0.46 | 50/50 |
| Calculated Multi-Family Residential | 0.22 | 40/60 | 0.34 | 49/51 |
| ITE Published Recreational Homes (260) | 0.16 | 67/33 | 0.26 | 41/59 |

Note: Rates are vehicle trips per hour per dwelling unit.

# APPENDIX I-1.

# Preliminary Basis of Design for Pi`ilani Highway Widening

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CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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April 28, 2011

## PRELIMINARY BASIS OF DESIGN FOR PI'ILANI HIGHWAY WIDENING (KILOHANA DRIVE TO WAILEA IKE DRIVE) WAILEA, MAUI, HAWAII

### I. INTRODUCTION

This basis of design evaluates the existing roadway conditions and defines design guidelines and assumptions for the roadway widening of Piilani Highway (Highway 31) from Kilohana Drive to Wailea Ike Drive.

### II. PROPOSED PROJECT

#### A. Location

Piilani Highway is a north-south State arterial providing access to the Kihei-Wailea-Makena areas from areas north of Wailea-Makena. The proposed Piilani Highway Widening project consists of widening of approximately 1.44 miles of highway from Kilohana Drive/Mapu Street to Wailea Ike Drive. Intersection improvements proposed within the project area are Kilohana Drive/Mapu Street, Okolani Drive/Mikioi Place and Wailea Ike Drive/proposed Honua'ula project access road. The project area is bounded by the Maui

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WAILUKU, MAUI, HAWAII
HILO, HAWAII

Meadows Subdivision and the proposed Honua'ula Partners LLC development (currently vacant land) to the east and Wailea Kanani, Wailea Puanani Estates, Kai Malu at Wailea, Wailea Gateway Shopping Center, and the Bluffs at Wailea to the west. Refer to Exhibit 1 for Location and Vicinity Map.

**B. Project Description**

Widening of Piilani Highway from Kilohana Drive/Mapu Place to the terminus is required as a condition in the change in zoning approval for the Honua'ula Development, Makena Resort Development, and Wailea A&B Properties Development. The proposed project will widen Piilani Highway from a two-lane highway to a four-lane highway south of its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive, including reconstructing Piilani Highway/Wailea Ike intersection to include a southbound extension of Piilani Highway and eastbound entry roadway into the Honua'ula project area. Proposed improvements include excavation and embankment, widening of the road with asphalt concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention systems, storm water filtration systems, retaining walls, sound attenuation walls, roadway re-striping, relocation of overhead electrical transmission lines, telephone lines and cable television lines to new utility poles, installation of new utility boxes, street light standards, traffic sign posts, guard rails, and adjustments to existing utilities as may be necessary for installation of proposed improvements. Reconstruction of the existing traffic signal at Kilohana Drive/Mapu Street and installation of new traffic signals at Okolani Drive/Mikioi Place and at Wailea Ike Drive/proposed Honua'ula project access road are also proposed. Refer to Exhibit 2 for General Site Plan.

## III. EXISTING ROADWAY CONDITIONS

Piilani Highway - is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Piilani Highway begins at its intersection with South/North



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Kihei Road and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway further south. Left-turn storage lanes are provided at major intersections on Piilani Highway. The posted speed limit on Piilani Highway is 40 miles per hour (mph) for a majority of the highway. The speed limit on Piilani Highway within the project limits is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

Piilani Highway is currently classified as an Urban Principal Arterial. The segment of highway under this project scope is currently an existing two-lane asphalt concrete paved roadway with one (1) lane of traffic in each direction.

Kilohana Drive - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Piilani Highway, intersecting Piilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. Kilohana Drive is a State roadway from approximately Piilani Highway to Kapili Street. The posted speed limit on Kilohana Drive is 25 mph.

Mapu Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Pi'ilani Highway to Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

Okolani Drive - is a four-lane, divided, east/west private collector roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided County roadway east of Wailea Alanui Drive to its intersection with Piilani Highway directly across of Mikioi Place. The posted speed limit on Okolani Drive is 30 mph.

Mikioi Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Pi'ilani Highway, across Okolani Drive, to Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

Wailea Ike Drive - is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted

speed limit of 30 mph. Wailea Ike Drive, from its intersection with Wailea Ekolu Place to Wailea Alanui Drive, has a major drainage channel in its median area.

## IV. PROPOSED ROADWAY BASIS OF DESIGN

### A. Roadway Functional Classification

Piilani Highway is currently classified as an Urban Principal Arterial. Thus, roadway design is based on an Urban Principal Arterial roadway.

### B. Posted and Design Speed

The existing posted speed limit on Piilani Highway is 40 miles per hour (mph) for a majority of the highway. The speed limit on Piilani Highway within the project limits is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive. Based on a speed study of this segment of highway by Austin, Tsutsumi & Associates, Inc. in April 2009, the 85$^{th}$ percentile speed was determined to be 37.7 mph. Under the proposed design, the posted speed limit will be 35 mph and the design speed will be 45 mph for the section of highway under the project scope.

| | |
|---|---|
| Design Speed | 45 mph |
| Posted Speed | 35 mph |

### C. Horizontal Alignment

The existing horizontal roadway alignment is maintained throughout the highway segment except for a 1,500 feet section from Station 136+00 to 151+00 where a 20' horizontal shift mauka (including transitional taper) occurs. This 20' shift allows for the makai side of the highway in this vicinity to remain as is for the most part and minimizes the amount of retaining walls and renovations to existing infrastructure. A normal cross slope of 2% is used for the entire stretch of highway. Below is a table showing storage lengths used for left-turn auxiliary lanes:



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| Table of Left-Turn Storage Lengths | |
|---|---|
| | Storage Length (ft) |
| Piilani Hwy onto Mapu Pl. | 100 |
| Piilani Hwy onto Kilohana Dr. | 50 |
| Piilani Hwy onto Mikioi St. | 75 |
| Piilani Hwy onto Okolani Dr. | 50 |
| Piilani Hwy onto Honua'ula access rd. | 150 |

Storage length values are based on traffic volume calculations taken from the Traffic Impact Assessment Report (TIAR) by Austin, Tsutsumi & Associates, Inc dated July 21, 2009. Deceleration lengths of 350' for right-turn lanes and 400' for left-turn lanes are used, in accordance with AASHTO (Green Book, 2004 edition) guidelines. 15:1 tapers are included in the auxiliary lane deceleration length. Taper lengths for travel-way lanes are based on AASHTO and Manual on Uniform Traffic Control Devices (MUTCD, 2009 edition) guidelines, for the posted speed of 35 mph.

### D. Vertical Alignment

No changes in longitudinal grades are proposed. The project will require excavation and embankment in order to widen the existing highway while maintaining the existing longitudinal grade of the highway. The site will be graded to maintain the existing highway grades and drainage patterns. Retaining walls, ranging from an exposed face of approximately 2-feet to 26-feet, will be required in order to attain the proposed roadway grades. Preliminary geotechnical consultation recommendations dated March 30, 2009 state that gradients of 2H:1V or flatter should be used for permanent cut slopes exposing the surface soil, as well as fill slopes. Gradients of 1H:1V or flatter should be used for permanent cut slopes into the basalt. Sound attenuation walls will also be incorporated into the construction to aid in reduction in noise levels due to traffic noise impacts, as recommended by the acoustical engineer. HDOT criteria will be used to determine feasibility of sound wall construction.

**E. Cross Section Elements**

The proposed road improvements will widen Piilani Highway from a 24-feet travel-way to a 48-feet travel-way by adding a 12-feet wide travel lane in each direction of traffic flow. All cross sectional elements conform to AASHTO guidelines, and include 11-feet wide left-turn auxiliary lanes and 12' wide right-turn lanes. In addition, a 4-feet wide bike lane, 2-feet wide concrete curb and gutter and 6-feet wide sidewalk are proposed for both sides of the highway. An 8-feet wide striped median is also proposed for the segment of highway. Currently, there is no existing median provided for this segment of highway.

**F. Intersection Improvements**

The proposed intersection improvements are as follows:

Kilohana Drive/Mapu Place

- Modification of the existing traffic signal system
- Northbound Approach and Southbound Approaches: Provide an exclusive left-turn lane, two (2) exclusive through lanes, and an exclusive right-turn lane.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane, exclusive through lane and an exclusive right-turn lane.

Okolani Drive/Mikioi Place

- Install a traffic signal system.
- Northbound and Southbound Approaches: Provide an exclusive left-turn lane, an exclusive through lane, and a shared through/right-turn lane.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane.



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- Westbound Approach: Remain as a shared left-turn/through/right-turn lane.

The Piilani Highway/Wailea Ike Drive intersection will be completed in 3 phases. The Year 2016 was selected to reflect the completion year of Phase I of Honua'ula which includes the creation of a tee-intersection at the Piilani Highway/Wailea Ike Drive intersection. Year 2022 was selected to reflect the full build-out of Honua'ula, Wailea Resort and Makena Resort.

Phase I of the Piilani Highway/Wailea Ike Drive intersection is expected to occur prior to the construction of Honua'ula. The Piilani Highway/Wailea Ike Drive intersection will not require any intersection control and will have the following lane configuration:

Wailea Ike Drive – Phase 1

- Southbound Approaches: Provide an exclusive free right-turn lane.
- Eastbound Approach: Provide an exclusive free left-turn lane.

Phase II of the Piilani Highway/Wailea Ike Drive intersection is expected to occur upon completion of Phase I of Honua'ula (Year 2016). The east leg of the Piilani Highway/Wailea Ike Drive intersection will be striped forming a tee-intersection, with Piilani Highway being the stem of the tee. Due to a high southbound right-turn and eastbound left-turn, the intersection will warrant a traffic signal, in accordance with the HCM. With the Piilani Highway/Wailea Ike Drive intersection re-striped to a tee-intersection, the following are the recommended lane configuration:

Wailea Ike Drive/ Project Road – Phase 2

- Install a traffic signal system.
- Southbound Approaches: Provide an exclusive left-turn lane, and an exclusive right-turn lane. Also, it is recommended that the Piilani Highway southbound right-turn be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.

- Eastbound Approach: Provide two (2) exclusive left-turn lanes and a through lane.
- Westbound Approach: Provide an exclusive through lane and an exclusive right-turn lane.

Phase III of the Piilani Highway/Wailea Ike Drive intersection is expected to occur during Phase II of Honua'ula where an extension of Piilani Highway to intersection with an extension of Kaukahi Street forming the south leg of the Piilani Highway/Wailea Ike Drive intersection is proposed. The following lane configuration is recommended:

Wailea Ike Drive/ Project Road/Future Piilani Highway Extension South – Phase 3

- Install a traffic signal system.
- Northbound Approach: Provide an exclusive left-turn lane, two (2) exclusive through lanes, and an exclusive right-turn lane.
- Southbound Approaches: Provide two (2) exclusive left-turn lanes, an exclusive through lane, and an exclusive right-turn lane. Piilani Highway southbound right-turn will be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
- Eastbound Approach: Provide two (2) exclusive left-turn lanes and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane, an exclusive through lane, and an exclusive right-turn lane.

Intersection curve geometrics are based on turning path requirements for WB-50 design vehicles. Where appropriate, ADA curb ramps will be designed and constructed.





### G. Signage and Pavement Markings

The signage and pavement markings will be designed and constructed based on the Federal Highway Administration "Manual on Uniform Traffic Control Devices" (MUTCD).

### H. Roadside Design

Guard rails will be installed in accordance with the AASHTO Roadside Design Guide.

## V. CONCLUSION

Based on the foregoing it is our professional opinion that the proposed improvements for this project will be designed in accordance with the applicable rules and regulations of the State of Hawaii and the County of Maui as applicable. Highway elements were based on HDOT, County of Maui and AASHTO guidelines.

## DESIGN REFERENCES

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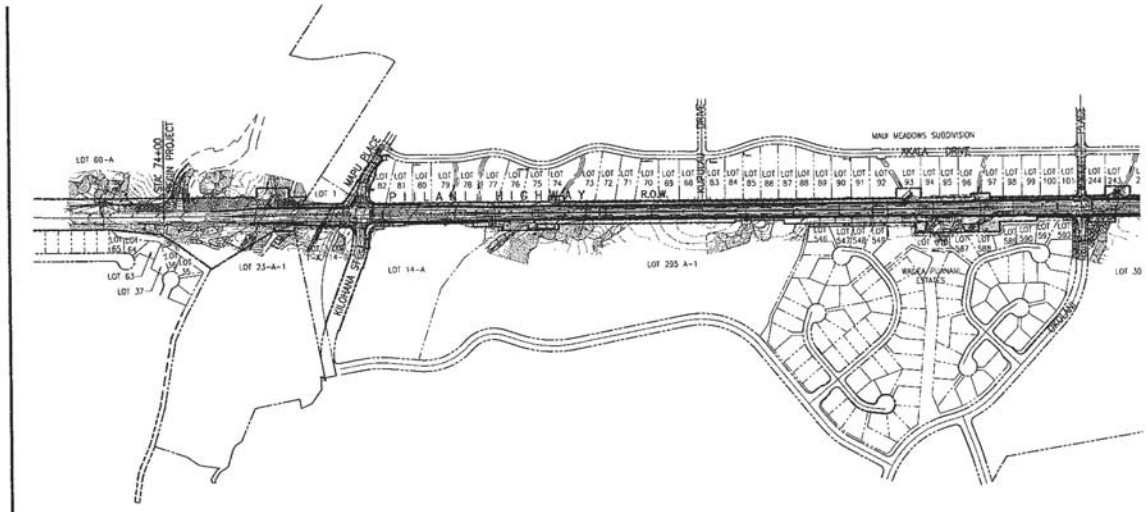
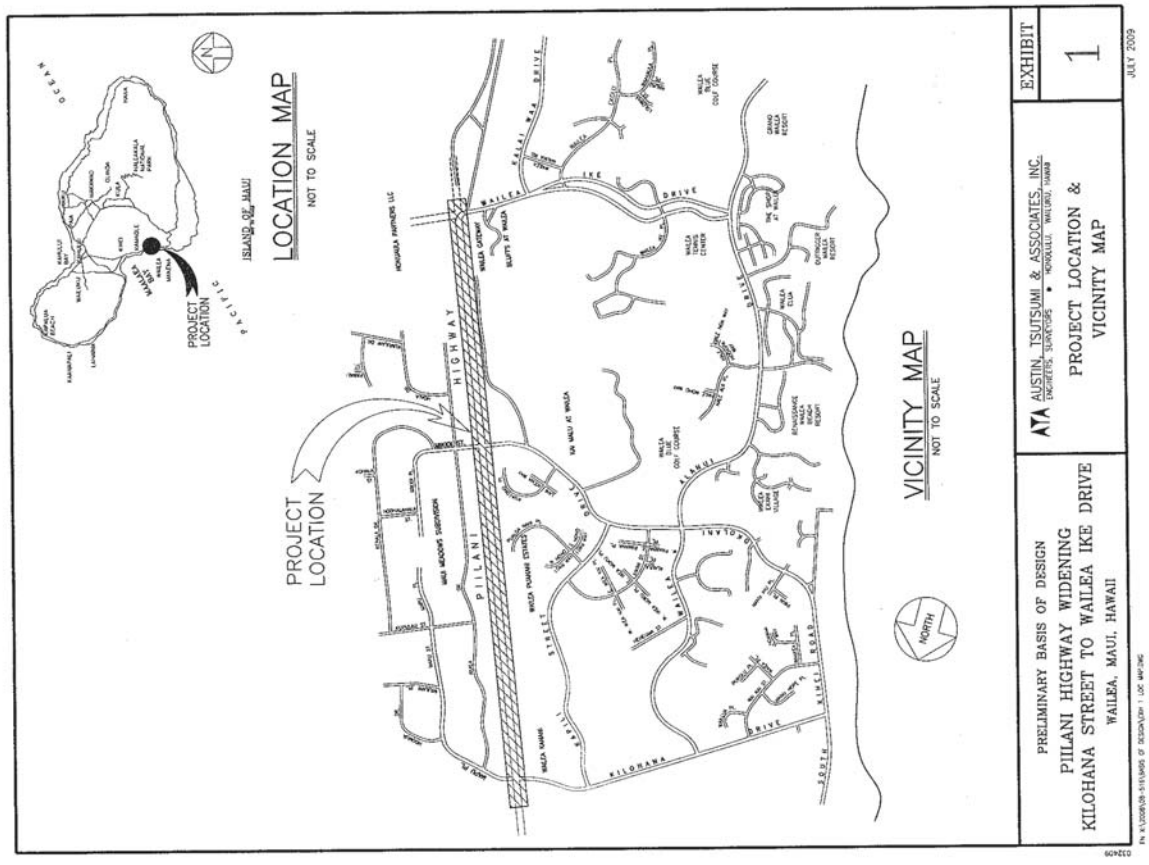



GENERAL SITE PLAN
SCALE: 1"=300'

SCALE IN FEET
150' 0 150' 300'

PRELIMINARY BA
PIILANI HIGHW
KILOHANA STREET T
WAILEA, MA



# APPENDIX J.

# Preliminary Engineering Report

## PRELIMINARY ENGINEERING REPORT
## PIILANI HIGHWAY WIDENING - KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

## FINAL

July 23, 2010
Revised April 28, 2011

Prepared for:

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# PRELIMINARY ENGINEERING REPORT
# FOR
# PIILANI HIGHWAY WIDENING
# KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

**PREPARED FOR:**

**Honua'ula Partners, LLC**

**A & B Wailea LLC**

**Keaka LLC**

**ATC Makena Owner LLC**

Prepared By

**Austin, Tsutsumi & Associates, INC.**
Civil Engineers • Surveyors
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July 23, 2010
Revised April 28, 2011



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A PRELIMINARY HYDROLOGY CALCULATIONS



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CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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# PRELIMINARY ENGINEERING REPORT
# FOR
# PIILANI HIGHWAY WIDENING
# (KILOHANA DRIVE TO WAILEA IKE DRIVE)
# WAILEA, MAUI, HAWAII

## I. INTRODUCTION

The purpose of this report is to provide an overview of the preliminary engineering design of the Piilani Highway Widening – Kilohana Drive to Wailea Ike Drive project in Wailea, Maui. This report evaluates the existing site conditions and defines requirements for grading, drainage, electrical and water utilities, and intersection improvements with traffic signalization, along with other miscellaneous improvements for the widening of Piilani Highway from Kilohana Drive to Wailea Ike Drive.

## II. PROPOSED PROJECT

### A. Location

Piilani Highway (Route 31) is a four (4) lane principal arterial roadway from South Kihei Road to Kilohana Drive in Wailea. The highway reduces to two (2) lanes from its intersection with Kilohana Drive to its existing terminus at Wailea Ike Drive. This north-south State arterial provides access to the Kihei-

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Wailea-Makena areas from areas north of Wailea-Makena. The proposed Piilani Highway Widening project consists of widening of approximately 1.44 miles of highway from Kilohana Drive/Mapu Street to Wailea Ike Drive. Intersection improvements proposed within the project area are Kilohana Drive/Mapu Street, Okolani Drive/Mikioi Place and Wailea Ike Drive/proposed Honua'ula project access road. The project area is bounded by the Maui Meadows Subdivision and the proposed Honua'ula Partners LLC development (currently vacant land) to the east and Wailea Kanani, Wailea Puanani Estates, Kai Malu at Wailea, Wailea Gateway Shopping Center, and the Bluffs at Wailea to the west. Refer to Exhibit 1 for Location and Vicinity Map.

**B. Project Description**

Honua'ula Partners LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Owner LLC in coordination with the State of Hawaii, Department of Transportation, Highways Division proposes to implement the project. The proposed project will widen Piilani Highway from a two-lane highway to a four-lane highway beginning at approximately 1,000 feet north of its intersection with Kilohana Drive/Mapu Place to its terminus at Wailea Ike Drive, including reconstructing Piilani Highway/Wailea Ike intersection to include a southbound extension of Piilani Highway and eastbound entry roadway into the Honua'ula project area. Proposed improvements include excavation and embankment, widening of the road with asphalt concrete pavement, construction of concrete curb, gutters, sidewalks, drainage systems, storm water retention and filtration systems, retaining walls, sound attenuation walls, roadway re-striping, relocation of overhead electrical transmission lines, telephone lines and cable television lines to new utility poles, installation of new utility boxes, street light standards, traffic sign posts, guard rails, and adjustments to existing utilities as may be necessary for installation of proposed improvements. Reconstruction of the existing traffic signal at Kilohana Drive/Mapu Street and installation of new traffic signals at Okolani Drive/Mikioi Street and at Wailea Ike Drive/proposed Honua'ula project access road are also proposed. (Refer to Exhibits 2 to 9 for Typical Road Sections and Preliminary Plans.)



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## III. EXISTING CONDITIONS

**A. Topography and Soil Conditions**

The project site within the existing highway right-of-way is currently developed with the construction of the existing roadway and utility improvements. The longitudinal slope of the highway slopes in a south to north direction from Wailea Ike Drive (Station 150+00 at approximate elevation of 323 feet) to the beginning of the project limits just north of Kilohana Drive/Mapu Place intersection (Station 74+00 at approximately elevation of 197 feet). The existing ground cross sections generally slope in the mauka to makai direction with elevations ranging from 329 ft to 197-feet mean sea level (MSL).

Soil on the site is mainly Makena loam and stony complex (MXC). MXC soil is typically found on 3 to 15 percent slopes, on the lower leeward slopes of Haleakala in the Makena and Kamaole region. This complex is a mixture of Makena loam and stony land. Stony land occurs on low ridges and makes up 30 to 60 percent of the complex. Makena loam is dark brown to dark yellowish brown soil. Type MXC soil is part of the Makena soil series and characterized as well drained, having moderately rapid permeability, and slow to medium runoff with a slight erosion hazard and a low shrink-swell potential. Classifications are based on the USDA Soil Conservation Service's publication, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai", State of Hawaii, dated August 1972 and soil classification information is confirmed with the geotechnical consultation letter prepared by Hirata & Associates, Inc. dated March 30, 2009.

**B. Existing Infrastructure**

**1. Water**

The Kihei-Makena region is served by the Central Maui Water System. The Central Maui Water System is served by the Iao Aquifer which includes the Mokuhau wells located in Wailuku.

Two (2) segments of waterlines are located within the project area. The first segment is an existing 12-inch cast iron waterline which

crosses Piilani Highway north of Kilohana Drive/Mapu Place intersection at approximately Station 83+50 from the Maui Meadows Subdivision into Lot 1-A (TMK: (2) 2-1-008:046) owned by the County of Maui. The second 12" waterline crosses Piilani Highway south of Okolani Drive/Mikioi Place at approximately Station 123+00 and branches off in the southerly direction from Station 123+00 to 126+40 then continues offsite within Easement 136 located within Lot 307-A (TMK: (2) 2-1-008:130) owned by A&B Wailea LLC.

**2. Sewer**

The wastewater service area for the County's Kihei Wastewater Reclamation System extends from North Kihei to Wailea. The system consists of pump stations and force mains which convey wastewater through the County's sewer lines. The combined flows are transported to the Kihei Wastewater Reclamation Facility, which is located adjacent to the Elleair Golf Course. The existing design capacity of the Kihei Wastewater Reclamation Facility is 8.0 million gallons per day (MGD).

The proposed improvements are not expected to adversely impact the wastewater collection system and associated infrastructure. There are no existing sewer systems within the project limits.

**3. Electrical**

An existing overhead Maui Electric Company (MECo) transmission line runs along the makai side of the highway, then crosses the existing highway to the mauka side from Station 141+60 and continues in the southerly direction beyond the project limits. Overhead service lines cross the highway at various locations and provide service to the adjacent subdivisions. Power to existing street lights are provided via service drops from overhead lines and underground conduits.

Hawaiian Telephone Company (HTCo) overhead telecommunication lines situated on the makai side of Piilani Highway are located on joint poles shared with MECo with crossings at various locations to provide service to adjacent subdivisions.



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Sandwich Isle Communication (SIC) underground fiber optic telecommunications lines are situated on the mauka side of the existing highway and provide service to Department of Hawaiian Home Land (DHHL) lessees.

**4. Drainage**

There are nine (9) existing culvert crossings spanning the section of Piilani Highway within the project vicinity. The culverts were designed based on a 50 year – 1 hour storm recurrence interval. Existing culvert capacity and drainage calculations are based on a drainage report titled "Hydrology Report for Piilani Highway" dated March 1977, prepared by Trans-Meridian Engineers & Surveyors, Inc. for the HDOT Highways Division. The table below summarizes the existing culvert information within the project site limits:

| Culvert Designation | Culvert Size | Culvert Capacity (cfs) |
|---|---|---|
| 27 | 2- 60" | 302 |
| 28 | 3- 48" | 217 |
| 29 | 2- 42" | 115 |
| 30 | 1- 30" | 27 |
| 31 | 1- 84" | 398 |
| 32 | 4- 120" | 2522 |
| 33 | 1- 120" | 1005 |
| 34 | 3- 48" | 295 |
| 35 | 2- 120" | 1925 |

The culvert designation and culvert capacity information was obtained from the Trans-Meridian Drainage Report. The culvert size information was obtained from field measurements by Austin, Tsutsumi & Associates, Inc. completed on July 24, 2008.

Currently, roadway drainage systems consist of concrete swales, curb/gutter, catch basins/grated drain inlets and 24-inch diameter drain pipes at certain segments of the highway, primarily in the vicinity of the

three intersections. These systems drain to the existing culverts and then to the gulches. No retention systems currently exist within the existing state right-of-way. Offsite flows are currently intercepted by a concrete drainage ditch located along the eastern boundary of the project area and are conveyed to the existing culverts.

Existing flows within the project limits were calculated to be approximately 65.2 cfs based on a 25 year-1 hour storm recurrence interval in accordance with HDOT Design Criteria for Highway Drainage dated May 15, 2006. As mentioned above, existing offsite and culvert flows were taken from the drainage report prepared by Trans-Meridian Engineers & Surveyors, Inc. Refer to Appendix A for Preliminary Hydrology Computations.

**5. Roadway System**

Piilani Highway - is generally a four-lane, undivided, north/south State arterial highway providing access to Kihei and Wailea from areas north of Kihei. Piilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Mapu Place until its terminus at Wailea Ike Drive. Piilani Highway begins at its intersection with South/North Kihei Road and ends at its intersection with Wailea Ike Drive, with provisions to extend the highway further south. Left-turn storage lanes are provided at major intersections on Piilani Highway. The posted speed limit on Piilani Highway is 40 miles per hour (mph) for a majority of the highway. The speed limit on Piilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

Piilani Highway is currently classified as an Urban Principal Arterial. The segment of highway under this project scope is currently an existing two-lane asphalt concrete paved roadway with one (1) lane of traffic in each direction.



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Kilohana Drive - is a two-lane, undivided, east/west roadway that connects South Kihei Road with Piilani Highway, intersecting Piilani Highway across Mapu Place, which provides the north access to Maui Meadows residential subdivision. Kilohana Drive is currently a private roadway from South Kihei Road to approximately Kapili Street and a State roadway from approximately Kapili Street to Piilani Highway. The posted speed limit on Kilohana Drive is 25 mph.

Mapu Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Pi'ilani Highway to Maui Meadows residential subdivision. The posted speed limit on Mapu Place is 25 mph.

Okolani Drive - is a four-lane, divided, east/west private collector roadway between South Kihei Road and Wailea Alanui Drive. Okolani Drive narrows to a two-lane undivided roadway east of Wailea Alanui Drive to its intersection with Piilani Highway directly across of Mikioi Street. The posted speed limit on Okolani Drive is 30 mph.

Mikioi Place – is a two-lane, undivided, east/west roadway that provides one of two access points from Pi'ilani Highway, across Okolani Drive, to Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

Wailea Ike Drive - is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph. Wailea Ike Drive, from its intersection with Wailea Ekolu Place to Wailea Alanui Drive, has a major drainage channel in its median area.

**C. Flood Zone**

The project site sits in a designated flood zone "X", with areas of minimal flooding. Flood zone information is obtained from the Federal Emergency

Management Agency, Flood Insurance Rate Map (FIRM), Panel No. 150003 0676E, dated September 25, 2009.

## IV. PROPOSED INFRASTRUCTURE IMPROVEMENTS

### A. Grading and Drainage Plan

The project will require excavation and embankment in order to widen the existing highway while maintaining the existing longitudinal grade of the highway. The site will be graded to maintain the existing highway grades and south to north drainage pattern. Retaining walls, ranging from an exposed face of 2-feet to 26-feet, will be required in order to attain the proposed roadway grades. Based on the geotechnical consultation letter dated March 30, 2009 by Hirata & Associates, gradients of 2H:1V or flatter should be used for permanent cut slopes exposing the surface soil, as well as fill slopes. Gradients of 1H:1V or flatter should be used for permanent cut slopes into the basalt. (Refer to Exhibit 2 - Typical Road Sections).

The Rational Method is used to determine the storm water runoff quantities for drainage area less than 200 acres. Hydrology calculations are based on a 25 year – 1 hour storm recurrence interval in accordance with HDOT Design Criteria for Highway Drainage dated May 15, 2006. Refer to Appendix A for preliminary computations for onsite runoff.

Offsite runoff mauka of the project site will be intercepted by concrete trapezoidal ditches located makai of the eastern right-of-way boundary. The runoff will be conveyed to existing culverts following the existing drainage routing. Offsite runoff calculations were taken from the drainage report prepared by Trans-Meridian Engineers & Surveyors, Inc. Flows were assumed unchanged, since any mauka developments that occurred subsequent to the Trans-Meridian report would be required to retain their respective increases in storm water flows in accordance with Maui County drainage standards.

Piilani Highway will be widened from a 24-feet travelway to a 48-feet travelway by adding one (1) additional lane in each direction of traffic flow. In addition, an 8-feet wide median is proposed along with 4-feet wide bike lane, 2-



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feet wide curb/gutter and 6-feet wide concrete sidewalk on both sides of the road. Refer to Exhibit 2 for Typical Road Sections. The proposed widening improvements will increase the impervious surfaces by approximately 5.8 acres, thus increasing the developed runoff from approximately 65.2 cfs (existing) to approximately 76.8 cfs (proposed), an increase of 11.6 cfs.

An analysis was conducted to determine the impact of discharging the increase in flow generated from the project site to each culvert. Based on the percentage increase in flow through the culvert and the normal depth increase through the culvert, the flow increase was considered to be negligible. The table below summarizes the existing culvert flow and the increase in flow generated from the project site to each culvert (if no retention provided):

| Culvert Designation | Culvert Size | Exist. Culvert Flow (cfs) | Increase in Flow (cfs) | % Increase in Flow |
|---|---|---|---|---|
| 27 | 2- 60" | 302 | 0.56 | 0.2 |
| 28 | 3- 48" | 217 | 1.22 | 0.6 |
| 29 | 2- 42" | 115 | 0.31 | 0.3 |
| 30 | 1- 30" | 27 | ~0 | ~0 |
| 31 | 1- 84" | 398 | 2.86 | 0.7 |
| 32 | 4- 120" | 2522 | 1.27 | 0.05 |
| 33 | 1- 120" | 1005 | 0.84 | 0.08 |
| 34 | 3- 48" | 295 | 2.74 | 0.9 |
| 35 | 2- 120" | 1925 | 1.61 | 0.08 |

Based on discussion with Maui County Dept. of Public Works – Engineering Division, there are no known flooding issues downstream of the project area. Thus, potential impact to downstream areas is negligible. Permanent BMPs including surface retention basins and mechanical filtration systems are proposed for this project that will retain the increase in flow generated by the 25 yr-1 hr design storm event and meet HDOT water quality standards.

The proposed drainage system improvements will include grated drain inlets, manholes, drain lines, surface retention basins and mechanical filtration systems, and extension of existing culverts and construction of new inlet and outlet structures to accommodate the widened road section. The 11.6 cfs

increase in runoff will be retained via the surface retention basins in accordance with HDOT Storm Water Permanent Best Management Practices Manual dated March 2007. Refer to Exhibits 3 to 9 for the proposed drainage system schematic layout. Coordination with the Army Corp of Engineers, Department of Health and Department of Land and Natural Resources will be undertaken during the design process to address applicable, additional permitting requirements for the culvert modifications.

In addition to reducing peak flow rates, the proposed stormwater system will provide water quality treatment via mechanical filtration systems and reduce the discharge of pollutants to the maximum extent practicable in accordance with the HDOT Storm Water Permanent Best Management Practices Manual dated March 2007.

**B. Water System**

A segment of the existing 12-inch cast iron waterline which crosses Piilani Highway north of Kilohana Drive/Mapu Place intersection will need to be relocated and lowered to allow for the proposed drainage improvements. A segment of the 12" waterline that runs along Piilani Highway south of Okolani Drive/Mikioi Place will also need to be relocated to allow for the proposed drainage improvements. Refer to Exhibits 4 and 7 for schematic of waterline relocation.

**C. Sewer System**

No existing sewer lines will be affected by the proposed road improvements.

**D. Electrical System**

The existing MECo overhead electrical transmission lines and HTCo overhead telecommunication lines will need to be relocated to new joint utility poles along the length of the project section to accommodate the proposed roadway widening. Existing electrical boxes, underground conduits and street lights will also be relocated to accommodate the proposed roadway widening. Relocation of the SIC lines are not anticipated. The contractor must ensure that the existing SIC line remain intact and uncut during construction.



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**E. Roadway Improvements**

Widening of Piilani Highway from Kilohana Drive/Mapu Place to the terminus is required as a condition in the change in zoning approval for the Honua'ula Development, Makena Resort Development, and Wailea A&B Properties Development. The proposed road improvements will widen Piilani Highway from a 24-feet travelway to a 48-feet travelway by adding a 12-feet wide travel lane in each direction of traffic flow. In addition, a 4-feet wide bike lane, 2-feet wide concrete curb, gutter and 6-feet wide sidewalk on both sides of the highway will be provided. An 8-feet wide striped median is also proposed. (Refer to Exhibit 2 for Typical Road Sections.)

Retaining walls will be required along various segments of the proposed roadway widening to accommodate the widened roadway section. Wall heights will vary from approximately 2 to 26 feet high. Sound attenuation walls will also be incorporated into the construction to aid in reduction in noise levels due to traffic noise impacts, as recommended by the acoustical engineer Y. Ebisu & Associates sound study report dated August 2009. HDOT criteria will be used to determine feasibility of sound wall construction.

The existing posted speed limits for Piilani Highway varies from 30-miles per hour between the Mokulele highway to the north of Kilohana Drive, 40-mph from Kilohana Drive southbound with a reduced speed of 25-mph near the terminus at Wailea Ike Drive. Based on a speed study of this segment of highway by Austin, Tsutsumi & Associates, Inc. in April 2009, the 85$^{th}$ percentile speed was determined to be 37.7 mph. Under the proposed design, the posted speed limit will be 35 mph and the design speed will be 45 mph for the section of highway under the project scope.

Right-of-way acquisition of approximately 15 feet makai of the existing right-of-way, from approximately Station 81+00 to Station 84+00, affecting Lot 1-A (TMK: (2) 2-1-008:046) and Lot 14-B (TMK: (2) 2-1-008:113) owned by the County of Maui, will be needed to accommodate the proposed roadway widening. Refer to Exhibit 4 for plan. Right-of-way acquisition of at the makai intersection curves of Okolani Drive, affecting Lot 611 (TMK: (2)2-1-026:094)

owned by Wailea Puanani Estates and Lot 307-A (TMK: (2)2-1-008:130) owned by A & B Wailea LLC will also be needed to accommodate the proposed roadway improvements.

The proposed intersection improvements are as follows:

Kilohana Drive/Mapu Place

- Modification of the existing traffic signal system
- Northbound Approach and Southbound Approaches: Provide an exclusive left-turn lane, two (2) exclusive through lanes, and an exclusive right-turn lane.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane, an exclusive through lane, and an exclusive right-turn lane.

Okolani Drive/Mikioi Place

- Install a traffic signal system.
- Northbound and Southbound Approaches: Provide an exclusive left-turn lane, an exclusive through lane, and a shared through/right-turn lane.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane.
- Westbound Approach: Remain as a shared left-turn/through/right-turn lane.

The Piilani Highway/Wailea Ike Drive intersection will be completed in 3 phases. The Year 2016 was selected to reflect the completion year of Phase I of Honua'ula which includes the creation of a tee-intersection at the Piilani Highway/Wailea Ike Drive intersection. Year 2022 was selected to reflect the full build-out of Honua'ula, Wailea Resort and Makena Resort.



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Phase I of the Piilani Highway/Wailea Ike Drive intersection is expected to occur prior to the construction of Honua'ula. The Piilani Highway/Wailea Ike Drive intersection will not require any intersection control and will have the following lane configuration:

Wailea Ike Drive – Phase 1

- Southbound Approaches: Provide an exclusive free right-turn lane.
- Eastbound Approach: Provide an exclusive free left-turn lane.

Phase II of the Piilani Highway/Wailea Ike Drive intersection is expected to occur upon completion of Phase I of Honua'ula (Year 2016). The east leg of the Piilani Highway/Wailea Ike Drive intersection will be striped forming a tee-intersection, with Piilani Highway being the stem of the tee. Due to a high southbound right-turn and eastbound left-turn, the intersection will warrant a traffic signal, in accordance with the Highway Capacity Manual (HCM). With the Piilani Highway/Wailea Ike Drive intersection re-striped to a tee-intersection, the following are the recommended lane configuration:

Wailea Ike Drive/ Project Road – Phase 2

- Install a traffic signal system.
- Southbound Approaches: Provide an exclusive left-turn lane, and an exclusive right-turn lane. Also, it is recommended that the Piilani Highway southbound right-turn be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
- Eastbound Approach: Provide two (2) exclusive left-turn lanes and a through lane.
- Westbound Approach: Provide an exclusive through lane and an exclusive right-turn lane.

Phase III of the Piilani Highway/Wailea Ike Drive intersection is expected to occur during Phase II of Honua'ula where an extension of Piilani Highway to

intersection with an extension of Kaukahi Street forming the south leg of the Piilani Highway/Wailea Ike Drive intersection is proposed. The following lane configuration is recommended:

Wailea Ike Drive/ Project Road/Future Piilani Highway Extension South – Phase 3

- Install a traffic signal system.
- Northbound Approach: Provide an exclusive left-turn lane, two (2) exclusive through lanes, and an exclusive right-turn lane.
- Southbound Approaches: Provide two (2) exclusive left-turn lanes, an exclusive through lane, and an exclusive right-turn lane. Also, it is recommended that the Piilani Highway southbound right-turn be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
- Eastbound Approach: Provide two (2) exclusive left-turn lanes and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane, an exclusive through lane, and an exclusive right-turn lane.

## V. CONCLUSION

The proposed improvements for this project will be designed in accordance with the applicable rules and regulations of the State of Hawaii and the County of Maui as applicable.

State Department of Transportation (HDOT) Design Criteria for Highway Drainage dated May 15, 2006 and HDOT Storm Water Permanent Best Management Practices Manual dated March 2007 requires retention of the increase in storm water runoff between the post-development flows and pre-development flows and detention of the water quality design volume or treatment of the water quality flow rate. The project storm water management plan and drainage system will be designed to meet these standards.



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A National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activities will be obtained and the requirements of the approved NPDES permit and best management plan (BMP) will be adhered during construction. At a minimum silt fences, diversion berms, gravel egress, truck wash down areas and dust screens will be included in the BMP. Monitoring of the BMP during construction will be the responsibility of the selected contractor with general oversight by HDOT or their designated representative.

Based on the foregoing, the project will have no adverse effects to the existing facilities and to the surrounding environment.

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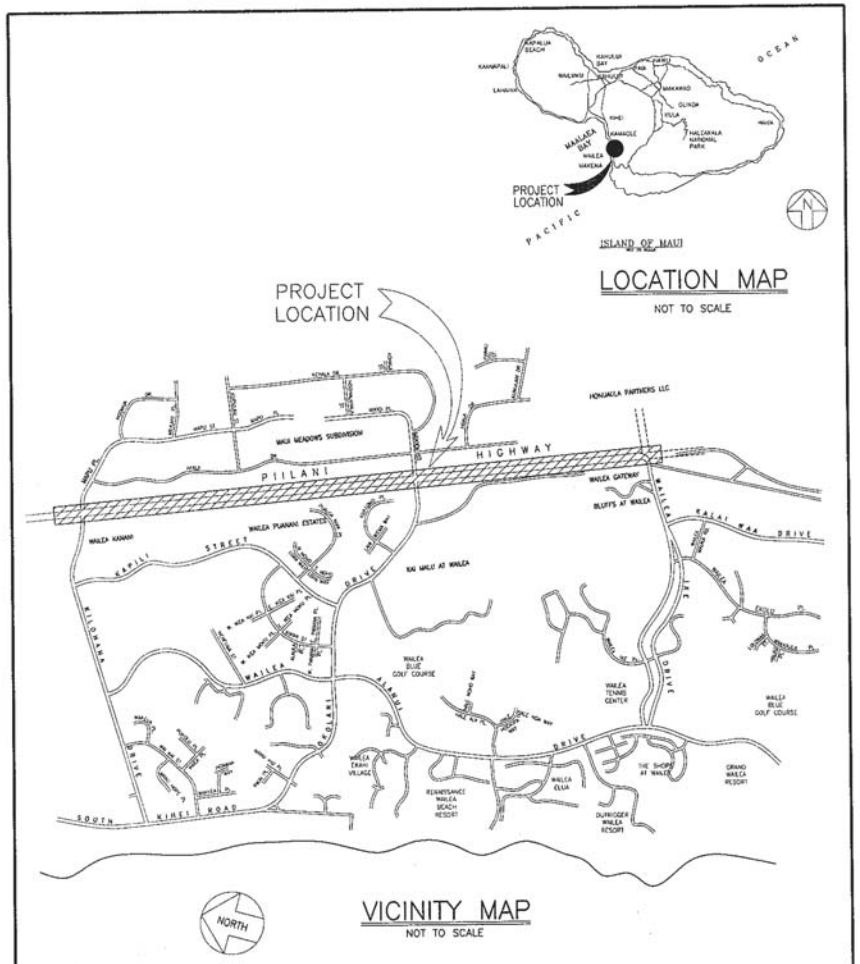
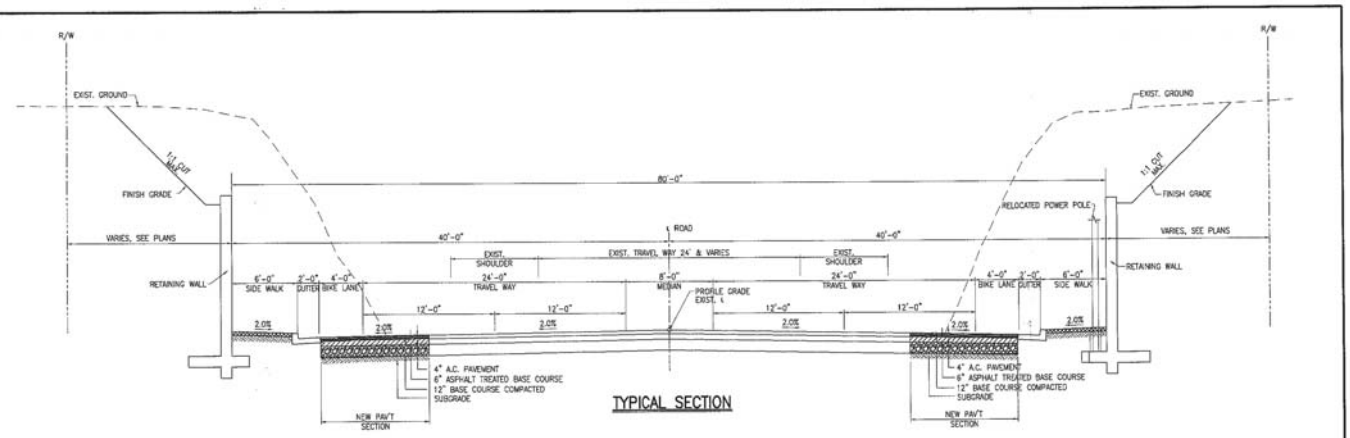
# EXHIBITS

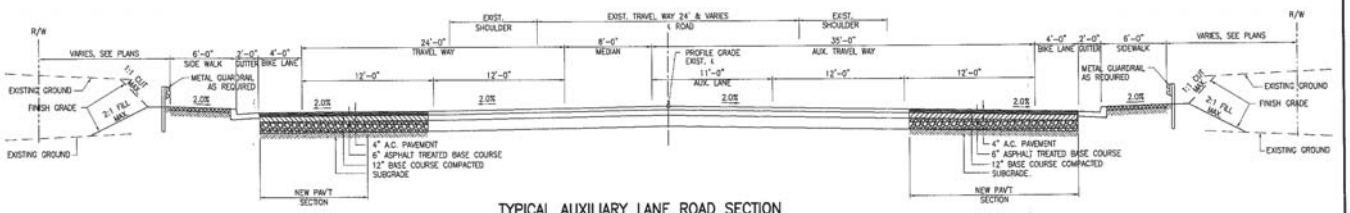



| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING<br>KILOHANA DRIVE TO WAILEA IKE DRIVE<br>WAILEA, MAUI, HAWAII | ATA AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII<br>PROJECT LOCATION &<br>VICINITY MAP | EXHIBIT<br>1 |

AUGUST 2009




TYPICAL SECTION



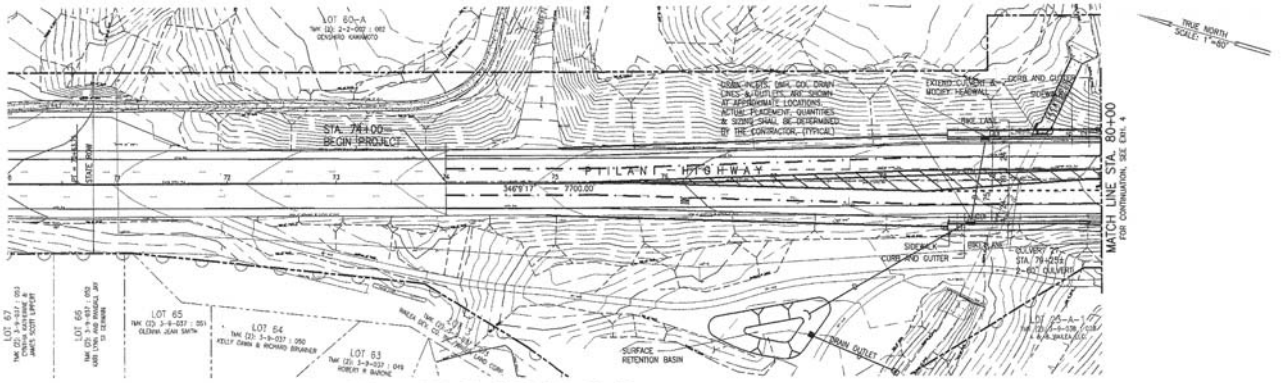

TYPICAL AUXILIARY LANE ROAD SECTION

NOTES:

1. EXISTING R.O.W. WIDTH VARIES FROM APPROX. 110' TO 250' FOR SECTION OF HIGHWAY BETWEEN KILOHANA DRIVE AND WAILEA IKE DRIVE.

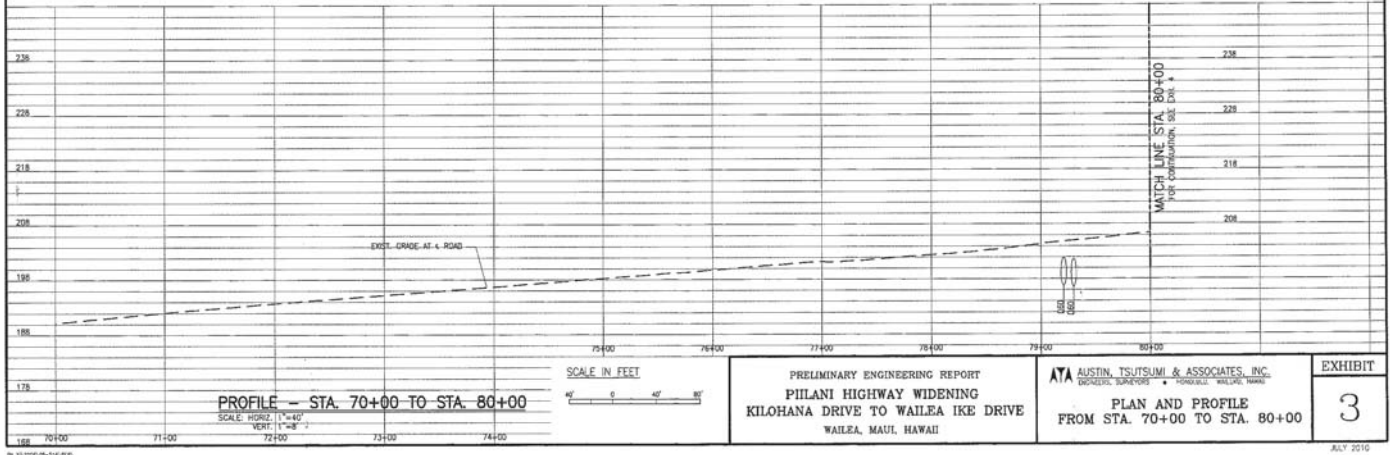
| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING<br>KILOHANA DRIVE TO WAILEA IKE DRIVE<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII<br>TYPICAL ROAD SECTIONS | EXHIBIT<br>2 |

JULY 2010




PLAN – STA. 70+00 TO STA. 80+00

SCALE: 1"=40'




PROFILE – STA. 70+00 TO STA. 80+00

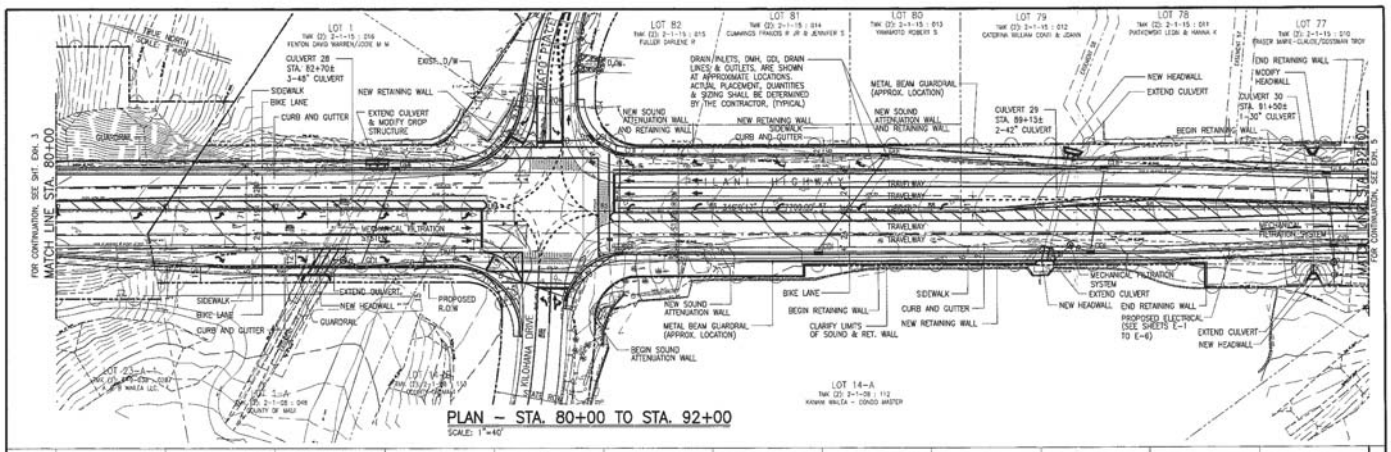
SCALE: HORIZ. 1"=40'
VERT. 1"=8'

SCALE IN FEET

40' 0 40' 80'

| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING<br>KILOHANA DRIVE TO WAILEA IKE DRIVE<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII<br>PLAN AND PROFILE<br>FROM STA. 70+00 TO STA. 80+00 | EXHIBIT<br>3 |

JULY 2010



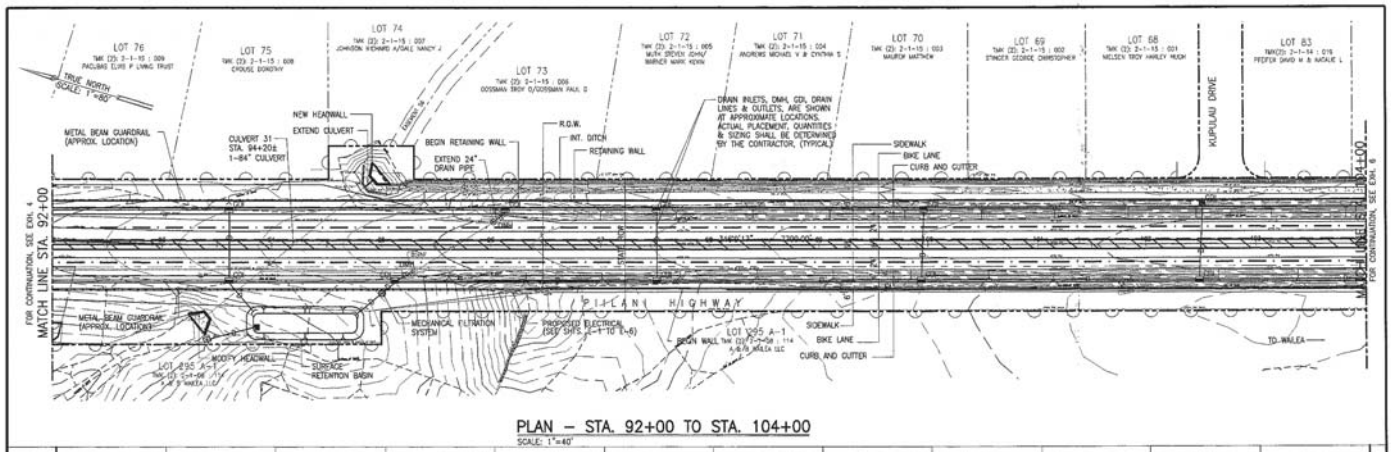

PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII

PLAN AND PROFILE
FROM STA. 80+00 TO STA. 92+00

EXHIBIT 4

JULY 2010



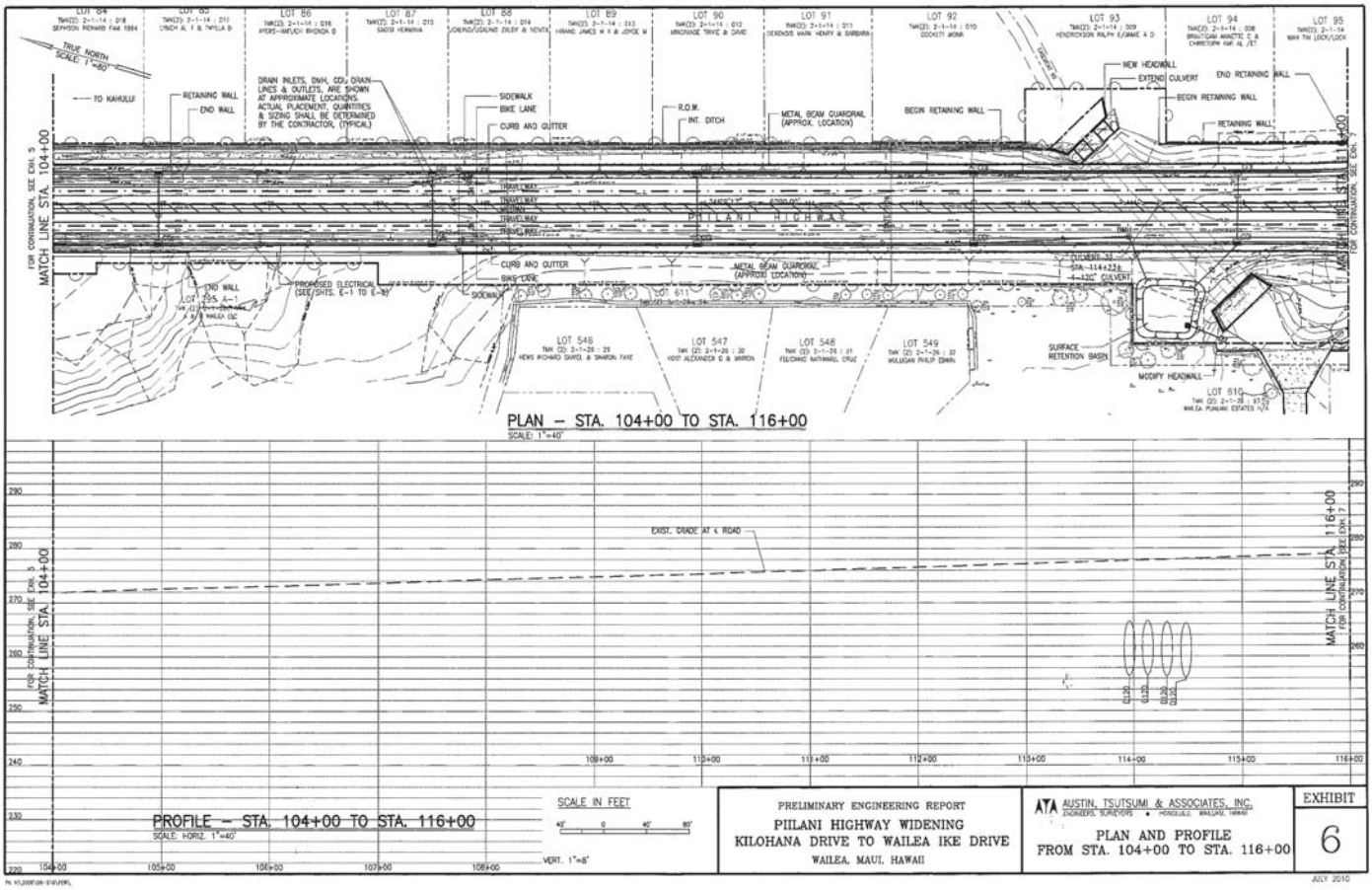

PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII

PLAN AND PROFILE
FROM STA. 92+00 TO STA. 104+00

EXHIBIT 5

JULY 2010



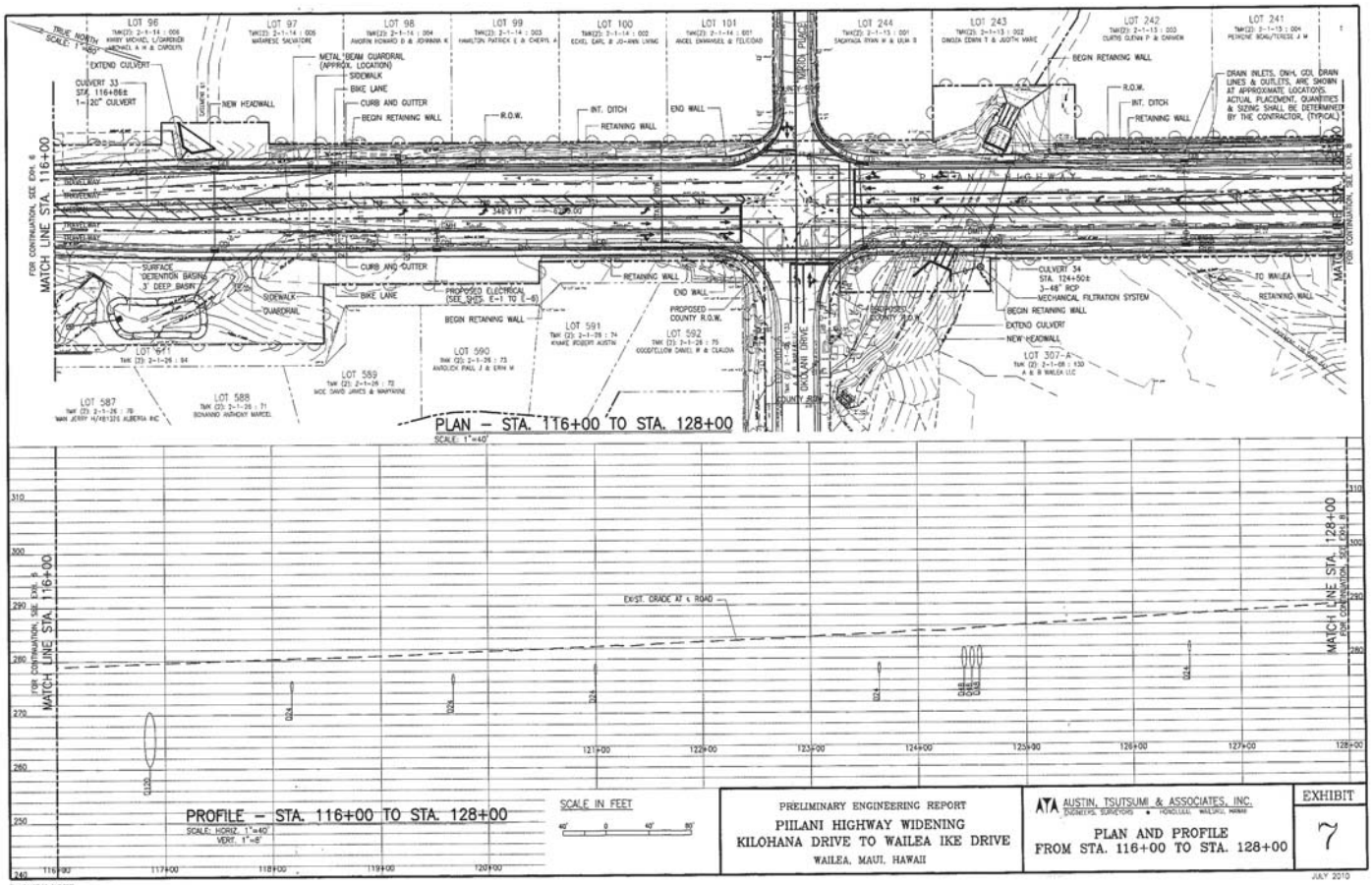

PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII

PLAN AND PROFILE
FROM STA. 104+00 TO STA. 116+00

EXHIBIT 6

JULY 2010



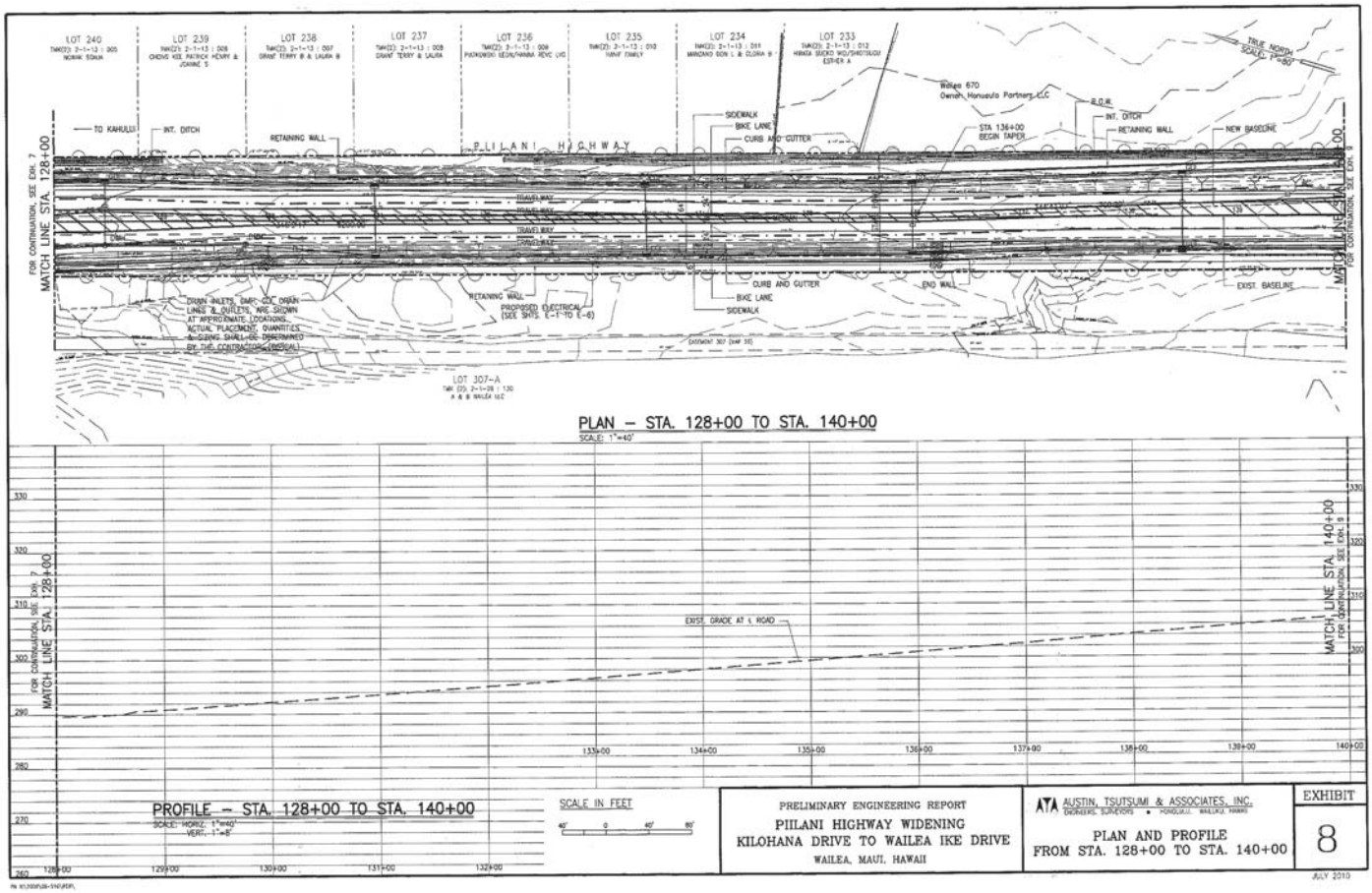

PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII

PLAN AND PROFILE
FROM STA. 116+00 TO STA. 128+00

EXHIBIT 7

JULY 2010




PLAN – STA. 128+00 TO STA. 140+00
SCALE: 1"=40'




PROFILE – STA. 128+00 TO STA. 140+00
SCALE: HORIZ. 1"=40'
VERT. 1"=8'

SCALE IN FEET
40' 0 40' 80'

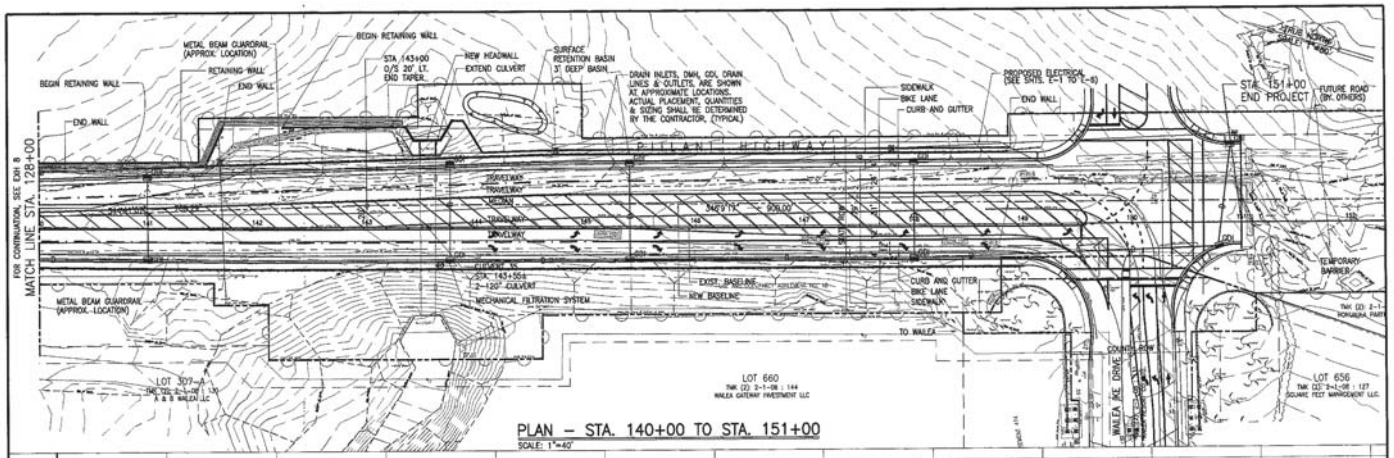
PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS SURVEYORS • HONOLULU, HAWAII

PLAN AND PROFILE
FROM STA. 128+00 TO STA. 140+00

EXHIBIT 8

JULY 2010




PLAN – STA. 140+00 TO STA. 151+00
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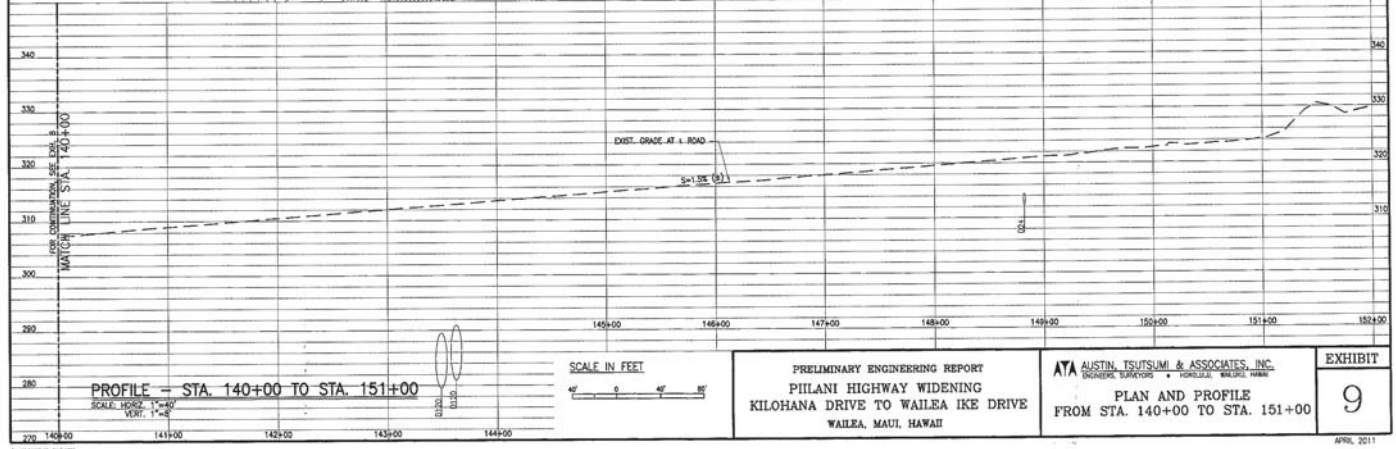



PROFILE – STA. 140+00 TO STA. 151+00
SCALE: HORIZ. 1"=40'
VERT. 1"=8'

SCALE IN FEET
40' 0 40' 80'

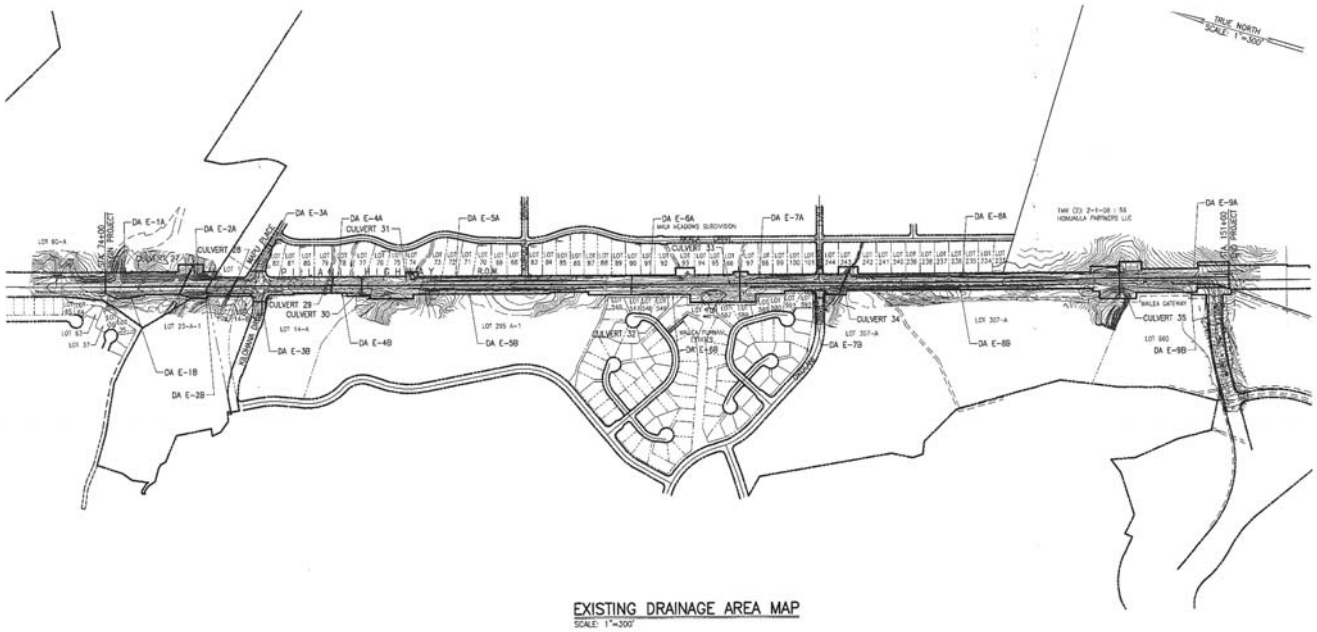
PRELIMINARY ENGINEERING REPORT
PIILANI HIGHWAY WIDENING
KILOHANA DRIVE TO WAILEA IKE DRIVE
WAILEA, MAUI, HAWAII

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS SURVEYORS • HONOLULU, HAWAII

PLAN AND PROFILE
FROM STA. 140+00 TO STA. 151+00

EXHIBIT 9

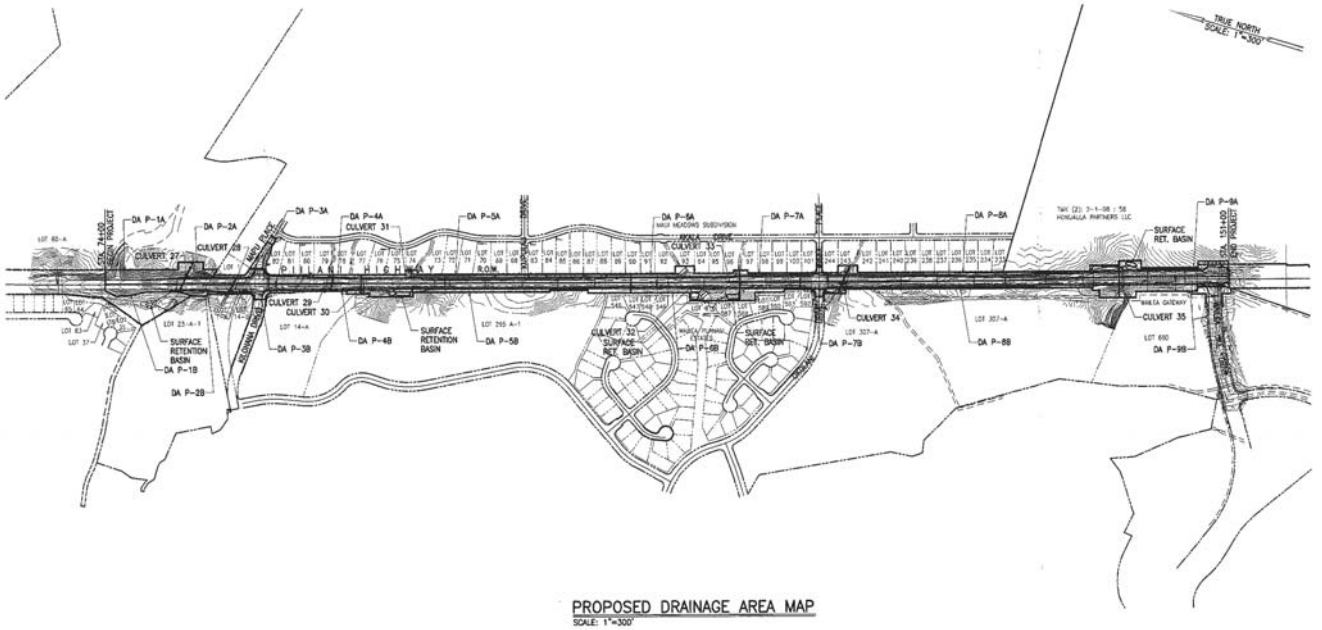
APRIL 2011




EXISTING DRAINAGE AREA MAP
SCALE: 1"=300'

| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING<br>KILOHANA DRIVE TO WAILEA IKE DRIVE<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII<br>EXISTING DRAINAGE AREA MAP | EXHIBIT<br>10 |

JULY 2010




PROPOSED DRAINAGE AREA MAP
SCALE: 1"=300'

| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING<br>KILOHANA DRIVE TO WAILEA IKE DRIVE<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII<br>PROPOSED DRAINAGE AREA MAP | EXHIBIT<br>11 |

APRIL 2011

# APPENDICES

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CIVIL ENGINEERS ▪ SURVEYORS

## APPENDIX A

PRELIMINARY HYDROLOGY CALCULATIONS

## PIILANI HWY WIDENING (Q existing)
## HYDROLOGY CALCULATIONS

| Drainage Area | Area, A, (sq ft.) | Area, A, (acres) | Runoff Coeff, C | Rainfall Intensity, I (in/hr), 25-yr-1hr | Length of Reach, L, (ft) | Slope, S (ft/ft) | Time of Conc, Tc, (min) | Initial Destination | Final Destination | Q25 | WQFR (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E-1A | 59,396.00 | 1.364 | 0.59 | 4.1 | 540 | 0.02 | 10.0 | Offsite | Offsite | 3.30 | 0.32 |
| E-1B | 31,505.00 | 0.723 | 0.70 | 4.1 | 540 | 0.02 | 10.0 | Offsite | Offsite | 2.06 | 0.20 |
| E-2A | 32,274.00 | 0.741 | 0.66 | 4.1 | 350 | 0.03 | 10.0 | CULVERT 27 | Offsite | 2.00 | 0.20 |
| E-2B | 23,819.00 | 0.547 | 0.66 | 3.8 | 350 | 0.03 | 10.0 | CULVERT 27 | Offsite | 1.37 | 0.14 |
| E-3A | 45,543.00 | 1.046 | 0.77 | 4.1 | 460 | 0.04 | 10.0 | CULVERT 28 | Offsite | 3.30 | 0.32 |
| E-3B | 44,175.00 | 1.014 | 0.70 | 4.1 | 460 | 0.04 | 10.0 | CULVERT 28 | Offsite | 2.91 | 0.28 |
| E-4A | 11,788.00 | 0.271 | 0.72 | 4.1 | 200 | 0.03 | 10.0 | CULVERT 29 | Offsite | 0.80 | 0.08 |
| E-4B | 12,332.00 | 0.283 | 0.63 | 4.1 | 200 | 0.03 | 10.0 | CULVERT 29 | Offsite | 0.73 | 0.07 |
| E-5A | 112,991.00 | 2.594 | 0.67 | 3.8 | 1470 | 0.01 | 13.0 | CULVERT 31 | Offsite | 6.60 | 0.70 |
| E-5B | 121,316.00 | 2.785 | 0.61 | 3.8 | 1470 | 0.01 | 13.0 | CULVERT 31 | Offsite | 6.46 | 0.68 |
| E-6A | 52,522.00 | 1.206 | 0.63 | 4.1 | 750 | 0.01 | 10.0 | CULVERT 32 | Offsite | 3.11 | 0.30 |
| E-6B | 71,979.00 | 1.652 | 0.56 | 4.1 | 750 | 0.01 | 10.0 | CULVERT 32 | Offsite | 3.79 | 0.37 |
| E-7A | 49,822.00 | 1.144 | 0.75 | 4.1 | 490 | 0.01 | 10.0 | CULVERT 33 | Offsite | 3.52 | 0.34 |
| E-7B | 54,144.00 | 1.243 | 0.68 | 4.1 | 490 | 0.01 | 10.0 | CULVERT 33 | Offsite | 3.47 | 0.34 |
| E-8A | 116,047.00 | 2.664 | 0.71 | 3.8 | 1470 | 0.01 | 13.0 | CULVERT 34 | Offsite | 7.19 | 0.76 |
| E-8B | 116,317.00 | 2.670 | 0.64 | 3.8 | 1470 | 0.01 | 13.0 | CULVERT 34 | Offsite | 6.49 | 0.68 |
| E-9A | 61,943.00 | 1.422 | 0.53 | 4.1 | 800 | 0.01 | 10.0 | CULVERT 35 | Offsite | 3.09 | 0.30 |
| E-9B | 73,774.00 | 1.694 | 0.72 | 4.1 | 800 | 0.01 | 10.0 | CULVERT 35 | Offsite | 5.00 | 0.49 |
| | | TOTAL: | 25.061 | | | | | | TOTAL: | **65.21** | |

Recurrence interval = 2.0 in. (25yr-1hr)

Job # 06-516
7/26/2010
9:37 AM

BY: AY
hydrology_06-516 - 072310 - 25 YR-PREFERRED ALTERNATIVE.xls

Job # 06-516
7/26/2010
9:37 AM

## PIILANI HWY WIDENING (Q proposed)
## HYDROLOGY CALCULATIONS

| Drainage Area | Area, A, (sq ft.) | Area, A, (acres) | Runoff Coeff, C | Rainfall Intensity, I (in/hr), 25-yr-1hr | Length of Reach, L, (ft) | Slope, S (ft/ft) | Time of Conc, Tc, (min) | Initial Destination | Final Destination | Q25 (cfs) | WQDV (cf) | WQFR (cfs) | Q increase cfs | Q proposed cfs | Q capacity cfs | Q retained cfs | V retained cf |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-1A | 59,396.00 | 1.364 | 0.81 | 4.1 | 540 | 0.02 | 10.0 | Offsite | Offsite | 3.41 | 3019 | 0.33 | 1.23 | 5.60 | 0.00 | 0.00 | 0 |
| P-1B | 31,505.00 | 0.723 | 0.74 | 4.1 | 540 | 0.02 | 10.0 | Offsite | Offsite | 2.19 | 1943 | 0.21 | | | | | |
| P-2A | 32,274.00 | 0.741 | 0.89 | 4.1 | 350 | 0.03 | 10.0 | SYSTEM 27 | Offsite | 2.10 | 1856 | 0.20 | 0.56 | 3.93 | 3.00 | 3.00 | 5400 |
| P-2B | 23,819.00 | 0.547 | 0.82 | 4.1 | 350 | 0.03 | 10.0 | SYSTEM 27 | Offsite | 1.84 | 1628 | 0.18 | | | | | |
| P-3A | 45,543.00 | 1.046 | 0.88 | 4.1 | 460 | 0.04 | 10.0 | MECH'd CULVERT 28 | Offsite | 3.77 | 3340 | 0.37 | 1.22 | 7.43 | 0.00 | 0.00 | 0 |
| P-3B | 44,175.00 | 1.014 | 0.88 | 4.1 | 460 | 0.04 | 10.0 | MECH'd CULVERT 28 | Offsite | 3.66 | 3239 | 0.36 | | | | | |
| P-4A | 11,788.00 | 0.271 | 0.85 | 4.1 | 200 | 0.03 | 10.0 | MECH'd CULVERT 29 | Offsite | 0.90 | 796 | 0.09 | 0.31 | 1.84 | 0.00 | 0.00 | 0 |
| P-4B | 12,332.00 | 0.283 | 0.81 | 4.1 | 200 | 0.03 | 10.0 | MECH'd CULVERT 29 | Offsite | 0.84 | 832 | 0.09 | | | | | |
| P-5A | 112,991.00 | 2.594 | 0.81 | 3.8 | 1470 | 0.01 | 13.0 | MECH'd SYSTEM 31 | Offsite | 7.98 | 7627 | 0.84 | 2.98 | 15.92 | 3.00 | 3.00 | 5300 |
| P-5B | 121,316.00 | 2.785 | 0.75 | 3.8 | 1470 | 0.01 | 13.0 | MECH'd SYSTEM 31 | Offsite | 7.94 | 7352 | 0.84 | | | | | |
| P-6A | 52,522.00 | 1.206 | 0.75 | 4.1 | 750 | 0.01 | 10.0 | SYSTEM 32 | Offsite | 3.71 | 3283 | 0.36 | 1.27 | 8.18 | 4.00 | 4.00 | 7200 |
| P-6B | 71,979.00 | 1.652 | 0.66 | 4.1 | 750 | 0.01 | 10.0 | SYSTEM 32 | Offsite | 4.47 | 3959 | 0.44 | | | | | |
| P-7A | 49,822.00 | 1.144 | 0.82 | 4.1 | 490 | 0.01 | 10.0 | SYSTEM 33 | Offsite | 3.85 | 3404 | 0.38 | 0.84 | 7.22 | 4.00 | 4.00 | 7200 |
| P-7B | 54,144.00 | 1.243 | 0.78 | 4.1 | 490 | 0.01 | 10.0 | SYSTEM 33 | Offsite | 3.97 | 3519 | 0.39 | | | | | |
| P-8A | 116,047.00 | 2.664 | 0.80 | 3.8 | 1470 | 0.01 | 13.0 | MECH'd CULVERT 34 | Offsite | 8.19 | 7736 | 0.85 | 2.74 | 10.42 | 0.00 | 0.00 | 0 |
| P-8B | 116,317.00 | 2.670 | 0.82 | 3.8 | 1470 | 0.01 | 13.0 | MECH'd CULVERT 34 | Offsite | 8.32 | 7948 | 0.88 | | | | | |
| P-9A | 61,943.00 | 1.422 | 0.77 | 4.1 | 800 | 0.01 | 10.0 | MECH'd CULVERT 35 | Offsite | 4.49 | 3975 | 0.44 | 1.61 | 9.70 | 2.00 | 2.00 | 3600 |
| P-9B | 73,774.00 | 1.694 | 0.75 | 4.1 | 800 | 0.01 | 10.0 | MECH'd CULVERT 35 | Offsite | 5.21 | 4611 | 0.51 | | | | | |
| | | TOTAL: | 25.061 | | | | | | TOTAL: | **78.85** | **79234.60** | | **11.53** | | **14.58** | **25700** | |

hydrology_06-516 - 072310 - 25 YR-PREFERRED ALTERNATIVE.xls

BY: AY

# APPENDIX J-1.

# Preliminary Engineering Report for Pi`ilani Highway Widening Construction Baseyard and Staging Area

## PRELIMINARY ENGINEERING REPORT
## PIILANI HIGHWAY WIDENING-
## CONSTRUCTION BASEYARD AND STAGING AREA
WAILEA, MAUI, HAWAII

July 28, 2011

Prepared for:

Honua'ula Partners, LLC
P.O. Box 220
Kihei, Hawaii 96753

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Kahului, Hawaii 96732

Keaka LLC
2005 Main Street
Wailuku, Hawaii 96793

ATC Makena Owner LLC
Starn O'Toole Marcus & Fisher
A Law Corporation
733 Bishop Street, Suite 1900
Honolulu, Hawaii 96813

*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

# PRELIMINARY ENGINEERING REPORT
# FOR
# PIILANI HIGHWAY WIDENING-
# CONSTRUCTION BASEYARD AND STAGING AREA

WAILEA, MAUI, HAWAII

**PREPARED FOR:**

**Honua'ula Partners, LLC**
**A & B Wailea LLC**
**Keaka LLC**
**ATC Makena Owner LLC**

Prepared By

**Austin, Tsutsumi & Associates, INC.**
Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

July 28, 2011



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A PRELIMINARY HYDROLOGY CALCULATIONS



AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
ADRIENNE W. L. H. WONG, P.E., LEED AP

# PRELIMINARY ENGINEERING REPORT
# FOR
# PIILANI HIGHWAY WIDENING-
# CONSTRUCTION BASEYARD AND STAGING AREA
# WAILEA, MAUI, HAWAII

## I. INTRODUCTION

The purpose of this report is to provide an overview of the preliminary engineering design for the Piilani Highway Widening – Construction Baseyard and Staging Area project in Wailea, Maui. This report evaluates the existing site conditions and defines requirements for grading, drainage, water, sewer, electric and roadway improvements.

## II. PROPOSED PROJECT

### A. Location

The proposed Construction Baseyard and Staging Area project will be located directly mauka of the Piilani Highway/ Wailea Ike Drive intersection. The roughly five (5) acre project site is bounded by Piilani Highway to the west and the proposed Honua'ula Partners LLC development (currently vacant land) to the north, south, and east. Refer to Exhibit 1 for Location and Vicinity Map.

REPLY TO:
501 SUMNER STREET, SUITE 521 • HONOLULU, HAWAII 96817-5031
PHONE (808) 533-3646 • FAX (808) 526-1267
EMAIL : atahi@atahawaii.com

OFFICES IN:
HONOLULU, HAWAII
WAILUKU, MAUI, HAWAII
HILO, HAWAII

### B. Project Description

The proposed Construction Baseyard and Staging Area Project is a subset of the overall Piilani Highway Widening Project. The proposed Piilani Highway Widening project consists of widening approximately 1.44 miles of highway from Kilohana Drive/Mapu Street to Wailea Ike Drive, along with various intersection improvements along the route. Honua'ula Partners LLC, A&B Wailea LLC, Keaka LLC, and ATC Makena Owner LLC are collaborating to implement the project in coordination with the State of Hawaii, Department of Transportation, Highways Division.

The Construction Baseyard and Staging Area will be a temporary facility used during the construction of the Piilani Highway Widening Project. The staging area will be adjacent to the highway right-of-way (ROW) on land owned by Honua'ula Partners LLC. Approximately one (1) acre will be utilized as the construction baseyard, containing construction offices and meeting space, equipment storage and repair, storage for construction tools and materials, and construction employee graveled parking. The remaining three (3) acres will be used as the construction staging area for bulk materials storage, a rock processing and crushing facility, and if needed, unpaved overflow parking for construction employees. Approximately one (1) acre will remain as unimproved area or will be used for stormwater retention.

## III. EXISTING CONDITIONS

### A. Topography and Soil Conditions

The project area is currently undeveloped and is covered by grass, weeds and klawe trees. Besides an existing fence along the highway ROW, there are no structures on the site. The land generally slopes east to west at an average slope of around 10 percent. Elevations range from 302 to 382 feet mean sea level. A natural drainage-way, labeled as "Kihei Gulch 3" on FEMA's Flood Insurance Rate Maps, runs just north of the site.



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CIVIL ENGINEERS • SURVEYORS

Soils on the site consist predominantly of well-drained Makena loam, stony complex (MXC). Stony land occurs on low ridges and makes up 30 to 60 percent of the Makena complex. Aa lava outcrops can also cover as much as 15 percent of Makena soil areas. A typical soil profile consists of around two feet of very dark brown to yellow brown loam and silt loam underlain by a layer of cobbly silt loam. Fragmented aa lava can be found at a depth of around 44 inches. Makena soils have moderately rapid permeability and a Hydrologic Soil Group of "C". The erosion hazard is slight to moderate and the shrink-swell potential is low.

Soil classifications are based on the USDA Soil Conservation Service's publication, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai", State of Hawaii, dated August 1972 and soil classification information is confirmed with the geotechnical consultation letter prepared by Hirata & Associates, Inc. dated March 30, 2009.

### B. Existing Infrastructure

#### 1. Water

There are no existing water utilities on-site. The closest water line is a 12-inch line that is located on the opposite side of Piilani Highway. The existing line, part of the Central Maui Water System, runs inside an easement within Lot 307-A (TMK: (2) 2-1-008:130) owned by A&B Wailea LLC.

#### 2. Sewer

The wastewater service system for the Kihei-Makena region consists of pump stations and force mains that convey wastewater to the Kihei Wastewater Reclamation Facility. There are no existing sewer systems on or immediately adjacent to the project site. The nearest sewer manhole is located approximately 1000 feet away at the Wailea Ike Drive and Kalai Waa Drive intersection.

**3. Electrical and Communication**

An existing overhead Maui Electric Company (MECo) transmission line runs along the mauka edge of the highway within the Piilani Highway ROW. Hawaiian Telcom overhead telecommunication lines are also located on the same poles.

Sandwich Isle Communication (SIC) fiber optic telecommunications lines are buried underground along the mauka side of Piilani highway.

**4. Drainage**

As mentioned previously, the land slopes generally from east to west. Kihei Gulch 3 is a shallow natural drainage-way that runs north of the site and has a contributing drainage area of roughly 2.39 square miles. At the point where the gulch reaches Piilani Highway, the gulch runoff continues through a double 120-inch culvert. Refer to Exhibit 3 for the Existing Conditions Drainage Area Map.

During small rain events, the majority of on-site rainfall infiltrates into the pervious soil. During larger storms, runoff begins as overland flow through the thick grass and vegetation and drains in a westerly direction. The overland flow eventually reaches an interceptor swale that runs along the mauka edge of Piilani Highway. This runoff eventually reaches the gulch where it continues through the double 120-inch culvert.

During the design of Piilani Highway in the late 1970s, the flow rates were determined for the various proposed culvert crossings. A drainage report titled "Hydrology Report for Piilani Highway" dated March 1977, was prepared by Trans-Meridian Engineers & Surveyors, Inc. for the HDOT Highways Division. The following flow rates were determined at the existing double 120-inch culvert:

50-Year Flow = 1,925 cfs

100-Year Flow = 2,716 cfs



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Even though the flow rates were determined over 30 years ago, a comparison to flow rates published by FEMA in 2009 for the mouth of Kihei Gulch 3 show that the flows are still reasonably accurate.

Existing runoff for the five (5) acre baseyard site is calculated to be approximately 4.5 cubic feet per sectond (cfs) based on a 50-year recurrence interval. On-site runoff rates were determined using the Rational Method in accordance with Maui County Storm Drain Rules. Refer to Appendix A for Preliminary Hydrology Calculations.

**5. Roadway System**

Piilani Highway is a two-lane state highway for the segment of highway under the Piilani Highway Widening project scope. The highway terminates at Wailea Ike Drive. The ROW width varies and continues past the Wailea Ike Drive intersection where Piilani Highway is planned to be extended in the future. There currently is no road access from Piilani Highway to the project site. There are existing jeep roads that run through the site which can be accessed from the Maui Meadows subdivision roadways.

**C. Flood Zone**

The project site lies in flood zone "X", defined as "areas determined to be outside the 0.2 percent annual chance floodplain". Flood zone information is obtained from the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), Panel No. 1500030676E, dated September 25, 2009. In order to determine the approximate 100-year floodplain for the gulch near the site, FEMA's National Flood Insurance Program's (NFIP) flood maps were used.

## IV. PROPOSED INFRASTRUCTURE IMPROVEMENTS

**A. Grading and Drainage Plan**

The project will require excavation and embankment in order to provide somewhat level pads for storing equipment, parking vehicles, and locating office

trailers. Per geotechnical recommendations, 2H:1V or flatter slopes can be used to provide grade adjustments in standard soil areas. Where basalt rock is encountered, slopes up to 1H:1V can be used. Refer to Exhibit 2 for the Preliminary Site Grading Plan.

Temporary interceptor swales/ ditches will be installed at the mauka edges of the baseyard to prevent mauka runoff from entering the site and mixing with the construction activities within the baseyard site. The interceptor ditches will convey the mauka runoff to the gulch similarly to existing conditions.

On-site runoff will generally be sheet flow in nature. With the exception of a temporary culvert under the entry driveway to the site, no storm drain inlets or drain piping will be used. Swales will be provided along the downstream perimeter to collect stormwater runoff and convey it to a temporary stormwater retention basin.

Post-development runoff for the baseyard site is calculated to be approximately 20.5 cfs based on a 50-year recurrence interval. This represents a 16 cfs increase over existing conditions. The increase in runoff is due to hardening of the site surface areas with gravel roads, gravel parking, rock crushing operations, office trailers, and equipment storage. The increase in runoff will be mitigated by storage of stormwater in the on-site retention basin. The 50-year 1-hour storm runoff will be completely retained, thus providing a net decrease in runoff from existing conditions. The following is a summary of 50-year runoff rates:

Q existing = 4.5 cfs

Q proposed = 20.5 cfs (before retention)

Q proposed = 0.0 cfs (after retention)

Refer to Appendix A for the entire Preliminary Hydrology Calculations and Exhibit 4 for the Proposed Conditions Drainage Area Map.

The flow in the gulch will be slightly reduced due to the proposed net reduction in on-site runoff; however, the reduction will be insignificant in relation to the large amount of flow in the gulch. As shown in Exhibits 2 to 4, the site





improvements are well outside of the 100-year limits. Additionally the project will not contain any disturbance within the 100-year flood limits for the upper gulch drainage-way.

In addition to controlling peak flow rates, the proposed stormwater system will retain the Water Quality Design Volume (WQDV). Runoff and pollutants from the 1-inch water quality design storm will flow to the retention basin where pollutants will be captured and the water will infiltrate over time.

**B. Water System**

No water system improvements are proposed due to the temporary nature of the project. Bottled drinking water will be furnished for the employees. Water for dust control will be brought in by tanker truck.

**C. Sewer System**

No sewer system improvements are proposed. Portable toilets will be supplied for employee use.

**D. Electrical System**

Electrical and telephone service lines will connect to the existing MECo overhead electrical transmission lines and Hawaiian Telcom overhead telecommunication lines that are adjacent to the site. No connection will be made to the existing underground SIC fiber optic line. The contractor must ensure that the existing SIC line remain intact and undisturbed during construction.

**E. Roadway Improvements**

As described previously, this project is a subset of the Piilani Highway Widening Project. The highway is proposed to be widened from two lanes to four lanes. The typical roadway section will contain two 12-foot wide travel lanes in each direction, an 8-foot wide striped median, 4-foot wide bike lanes, 2-foot wide curb and gutters, and 6-foot wide sidewalks.

As part of the highway improvements, the intersection at Wailea Ike Drive will be improved over several phases. During Phase 1, the intersection will remain unsignalized with exclusive turn lanes provided between Piilani Highway

and Wailea Ike Drive. During Phase 2, a traffic signal will be added and a new road will be installed on the west side, directly opposite Wailea Ike Drive, providing access to the proposed Honua'ula Development. Phase 2 of the Piilani Highway Widening is estimated to be completed in 2016, at which time the Temporary Baseyard Project is expected to no longer be needed.

Since the Construction Baseyard and Staging Area will need to be installed prior to any highway improvements, a gravel access road will be installed at this location for the interim period. The interim gravel access road will be used for the construction employees and for the heavy equipment. The gravel access road will be modified as needed during the highway widening and will remain in use until Phase 2 of the Piilani Highway Widening Project occurs.

## V. CONCLUSION

The temporary improvements proposed for the Construction Baseyard and Staging Area project will be designed in accordance with the applicable rules and regulations of the State of Hawaii and the County of Maui as applicable.

Maui County's *Rules for the Design of Storm Drainage Facilities* requires retention of the increase in stormwater runoff between the post-development flows and pre-development flows and detention of the water quality design volume or treatment of the water quality flow rate. The project stormwater management plan and drainage system will be designed to meet these standards. The 50-year 1-hour storm runoff will be completely retained, thus providing a net decrease in runoff from existing conditions.

A National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activities will be obtained and the requirements of the approved NPDES permit and best management plan (BMP) will be adhered during construction. At a minimum silt fences, diversion berms, gravel egress, truck wash down areas and dust screens will be included in the BMP. Monitoring of the BMP during construction will be the responsibility of the selected contractor with general oversight by the owner's designated representative.

The electrical, and telecommunication, and roadway systems are adequate to serve the project. No water or sewer infrastructure improvements are proposed. Bottled



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water and portable toilets will be provided for employee use on the temporary site. Tanked in water will be used for dust control.

Based on this study, the project will have no adverse effects to existing facilities or to the surrounding environment.

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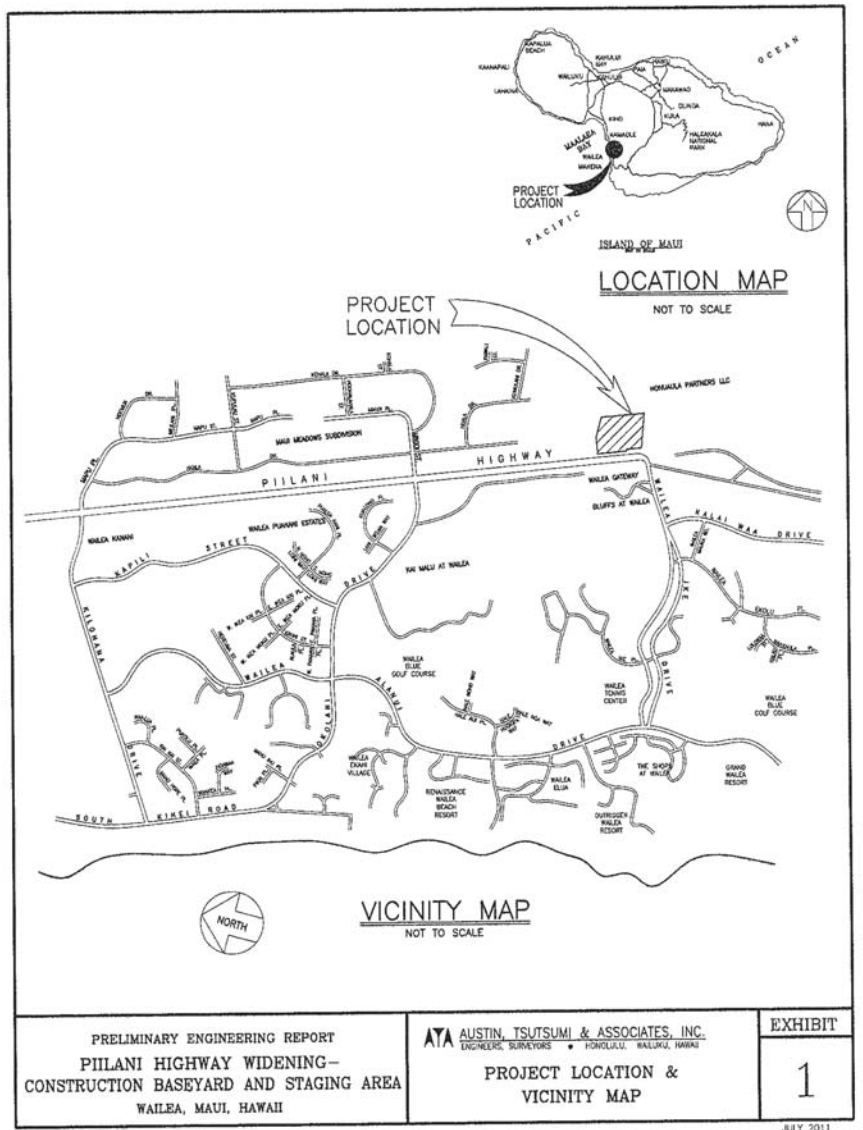
# EXHIBITS




| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING–<br>CONSTRUCTION BASEYARD AND STAGING AREA<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS ▪ HONOLULU, WAILUKU, HAWAII<br>PROJECT LOCATION &<br>VICINITY MAP | EXHIBIT<br>1 |

JOB NO. M-08-516
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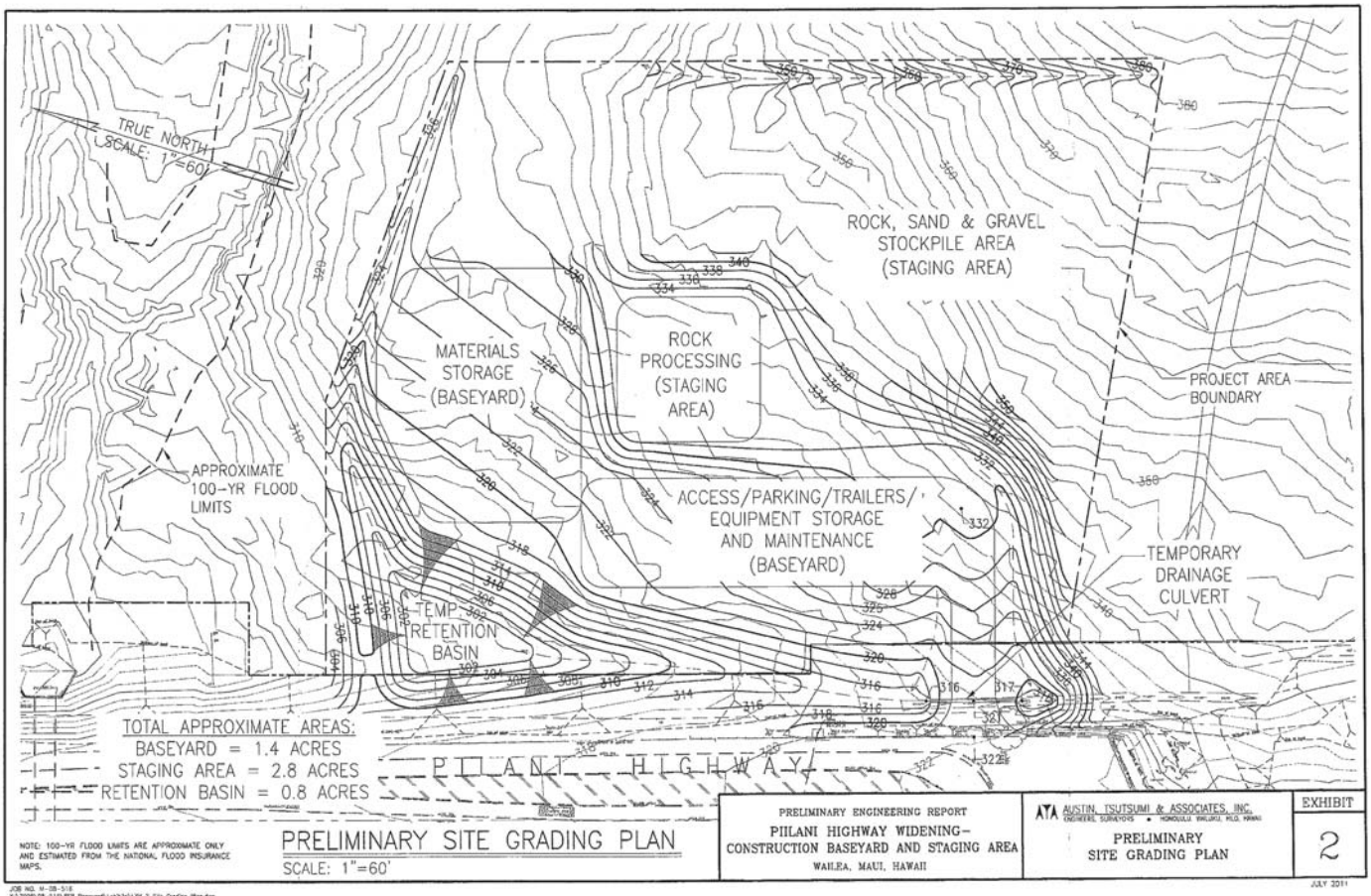
JULY 2011




PRELIMINARY SITE GRADING PLAN
SCALE: 1"=60'

| | |
|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING–<br>CONSTRUCTION BASEYARD AND STAGING AREA<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII<br>PRELIMINARY<br>SITE GRADING PLAN |
| | EXHIBIT 2 |

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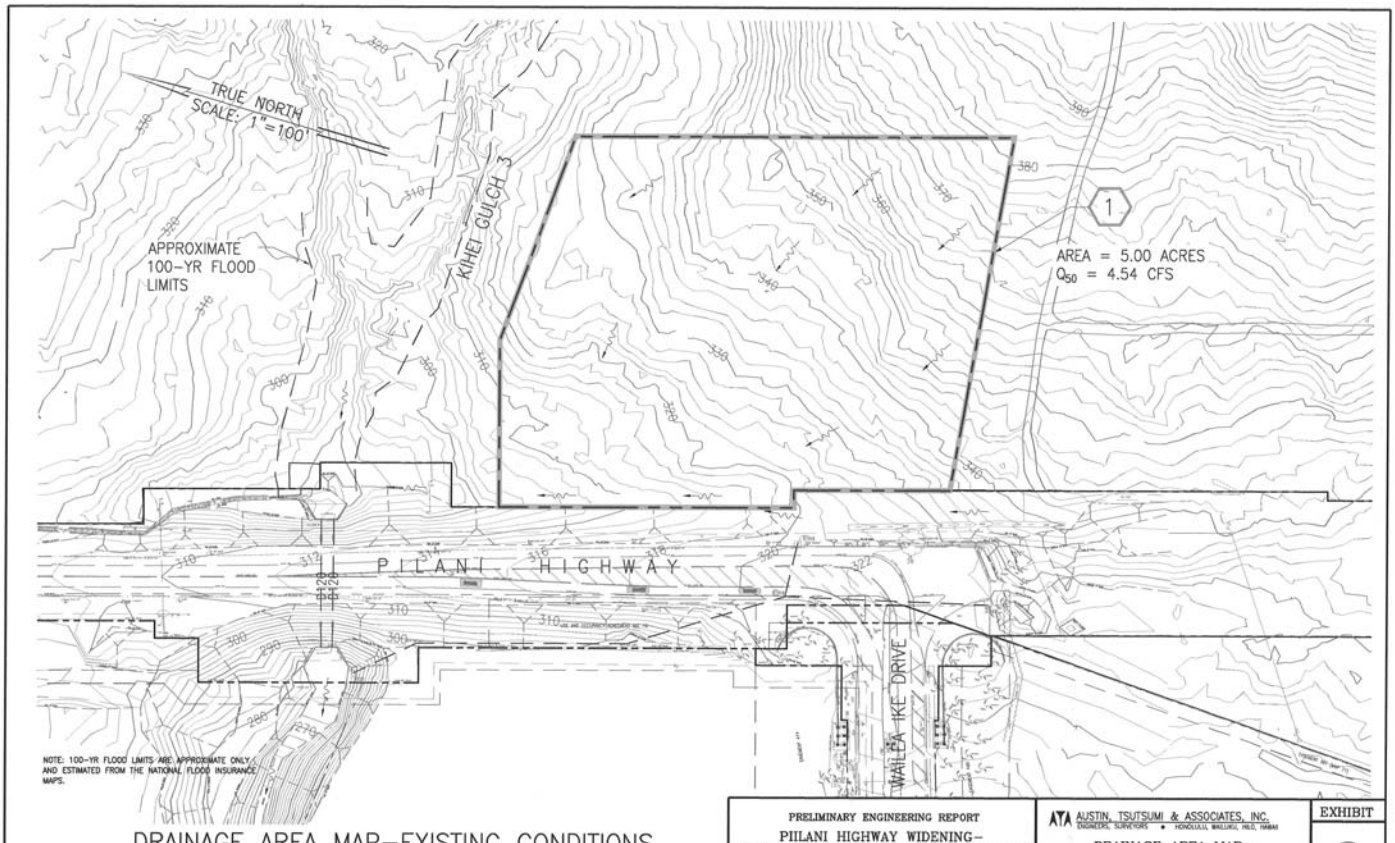
JULY 2011




DRAINAGE AREA MAP–EXISTING CONDITIONS
SCALE: 1"=100'

| | |
|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING–<br>CONSTRUCTION BASEYARD AND STAGING AREA<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII<br>DRAINAGE AREA MAP–<br>EXISTING CONDITIONS |
| | EXHIBIT 3 |

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JULY 2011

# APPENDICES

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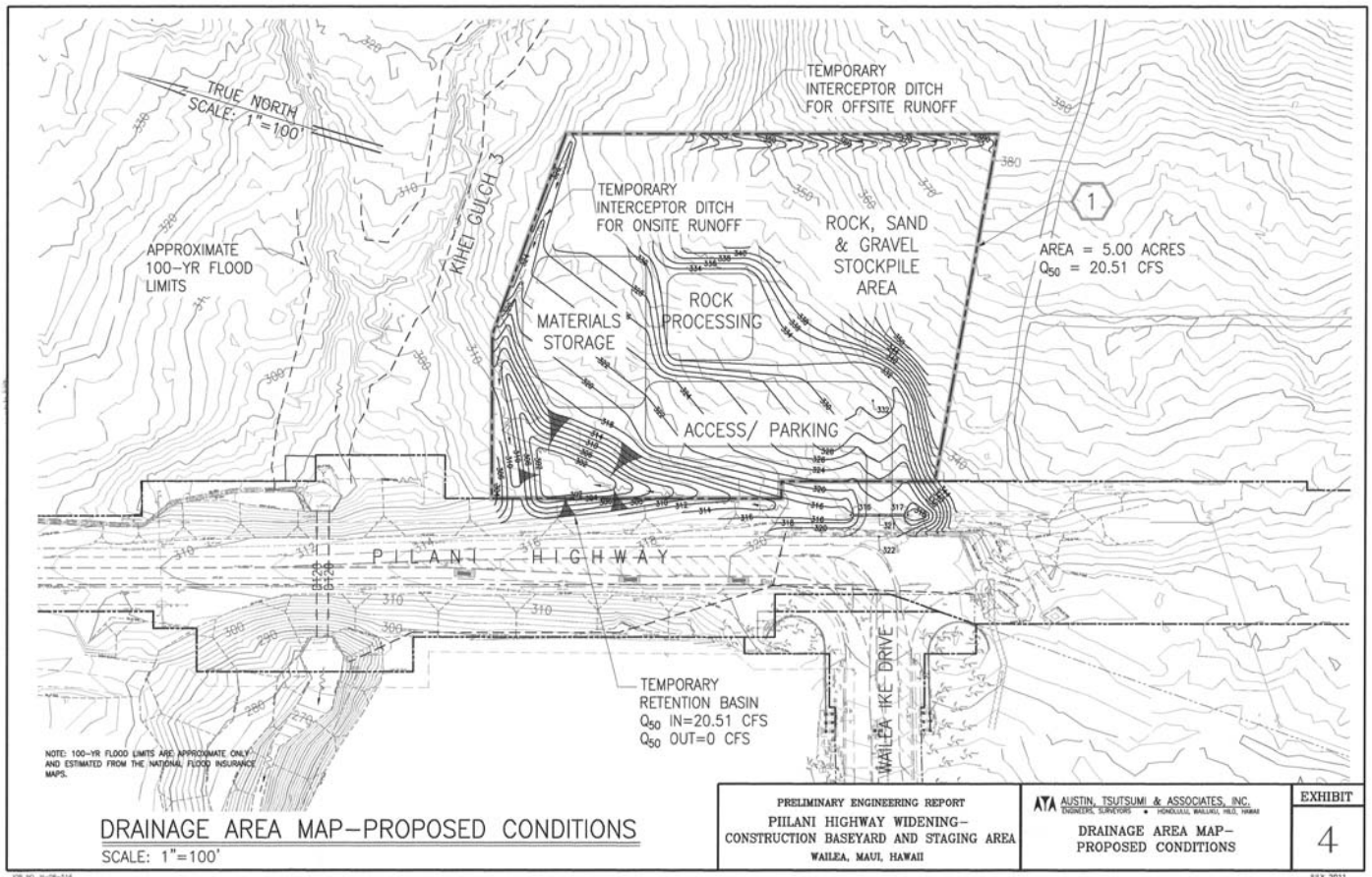


DRAINAGE AREA MAP–PROPOSED CONDITIONS
SCALE: 1"=100'

| | | |
|---|---|---|
| PRELIMINARY ENGINEERING REPORT<br>PIILANI HIGHWAY WIDENING–<br>CONSTRUCTION BASEYARD AND STAGING AREA<br>WAILEA, MAUI, HAWAII | AUSTIN, TSUTSUMI & ASSOCIATES, INC.<br>ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII<br>DRAINAGE AREA MAP–<br>PROPOSED CONDITIONS | EXHIBIT<br>4 |

JOB NO. 11-08-516
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JULY 2011

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CIVIL ENGINEERS ● SURVEYORS

# APPENDIX A

## PRELIMINARY HYDROLOGY CALCULATIONS

**TABLE 1**

**RUNOFF CALCULATIONS - EXISTING CONDITIONS**

| D.A. | Area (ac) | Time of Concentration: Flow Length (ft) | Slope (%) | Ground Cover | Tc (min) | $P_{50}$ 1-Hour Rainfall (in) | $I_{50}$ Adjusted Intensity (in/hr) | C Runoff Coeff. | To Gulch: $Q_{50}$ (cfs) | $Vol_{50}$ (cf) |
|---|---|---|---|---|---|---|---|---|---|---|
| DA 1 | 5.000 | 530 | 9.8 | Grass | 17.7 | 2.6 | 4.5 | 0.20 | 4.54 | 8,172 |

**TABLE 2**

**RUNOFF CALCULATIONS - POST DEVELOPMENT CONDITIONS**

| D.A. | Area (ac) | Time of Concentration: Flow Length (ft) | Slope (%) | Ground Cover | Tc (min) | $P_{50}$ 1-Hour Rainfall (in) | $I_{50}$ Adjusted Intensity (in/hr) | C Runoff Coeff. | To Retention Basin: $Q_{50}$ (cfs) | $Vol_{50}$ (cf) |
|---|---|---|---|---|---|---|---|---|---|---|
| DA 1 | 5.000 | 460 | 12.5 | Bare Soil | 9.4 | 2.6 | 5.5 | 0.74 | 20.51 * | 36,918 * |
| **Increase From Existing (Prior to Retention)** | | | | | | | | | **15.97** | **28,746** |

Notes:
1. 50-Year, 1-Hour Rainfall determined using the National Oceanic and Atmospheric Administration's (NOAA) Precipitation Frequency Data Server for Project Location: 20.690N, 156.429W.
2. Adjusted Intensity determined using Maui Stds. Plate 2.
3. Time of Concentration determined using Maui Stds. Plate 1.
4. Refer to Runoff Coefficient Calculations for determination of weighted C value.
5. Runoff rates from Proposed Drainage Areas (marked with "*") are the quantities prior to retention. Runoff from the proposed site is completely retained and does not contribute to the overall runoff. Refer to Table 3, Storage System Summary.
6. Runoff Volume determined using a triangular Rational Method Hydrograph ending at 1-hour.

**TABLE 3**

**STORAGE SYSTEM SUMMARY**

| Storage System | Contrib. D.A.'s | Description | Retention Volume (cf) | Inflow Volume (cf) | Meets Req.? | Q in (cfs) | Q out (cfs) |
|---|---|---|---|---|---|---|---|
| BASIN A | DA-1 | 6' Deep Retention Basin | 38,000 | 36,918 | √ | 20.51 | 0.00 |

## RUNOFF COEFFICIENT CALCULATIONS

**LAND USES OR SURFACE TYPES AT SITE:**

| | |
|---|---|
| Unimproved Grass, Weeds, and Kiawe Trees | C = 0.20 |
| Grass/ Weed Cover (Fringe and Basin Area) | C = 0.20 |
| Gravel Road/ Bare Soil/ Crushed Rock | C = 0.85 |
| Trailers, Equipment, and other Impervious | C = 0.95 |

**WEIGHTED RUNOFF COEFFICIENT CALCULATIONS:**

**EXISTING**

| DA-1 | | Percent | Area (AC) |
|---|---|---|---|
| Unimproved Grass, Weeds, and Kiawe Trees | C = 0.20 | 100.0% | 5.000 |
| | **C = 0.20** | 100.0% | **5.000** |

**PROPOSED**

| DA-1 | | | |
|---|---|---|---|
| Grass/ Weed Cover (Fringe and Basin Area) | C = 0.20 | 18.0% | 0.900 |
| Gravel Road/ Bare Soil/ Crushed Rock | C = 0.85 | 73.0% | 3.650 |
| Trailers, Equipment, and other Impervious | C = 0.95 | 9.0% | 0.450 |
| | **C = 0.74** | 100.0% | **5.000** |

Notes: 1. The project site contains a mix of bare soil, gravel, crushed rock, equipment, trailers, grass, and unimproved land. Runoff coefficients are determined by composite coverage calculations.



# APPENDIX K.

# April 16, 2009 Community Meeting

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

Madge Schaefer, President
**Maui Meadows Neighborhood Association**
P. O. Box 160
Kihei, Hawai'i 96753

SUBJECT: Pi'ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai'i

Dear Ms. Schaefer:

During the County of Maui's review of the re-zoning application for Kihei-Makena Project District 9 (Honua'ula), it included a condition in which Honua'ula Partners, LLC (applicant) was made responsible for the widening improvements to Pi'ilani Highway to four (4) lanes from Kilohana Drive to Wailea Ike Drive, including intersection improvements along the project corridor. See **Figure 1**, location map.

The applicant was also required to improve the signalized intersection of Wailea Ike Drive and Wailea Alanui Drive. See **Figure 2**, location map. The condition states

> *"Modify the Wailea Alanui/Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9."*

The Pi'ilani Highway widening improvements will be located within the highway right-of-way and involves the use of lands owned by the State of Hawai'i. Pursuant to Chapter 343, Hawai'i Revised Statutes (HRS), an environmental assessment (EA) is required. Also, the improvements to the Wailea Alanui/Wailea Ike Drive intersection involves the use of County of Maui lands which will also require an EA. As part of the EA early consultation process, on behalf of the applicant, we are seeking early community input. In this regard, we have scheduled a community meeting on

**Date:** April 16, 2009
**Time:** 6:00 p.m.
**Place:** Kihei Community Center
303 East Lipoa Street
Kihei Hawai'i 96793

305 High Street, Suite 104 * Wailuku, Hawaii 96793 * ph: (808)244-2015 * fax: (808)244-8729 * planning@mhplanning.com * www.mhplanning.com

environment planning government

Printed on Recycled Paper



We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua'ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
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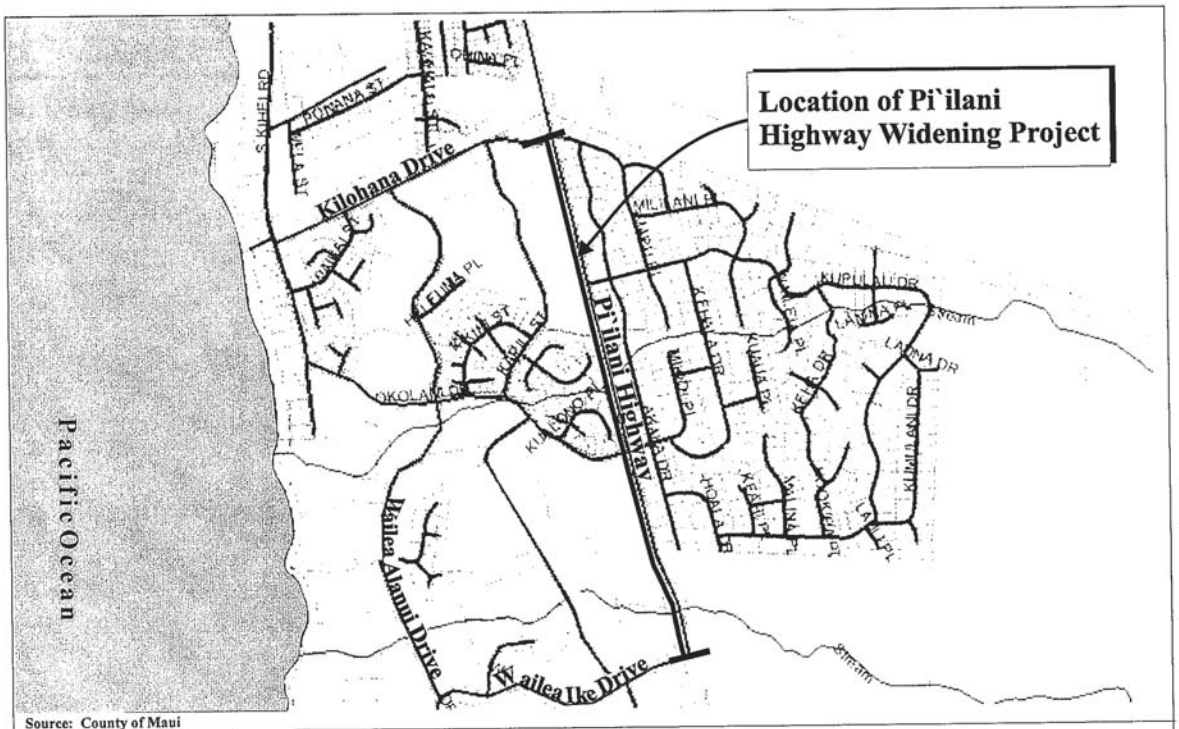



Source: County of Maui

Figure 1

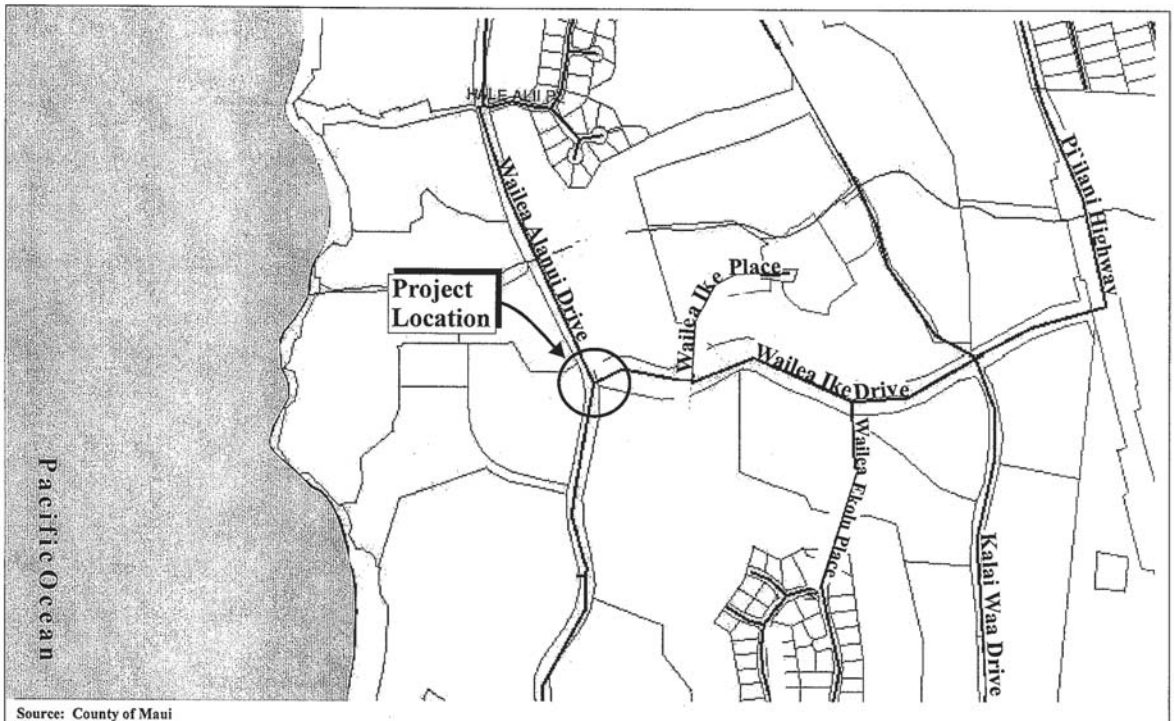
Pi`ilani Highway Widening to Four (4) Lanes
Between Kilohana Drive and Wailea Ike Drive
Location Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Pi`ilani Widening\LocationMap




Source: County of Maui

Figure 2

Wailea Ike Drive and Wailea Alanui Drive
Intersection Improvements
Location Map

NOT TO SCALE

Prepared for: WPCT/GW Land Associates, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\LocationMap

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

Bud Pikrone
**Wailea Community Association**
555 Kaukahi Street, Suite 214
Wailea, Hawai`i 96753-8333

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Mr. Pikrone:

During the County of Maui's review of the re-zoning application for Kihei-Makena Project District 9 (Honua`ula), it included a condition in which Honua`ula Partners, LLC (applicant) was made responsible for the widening improvements to Pi`ilani Highway to four (4) lanes from Kilohana Drive to Wailea Ike Drive, including intersection improvements along the project corridor. See **Figure 1**, location map.

The applicant was also required to improve the signalized intersection of Wailea Ike Drive and Wailea Alanui Drive. See **Figure 2**, location map. The condition states

> *"Modify the Wailea Alanui/Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9."*

The Pi`ilani Highway widening improvements will be located within the highway right-of-way and involves the use of lands owned by the State of Hawai'i. Pursuant to Chapter 343, Hawai`i Revised Statutes (HRS), an environmental assessment (EA) is required. Also, the improvements to the Wailea Alanui/Wailea Ike Drive intersection involves the use of County of Maui lands which will also require an EA. As part of the EA early consultation process, on behalf of the applicant, we are seeking early community input. In this regard, we have scheduled a community meeting on

**Date:** April 16, 2009
**Time:** 6:00 p.m.
**Place:** Kihei Community Center
303 East Lipoa Street
Kihei Hawai`i 96793

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We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

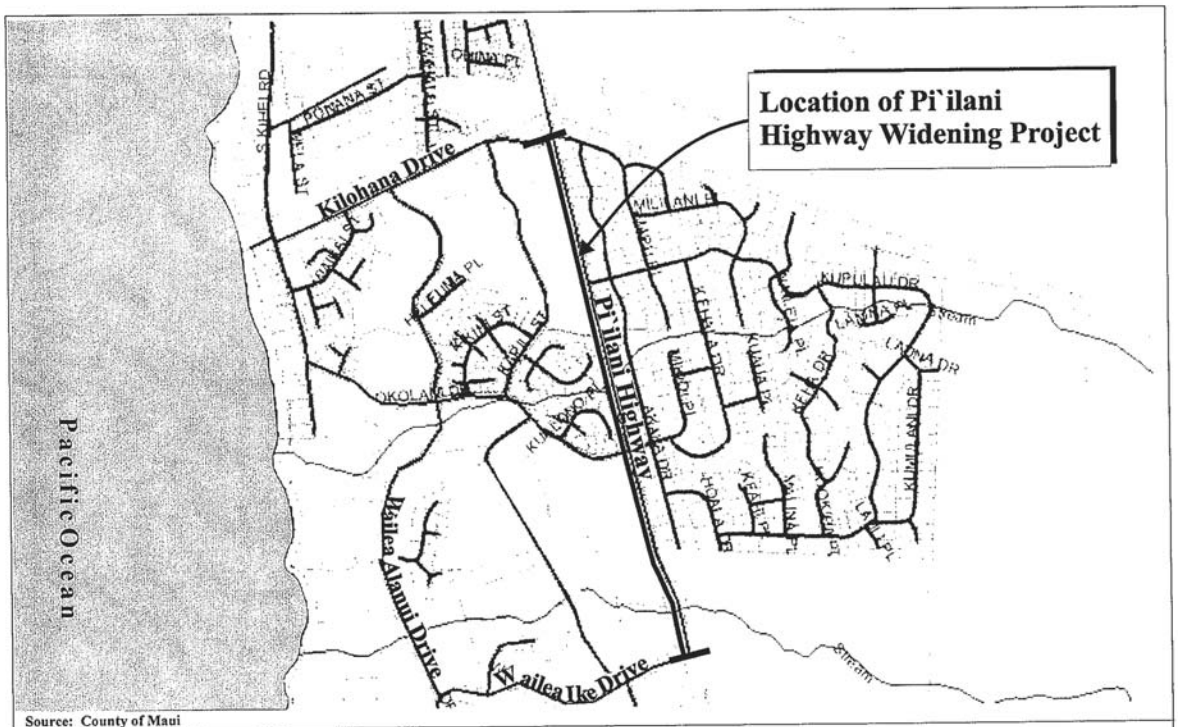
We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua`ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
F:\DATA\WCPT\PiilaniWidening\association.ltrs.wpd




Source: County of Maui

Figure 1

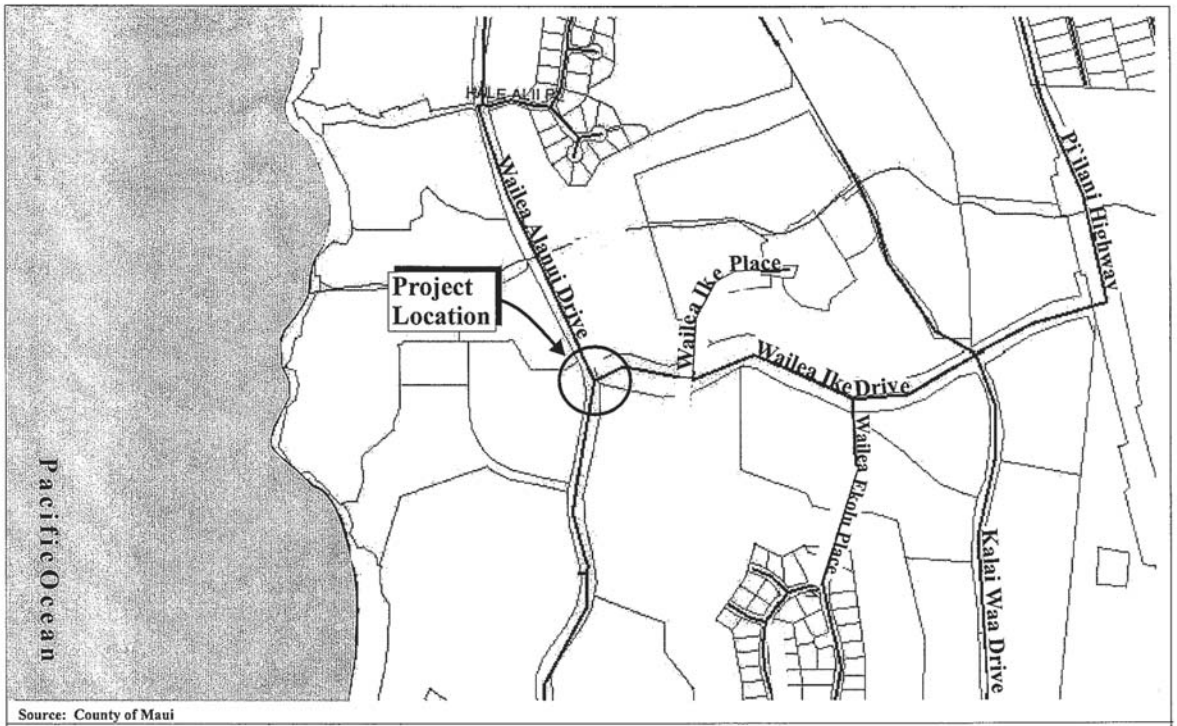
Pi`ilani Highway Widening to Four (4) Lanes Between Kilohana Drive and Wailea Ike Drive
Location Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Pi`ilani Widening\LocationMap




Source: County of Maui

Figure 2

Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements
Location Map

NOT TO SCALE

Prepared for: WPCT/GW Land Associates, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\LocationMap

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

**Kihei Community Association**
P. O. Box 662
Kihei, Hawa`ii 96753

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Sir or Madam:

During the County of Maui's review of the re-zoning application for Kihei-Makena Project District 9 (Honua`ula), it included a condition in which Honua`ula Partners, LLC (applicant) was made responsible for the widening improvements to Pi`ilani Highway to four (4) lanes from Kilohana Drive to Wailea Ike Drive, including intersection improvements along the project corridor. See **Figure 1**, location map.

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We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

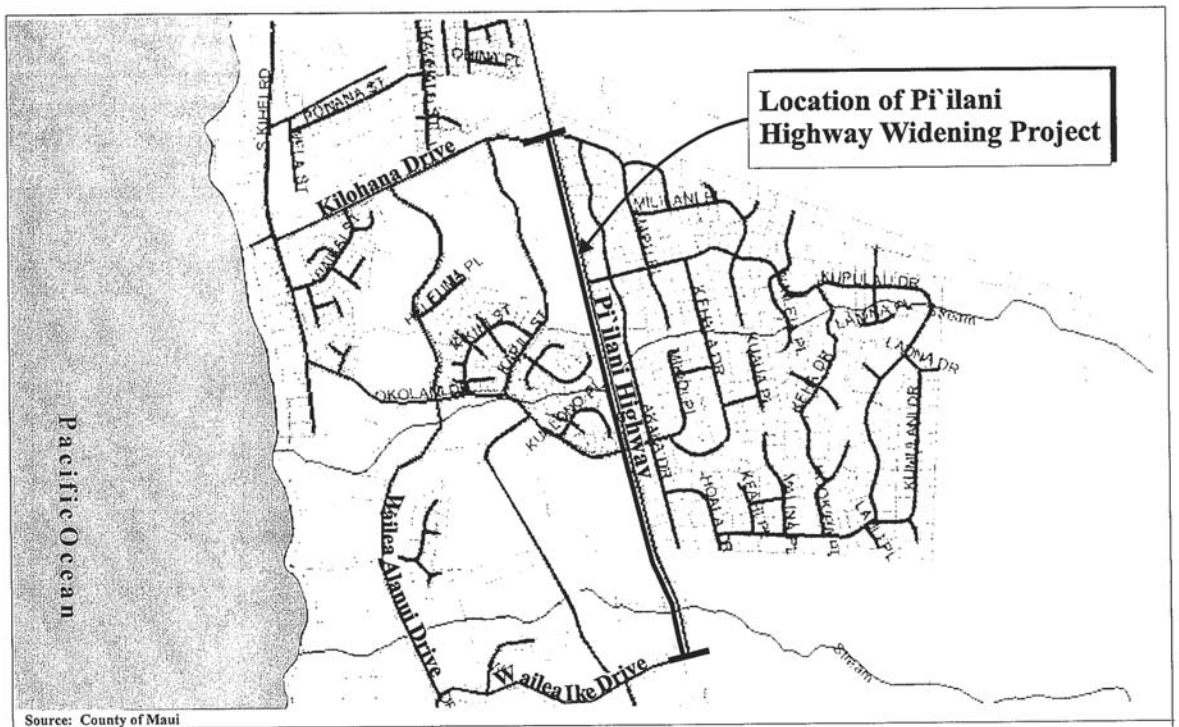
We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua`ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
F:\DATA\WCPT\PiilaniWideninglassociation.ltrs.wpd




Source: County of Maui

Figure 1

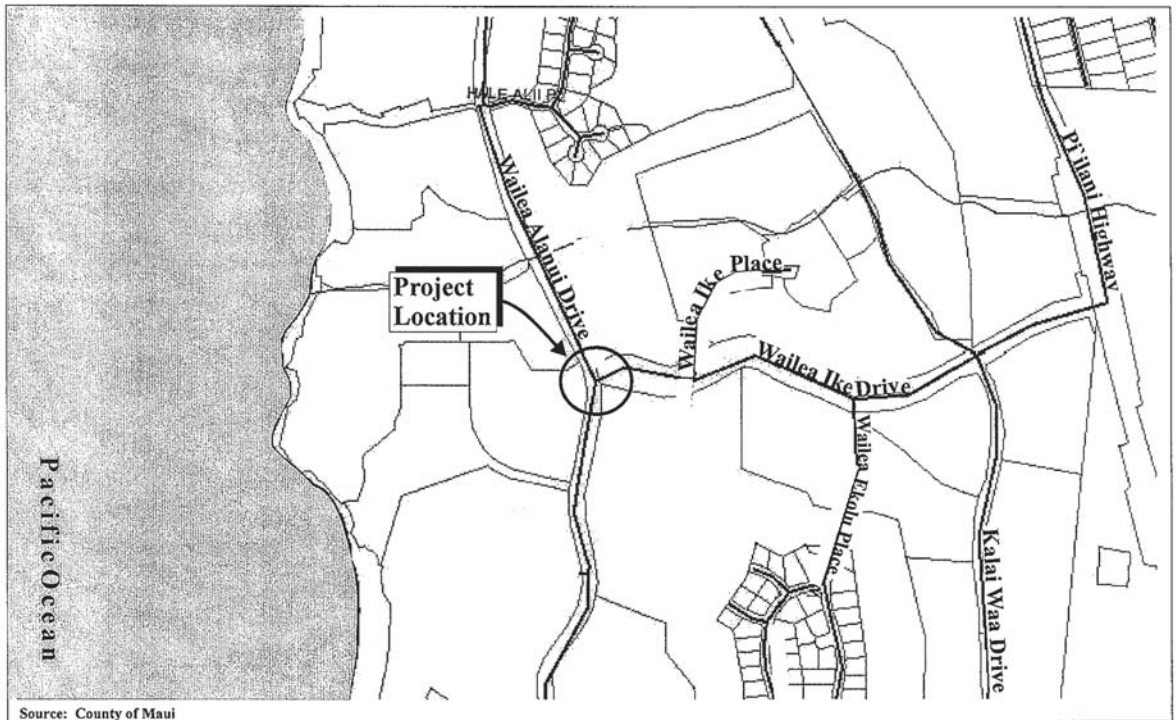
Pi`ilani Highway Widening to Four (4) Lanes Between Kilohana Drive and Wailea Ike Drive
Location Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Pi'ilani Widening\LocationMap




Source: County of Maui

Figure 2

Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements
Location Map

NOT TO SCALE

Prepared for: WPCT/GW Land Associates, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\LocationMap

# APPENDIX K-1.

# December 1, 2010 Community Meeting

MUNEKIYO HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 23, 2010

**MEETING MEMORANDUM**

| | |
|---|---|
| **Date of Meeting:** | December 1, 2010 |
| **From:** | Colleen Suyama, Senior Associate |
| **Subject:** | Pi`ilani Highway Widening Project (Kilohana Drive to Wailea Ike Drive) |
| **Purpose of Meeting:** | Community Meeting on the Filing of the Draft Environmental Assessment (EA) and to Solicit Comments |
| **Participants:** | See Attached Attendance Sheet |

Drawings of the roadway improvements were displayed for the public's review. The meeting began at approximately 6:30 p.m. with a powerpoint presentation.

**Edwin Sniffen**, Highways Division, Administrator of the State Department of Transportation (SDOT) presented an overview of the project and emphasized that this is a SDOT project.

**Colleen Suyama** of Munekiyo & Hiraga, Inc. (MHI), described the regulatory context of the improvements.

**Keith Niiya** of Austin Tsutsumi & Associates, Inc. (ATA) presented the project plans of the proposed roadway widening.

**Ray Skelton** of Goodfellow Brothers, Inc. addressed construction impacts and mitigation measures.

**Yoichi Ebisu** of Y. Ebisu & Associates addressed noise impacts and mitigation.

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The concerns raised by the public included the following:

***Need for Project:***

There were several persons who questioned the need for the project and felt the project was being planned to enable Honua'ula and Makena to be developed.

1. Edwin Sniffen explained that as a SDOT project it has been determined that the project is needed and that by 2015 the existing highway will be at capacity necessitating the improvements. If the State were to wait until 2015 to do the project, it will require obtaining State funds and taxpayers monies for this project. The willingness of the private developers to fund public infrastructure is seen as an opportunity for the construction of the last phase of the highway widening.

2. Some of the public questioned why other alternatives were not sought such as building a new highway further mauka. It was explained that the alternative sections did consider not building the highway improvements as well as a new mauka highway and are included in the draft EA. It was pointed out that a new mauka highway is being identified on the Maui Island Plan as a long term solution to traffic but it would take several years to accomplish.

3. There were several members of the public who felt there was no need for the project and that the State could wait 20 years.

***Regulatory:***

4. There were requests that an Environmental Impact Statement (EIS) be prepared for the project and whether this project was segmentation from the Honua'ula EIS. It was explained that this is a SDOT project and not a developer's project and that the Honua'ula EIS is separate from the State's project for the highway. At present, comments received from the agencies do not identify any significant impacts at a level that would necessitate an EIS.

   Dick Mayer felt the reports in the draft EA were inadequate such as the Traffic Impact Analysis Report (TIAR) since the traffic counts were taken in June when school was out of session which justified the preparation of an EIS. It was explained that the time for the traffic counts were coordinated with the Wailea Community Association who felt the heaviest traffic was in June when visitors were on the island.

5. Upon request of the public for additional community meetings, it was explained to the public that the meeting is not a requirement of the process and that the SDOT is holding the meeting, as represented, in order to solicit comments from the public.

6. Upon request of the public, it was explained that once the written comments are received on December 8th the consultant will address each comment directly to the commenter. A copy of the written comments and responses will be included in the



Final EA. It was pointed out that the responses may include unresolved issues that cannot be addressed to the satisfaction of the commenter. The draft of the Final EA will be submitted to the SDOT for review, comment and action. When the SDOT reviewing staff is satisfied with the draft Final EA the document will be forwarded to the Director of SDOT for action. The Director can approve the Final EA or can determine that an EIS is required for the project.

***Project Plans:***

7. Several persons commented that SDOT should consider other design alternatives for the project, such as, (1) shoulders for cars to pull off the traffic lanes; (2) separation of the bike lines and pedestrian sidewalks as a greenway; (3) addition of landscaping in the median and shoulders of the highway; and (4) remove sidewalks to reduce the width of the highway improvements. SDOT indicated that they were willing to consider the suggestions.

8. A public person asked why the highway improvement was not moved further makai where there are existing vacant parcels rather than close to the existing residences. It was explained that because of the adequacy of the existing highway corridor, one of the criteria used was to maintain the improvements within the existing right-of-way which eliminated the need for land acquisition.

   K. Niiya also explained that designing the highway further makai in accordance with SDOT standards and safety concerns would not greatly alter the alignment of the highway, except for maybe two (2) properties, since the roadway cannot zigzag from one side to the other.

9. Madge Schaeffer asked whether the telephone poles would be placed underground. It was explained that the utility lines are part of Maui Electric Company's (MECO) system and we are currently working with MECO on relocation of the above ground lines.

***Construction:***

10. Ray Skelton explained that construction would be five (5) days a week. When asked, he indicated that night construction may occur but it was unclear at this time. It would depend on whether the construction includes tying into County infrastructure, such as waterlines since the County normally requires such work be conducted at night.

11. Regarding noise, construction noise monitors will be used to measure noise levels. The Department of Health (DOH) typically will visit the site during construction.

12. Although the draft EA identifies Best Management Practices (BMPs) will be implemented, the public requested specific BMPs be identified in the EA and that an independent monitor be hired to monitor impacts and ensure compliance with the BMPs. Concerns were raised regarding what happens after construction hours and

there is a problem in the area and how the construction company will handle the situation.

R. Skelton explained that a point person and contact information will be given to the residents. If there is a problem, as soon as possible, the construction company will have the appropriate person either contact the complainant or at the job site addressing the complaint.

A concern was raised regarding impacts occurring at night such as dust from winds blowing at night. R. Skelton responded that the complainant can call the contact number and, as soon as possible, they will have someone at the job site dealing with the complaint. Further, prior to leaving the job site, the construction crews will treat the soils to retain as much moisture in the soils to prevent dust problems.

13. R. Skelton noted prior to construction a pre-site meeting is held to explain the contact information for complaints and protocol to be followed. Also, the construction company will conduct a pre-site survey establishing the baseline conditions prior to construction.

14. Concerns were raised regarding blasting and the impacts on the residents. R. Skelton explained that there are several methods being considered for the removal of the "blue" rock. Because a corridor already exists through the rock it is anticipated that much of the rock removal can be done using construction equipment, such as a shovel. However, there may be areas in which blasting may be required. Blasting technology has advanced that low explosive charges can be used and timed with more accuracy. It is anticipated that if blasting is to occur it will be no more than five (5) blasts a week. Prior to blasting notices will be given to homeowners near the blast area and the homeowners associations notifying them of the day and time of the blast.

    Concerns were raised as to who would be responsible for structural damages to property. It was explained that the contractor would be responsible and such terms are generally placed in the contract document. There were some attendees who wanted more assurances, such as a bond or State fund set up to cover such damages. It was explained that as a privately funded improvement the SDOT would not be able to bond or set up any special fund to cover damages.

15. Concerns were raised that construction on the highway would close the highway during an emergency evacuation. It was explained that during construction two (2) lanes of traffic need to be kept open to allow traffic and emergency access through the area. This is a requirement mandated by the State during construction.

16. Concerns were raised on pollutants into the ocean from the project construction from the increased impervious surface. It was explained that the increased impervious surface is approximately five (5) acres and that the drainage improvements for the highway widening will be in accordance with SDOT Design Guidelines and will include detention and retention basins that will allow sediments to settle prior to any



discharge into the drainage ways. Also, BMPs will be implemented during construction to mitigate construction generated pollutants from getting to the ocean. Robin Knox requested pollutant loads be reduced and that there be zero increase in pollutants.

17. A public attendee felt the construction of the roadway improvements should be coordinated with the construction of planned Wailea projects. There are several large Wailea projects that have been granted permit approvals.

18. In response to a comment, it was explained that the construction staging for the project will occur on vacant land on the mauka side near the Wailea Ike Drive intersection. Also, the construction material from the highway work will be disposed of on the vacant land on the mauka side of the intersection to reduce hauling the material outside of the area.

***Noise:***

19. At the request of the public, Y. Ebisu explained the noise impacts of the project. Current conditions on the highway identified two (2) residences that are impacted by the highway noise, where noise levels exceed acceptable levels without the highway improvements, 13 properties would be impacted, and with the highway improvements, 16 properties would be impacted. With the highway improvements, a total of three (3) properties are at levels that meet the SDOT policy where noise mitigation measures may be applied. Those properties are located at or near the intersection of Piilani Highway/Kilohana Drive/Mapu Road.

20. A public attendee requested that any sound wall be a sound absorption wall versus a reflective wall. There were also concerns that continuous walls would be constructed along the right-of-way. It was explained that the walls would be limited to the three (3) properties. Two (2) on the mauka side of the highway and one (1) on the makai side along a portion of the Kanani Wailea project.

21. At the sites where sound walls are necessary based on the SDOT policy, the developers will work with the property owners to determine whether the owner desires a sound wall and the type of sound walls that are to be constructed. The sound mitigation can be either a solid concrete wall, wood wall or landscaping. The developers will work with the property owners to ensure they are satisfied with the mitigation measure.

22. Concerns were raised that sound from the highway traffic will travel upland above the highway right of way. It was explained that in areas where the residences are located above the rock cuts, the rock sides act as a sound wall and reduces the traffic noise.

**PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT**
**(KILOHANA DRIVE TO WAILEA IKE DRIVE)**
***Kihei Elementary School Cafeteria***
***Community Meeting***
***Attendance Sheet***
***December 1, 2010***
***6:30 p. m.***

| PLEASE PRINT | | | |
|---|---|---|---|
| **Name** | **Organization** | **Address** | **Telephone** |
| Shane Medley | GRAND WAILEA | 3850 WAILEA ALANUI DR WAILEA | 808-875-1234 |
| Jaime Patterson | Resident | | 214-0574 |
| SONJA NOWAK | MAUI MEADOWS RESIDENT | 3476 AKALA DR. A, KIHEI 96753 | 891 1082 |
| Robert Yamamoto | Maui Meadows Res | 3066 Akala Dr., Kihei 96753 | 281-4474 |
| Barbara Kaneshige | Resident | 3304 Akala Dr | 874 0924 |
| Lyn Kaneshige | Resident | 3304 Akala Dr. | 250-1995 |
| Chris Stinger | Resident | 3200 AKALA Dr | 874-6069 |
| FRANK & JENN CUMMINGS | RESIDENT | 3056 AKALA, | 874-3753 |
| DAVID & MARYANN MOE COOPER | Resident | 377 Kuuloko Place, Wailea | 269-1240 |
| RICHARD & STEPHANIE | RESIDENT | 62 POAILANI PLACE, WAILEA | 214-6149 |
| Glenn Yamasaki | Resident | 119 Poailani Place, 96753 | 250-7447 |
| Daniel Kanahele | Resident | 1100 Kupulau Drive Kihei 96753 | 879-2239 |
| Tiffany Andricopoulos | Resident | 114 A Keala Pl. Kihei HI 96755 | |
| Mark Warner | Resident | 3170 Akala Dr. Kihei, HI 96753 | 808-298-4403 |



***Other Concerns:***

23. Lance Collins requested that the SDOT require the contractor to make public the contract file for public scrutiny and to have a penalty clause if the highway is not constructed in the anticipated 18 months construction time frame. It was explained that the SDOT cannot require a contractor not procured through the State to make such file available.

    Lance Collins felt the SDOT could condition the contractor through issuance of permits from the SDOT in order to enforce mitigation measures.

24. A public attendee questioned why the DOT could not require the hotels to stagger their shifts so the roadway did not have to be improved. It was explained that the SDOT does not have any authority to require the hotel operators to comply to such requests.

25. A public attendee voiced concerns that the improvement will increase speeding on the highway. In response SDOT will contact the Police Department and request that they monitor traffic speeds in the area.

There being no other comments, the meeting was concluded at 9:15 p.m.

Colleen Suyama
Senior Associate

CS:yp
Attachment
cc: Edwin H. Sniffen, Highways Division Administrator
Ken Tatsuguchi, Highways Division, Planning Branch
Kathy Young, Highways Division
Charles Jencks, Honuaula Partners LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Randall Endo, A& B Wailea LLC
Don Fujimoto, Keaka LLC

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***PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT***
***(KILOHANA DRIVE TO WAILEA IKE DRIVE)***
***Kihei Elementary School Cafeteria***
***Community Meeting***
***Attendance Sheet***
***December 1, 2010***
***6:30 p. m.***

**PLEASE PRINT**

| Name | Organization | Address | Telephone |
|---|---|---|---|
| Mathew Mawyer | Resident | 3190 Akala Dr | 874 4209 |
| JOHN ROGERS | Resident | 35 LUANAIKI PLACE | 633-4205 |
| Thomas Crosby | MMNA | 3259 Akala Drive | 879-7044 |
| MARK CORONESI | ✓ | 685 Kumulani DR. | 283-6659 |
| D'CK MAYER | | 1111 LOWER KIHO KULA | 283-43[illegible]6 |
| David Mogilefsky | | 2751 Kauhale St, Kihei | 891-1602 |
| Mark Hyde | Wailea Resident | 4320 E. Waioka Loop. | 874-3839 |
| Madge Schaefer | MMNA | 520 Mikioi PL | 874-9293 |
| ELIAS PAULAS | MAUI MEADOWS | 9120 AKALA DR. KIHEI | 891-9253 |
| Janet Schoenhaus | Asthmatic Resident | 101 E. Lipoilani Rd Kihei | 2980092 |
| Robin S. Knox | self | 728A Kupulau Dr. Kihei HI 96753 | 281-6416 |
| FRED SPANJAARD | SELF | 840 KUPULAU DR " " | 875-8820 |
| Jamie David | resident | 3328 Akala Dr | 874.0580 |
| Ralph Hendrickson | resident | 3328 Akala Dr | 874.0580 |



***PROPOSED PI`ILANI HIGHWAY WIDENING PROJECT***
***(KILOHANA DRIVE TO WAILEA IKE DRIVE)***
***Kihei Elementary School Cafeteria***
***Community Meeting***
***Attendance Sheet***
***December 1, 2010***
***6:30 p. m.***

**PLEASE PRINT**

| Name | Organization | Address | Telephone |
|---|---|---|---|
| Michael Elam | Resident | 23 Ailani Pl. Kihei | 874-8777 |
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

TO: OWNERS/LESSEES

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Sir or Madam:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

**Date:** December 1, 2010
**Time:** 6:30 p.m.
**Place:** Kihei Elementary School Cafeteria
250 Lipoa Street
Kihei, Hawaii 96753

The deadline for comments on the Draft EA is November 22, 2010. Since the scheduled community meeting is after the comment deadline we will continue to accept written comments until December 8, 2010, in order to include comments from participants at the community meeting.

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We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | TMK | NAME | NAME 1 | ADDRESS | ADDRESS 2 |
|---|---|---|---|---|---|
| 1 | 2210080460000 | COUNTY OF MAUI | DEPT. OF FIRE AND PUBLIC SAFETY | 200 DAIRY RD | KAHULUI HI 96732 |
| 2 | 2210081120000 | KANANI WAILEA - CONDO MASTER ETAL | C/O PACIFIC LAND & HOMES LLC | 2530 KEKAA DR C-1 | LAHAINA HI 96761 |
| 3 | 2210081120001 | WORDEN,ALAN ETAL | | 20911 NE SAHALEE CC DR | SAMMAMISH WA 98074 |
| 4 | 2210081120002 | PL&H COMMERCIAL LLC ETAL | | 2530 KEKAA DR, #C-1 | LAHAINA HI 96761 |
| 5 | 2210081120003 | MAGUIRE,PAUL JOSEPH ETAL | | PO BOX 2925 | SAN RAMON CA 94583 |
| 6 | 2210081120004 | PEAKE,GRAHAM CHANNING ETAL | | 111 PONANA ST | KIHEI HI 96753 |
| 7 | 2210081120005 | LEWIS,SKY ETAL | | 2600 KANAKANUI RD | KIHEI HI 96753 |
| 8 | 2210081120006 | BELLO,EDUARDO FELIX ETAL | C/O BELLO REALTY INC | PO BOX 1776 | KIHEI HI 96753 |
| 9 | 2210081120007 | CHENG,ROSE HSIU LING ETAL | | 6189 BIRDIE DR | LA VERNE CA 97150 |
| 10 | 2210081120007 | SIMONIAN,GEORGE S & MARY L 1993 TRUST | SIMONIAN,GEORGE S TRS | 1461 W PLAYER AVE | LA HABRA CA 90631 |
| 11 | 2210081120008 | ROBINSON,1991 TRUST ETAL | | 8 POAILANI PL | KIHEI HI 96753 |
| 12 | 2210081120009 | WHELAN FAMILY REVOC TRUST ETAL | WHELAN,DANIEL/BELLA TRS | 3980 WAILEA EKOLU PL | KIHEI HI 96753 |
| 13 | 2210081120010 | CHAPURA,RICHARD S 2004 TRUST ETAL | C/O CHAPURA, RICHARD S | 11 POAILANI PL | KIHEI HI 96753 |
| 14 | 2210081120011 | VETH,JOHN JOSEPH SR ETAL | | 900 REMBRANDT WAY | LAGUNA BEACH CA 92627 |
| 15 | 2210081120012 | ELAM,FAMILY TRUST ETAL | C/O ELAM, M/M M | 23 PO'AILANI PL | KIHEI HI 96753 |



***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 16 | 2210081120013 | DEAN,JOHN SCOTT HALEY ETAL | | 63 POAILANI PL | KIHEI HI 96753 |
| 17 | 2210081120014 | POYNTER FAMILY TRUST ETAL | POYNTER,KENNETH J/SHAREEN K TRS | 71 POAILANI PL #14 | KIHEI HI 96753 |
| 18 | 2210081120015 | PL&H COMMERCIAL LLC ETAL | | 2530 KEKAA DR, #C-1 | LAHAINA HI 96761 |
| 19 | 2210081120016 | RICHTER,KEVIN THOMAS ETAL | | 8617 COLGATE AVE APT 301 | LOS ANGELES CA 90048 |
| 20 | 2210081120017 | CALLAHAN,NANCY JEAN ETAL | | 87 POAILANI PL UNIT 17 | KIHEI HI 96753 |
| 21 | 2210081120018 | HILL,THOMAS MARTIN ETAL | | 159 KUALAPA PL | LAHAINA HI 96761 |
| 22 | 2210081120019 | MAUI HICATX PROPERTIES ETAL | C/O MONTE FITTS | WHALER'S VILLAGE. SUITE A-1, 2435 | LAHAINA HI 96761 |
| 23 | 2210081120020 | SAKURAI,KENNETH M TRUST ETAL | KENNETH M SAKURAI TTEE | 1900 HAU ST | HONOLULU HI 96819 |
| 24 | 2210081120021 | KIMURA,GLENN HAMAICHI YAMASAKI ETAL | | 119 POAILANI PL 21 | KIHEI HI 96753 |
| 25 | 2210081120022 | KHALEGHI FAMILY TRUST ETAL | C/O KHALEGHI,DR & DR | 1343 AMALFI DRIVE | PACIFIC PALISADES CA 90272 |
| 26 | 2210081120023 | LEFF FAMILY TRUST ETAL | LEFF, JONATHAN/MARYBETH, TRUSTEES | 178 SEMINARY DR | MENLO PARK CA 94025 |
| 27 | 2210081120024 | FITCH,DOUGLAS RICHARDSON ETAL | | 2463 S KIHEI RD | KIHEI HI 96753 |
| 28 | 2210081120025 | CHAMOUN,MARCOS DE CASTRO ETAL | | 137 POAILANI PL APT 25 | KIHEI HI 96753 |
| 29 | 2210081120026 | LANGENHUIZEN,WILLIAM ANTONI ETAL | | 145 POAILANI PL | KIHEI HI 96753 |
| 30 | 2210081120027 | PL&H COMMERCIAL LLC ETAL | | 2530 KEKAA DR, #C-1 | LAHAINA HI 96761 |
| 31 | 2210081120028 | VIAL,DEBORAH CATHERINE ETAL | | 785 W KUIAHA RD | HAIKU HI 96708 |

***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 32 | 2210081120029 | CROWLEY,SEAN PATRICK ETAL | | 100 POAILANI PL | KIHEI HI 96753 |
| 33 | 2210081120030 | WYLIE,LOIS ANN ETAL | | 96 POAILANI PL #30 | KIHEI HI 96753 |
| 34 | 2210081120031 | PL&H COMMERCIAL LLC ETAL | | 2530 KEKAA DR, #C-1 | LAHAINA HI 96761 |
| 35 | 2210081120032 | HANSEN,ROBERT NOEL ETAL | | P O BOX 294 | KIHEI HI 96753 |
| 36 | 2210081120033 | KNOWLES,MARJORIE PATRICIA ETAL | | 80 POAILANI PL | KIHEI HI 96753 |
| 37 | 2210081120034 | JAMSHIDI,FAMILY TRUST ETAL | C/O MOHAMMAD/JILA JAMSHIDI | 18015 BULLIS HILL | SAN ANTONIO TX 78258 |
| 38 | 2210081120035 | CADIZ,ANTHONY J TRUST ETAL | | 68 POAILANI PL #35 | KIHEI HI 96753 |
| 39 | 2210081120036 | COOPER,RICHARD DOUGLAS ETAL | | 62 POAILANI PL | KIHEI HI 96753 |
| 40 | 2210081120037 | WERDEGAR,FAMILY TRUST ETAL | WERDEGAR,MAURICE C/HELEN M TRS | 35 CORTO LANE | WOODSIDE CA 94062 |
| 41 | 2210081120038 | HILL,THOMAS MARTIN ETAL | | 159 KUALAPA PL | LAHAINA HI 96761 |
| 42 | 2210081130000 | COUNTY OF MAUI ETAL | C/O WAILEA RESORT | 161 WAILEA IKE PL | KIHEI HI 96753 |
| 43 | 2210081140000 | A & B WAILEA LLC ETAL | | 822 BISHOP ST | HONOLULU HI 96813 |
| 44 | 2210081270000 | A & B WAILEA LLC ETAL | | 822 BISHOP ST | HONOLULU HI 96813 |
| 45 | 2210081270000 | SQUARE FEET MANAGEMENT LLC | JACK KEAN | PO BOX 1306 | KIHEI HI 96753 |
| 46 | 2210081300000 | A & B WAILEA LLC ETAL | | 822 BISHOP ST | HONOLULU HI 96813 |
| 47 | 2210081440000 | NO FTP LISTING<br>NO INTERNET SITE LISTING | | | |



***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 48 | 2210130010000 | SAGAYAGA,RYAN M TR ETAL | | 3430 AKALA DR | KIHEI HI 96753 |
| 49 | 2210130020000 | GINOZA,EDWIN T ETAL | | 3442 AKALA DR | KIHEI HI 96753 |
| 50 | 2210130030000 | CURTIS,GLENN P ETAL | | 3456 AKALA DR | KIHEI HI 96753 |
| 51 | 2210130040000 | PETRONE,BEAU ETAL | | 3466 AKALA DR | KIHEI HI 96753 |
| 52 | 2210130050000 | NOWAK,SONJA TRUST ETAL | NOWAK,SONJA TRS | 3476 AKALA DR | KIHEI HI 96753 |
| 53 | 2210130060000 | CHONG KEE,PATRICK HENRY ETAL | | 3486 AKALA DR | KIHEI HI 96753 |
| 54 | 2210130070000 | GRANT, TERRY B/LAURA B ETAL | | 3496 AKALA DR | KIHEI HI 96753 |
| 55 | 2210130080000 | GRANT,TERRY ETAL | | 3496 AKALA DR | KIHEI HI 96753 |
| 56 | 2210130090000 | PIATKOWSKI,LEON & HANNA REVC LVG TR ETAL | | 3090 AKALA DR | KIHEI HI 96753 |
| 57 | 2210130100000 | HANIF,ELIAS ETAL | | 3526 AKALA DR | KIHEI HI 96753 |
| 58 | 2210130110000 | MANZANO,DON L ETAL | | 3536 AKALA DR | KIHEI HI 96753 |
| 59 | 2210130120000 | HIRATA,SUEKO ETAL | | PO BOX 396 | LAHAINA HI 96761 |
| 60 | 2210140010000 | ANGEL,EMMANUEL TR ETAL | | 3414 AKALA DR | KIHEI HI 96753 |
| 61 | 2210140020000 | ECKEL,EARL & JO-ANN LIVING TRUST ETAL | ECKEL,EARL A JR/JO-ANN I TRS | 3404 AKALA DR | KIHEI HI 96753 |
| 62 | 2210140030000 | HAMILTON,PATRICK E ETAL | | 3394 AKALA DR | KIHEI HI 96753 |
| 63 | 2210140040000 | AMORIN,HOWARD D ETAL | | 3384 AKALA DR | KIHEI HI 96753 |

***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 64 | 2210140050000 | MATARESE,SALVATORE ETAL | | 17060 HALEAKALA HWY | KULA HI 96790 |
| 65 | 2210140060000 | KIRBY,MICHAEL L ETAL | | 3360 AKALA DR | KIHEI HI 96753 |
| 66 | 2210140070000 | WAH TIM LOCK TRUST ETAL | | 3762 CLAUDINE ST | HONOLULU HI 96816 |
| 67 | 2210140080000 | BRAUTIGAM,ANNETTE C ETAL | | 3340 AKALA DR | KIHEI HI 96753 |
| 68 | 2210140080000 | BRAUTIGAM,ELFRIEDA TRUST | | 3216 MAPU PL | KIHEI HI 96753 |
| 69 | 2210140090000 | HENDRICKSON, RALPH E/JAMIE A ETAL | | 3328 AKALA DRIVE | KIHEI HI 96753 |
| 70 | 2210140100000 | COCKETT,MONA L TRUST ETAL | | 3310 AKALA DR | KIHEI HI 96753 |
| 71 | 2210140110000 | DERENSIS,MARK HENRY ETAL | | 3304 AKALA DR | KIHEI HI 96753 |
| 72 | 2210140120000 | MINCAVAGE,TRIXIE & DAVID TRUST ETAL | | 3294 AKALA DR | KIHEI HI 96753 |
| 73 | 2210140120000 | VALITE,RODOLFO T JR | | 3298 AKALA DR | KIHEI HI 96753 |
| 74 | 2210140120000 | VALITE,RONIE | | 3294 AKALA DR | KIHEI HI 96753 |
| 75 | 2210140130000 | HIRANO,JAMES M II TRUST ETAL | HIRANO,JAMES & JOYCE TTEES | PO BOX 37 | KIHEI HI 96753 |
| 76 | 2210140140000 | UGALINO/ZALDY ETAL | | 46 HUI DR | LAHAINA HI 96761 |
| 77 | 2210140150000 | SAGISI,HERMINIA TRUST ETAL | SAGISI,HERMINIA TRS | 3264 AKALA DR | KIHEI HI 96753 |
| 78 | 2210140160000 | FREEMAN,CURTIS JAMES ETAL | | 1258 SPRING GLADE RD | FAIRBANKS AK 99709 |
| 79 | 2210140170000 | BANK OF NEW YORK MELLON TRS ETAL | C/O BANK OF AMERICA | 7105 CORPORATE DR | PLANO TX 75024 |



***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 80 | 2210140180000 | JOSEPHSON,RICHARD FAMILY TRUST ETAL | | 3244 AKALA DR | KIHEI HI 96753 |
| 81 | 2210140190000 | PFEIFER,DAVID M ETAL | | PO BOX 1325 | VOLCANO HI 96785 |
| 82 | 2210150010000 | NIELSEN,TROY HARLEY HUGH ETAL | | 442 KUPULAU DR | KIHEI HI 96753 |
| 83 | 2210150020000 | STINGER,GEORGE CHRISTOPHER TRUST ETAL | | 3200 AKALA DR | KIHEI HI 96753 |
| 84 | 2210150030000 | MAURER,MATHEW REVOC LIVING TRUST ETAL | MAURER,MATHEW | 3190 AKALA DR | KIHEI HI 96753 |
| 85 | 2210150040000 | ANDREWS,MICHAEL VERNON ETAL | | 3180 AKALA DR | KIHEI HI 96753 |
| 86 | 2210150050000 | MUTH,STEVEN JOHN TRUST ETAL | | 3170 AKALA DR | KIHEI HI 96753 |
| 87 | 2210150060000 | FITCH,RICHARD KEELER ETAL | | 3160 AKALA DR | KIHEI HI 96753 |
| 88 | 2210150070000 | JOHNSON,RICHARD A ETAL | | P O BOX 11715 | LAHAINA HI 96761 |
| 89 | 2210150080000 | CROUSE, DOROTHY TR ETAL | | 3130 AKALA DR | KIHEI HI 96753 |
| 90 | 2210150090000 | PACUBAS,ELIAS PILAR TRUST ETAL | C/O ELIAS PILAR PACUBAS, TRUSTEE | 3120 AKALA DR | KIHEI HI 96753 |
| 91 | 2210150100000 | FRASER,MARIE-CLAUDE ETAL | | 3106 AKALA DR | KIHEI HI 96753 |
| 92 | 2210150110000 | PIATKOWSKI,LEON ETAL | | 3090 AKALA DR | KIHEI HI 96753 |
| 93 | 2210150120000 | CATERINA,WILLIAM CONTI ETAL | | 3076 AKALA PL | KIHEI HI 96753 |
| 94 | 2210150130000 | YAMAMOTO,ROBERT S ETAL | | 3066 AKALA DR | KIHEI HI 96753 |
| 95 | 2210150140000 | CUMMINGS,FRANCIS R JR ETAL | | 3056 AKALA DR | KIHEI HI 96753 |

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

Kihei Community Association
P.O. Box 662
Kihei, Hawaii 96753

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Sir or Madam:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

**Date:** December 1, 2010
**Time:** 6:30 p.m.
**Place:** Kihei Elementary School Cafeteria
250 Lipoa Street
Kihei, Hawaii 96753

The deadline for comments on the Draft EA is November 22, 2010. Since the scheduled community meeting is after the comment deadline we will continue to accept written comments until December 8, 2010, in order to include comments from participants at the community meeting.

305 High Street, Suite 104 - Wailuku, Hawaii 96793 - ph: (808)244-2015 - fax: (808)244-8729 - planning@mhplanning.com - www.mhplanning.com

***TMK LIST OF OWNERS/LESSEES ABUTTING THE SUBJECT PROPERTY***
***WCPT-PIILANI HIGHWAY***

| | | | | | |
|---|---|---|---|---|---|
| 96 | 2210150150000 | FULLER,DARLENE ROXANNE ETAL | | 365 HOOHANA ST STE D | KAHULUI HI 96732 |
| 97 | 2210150160000 | FENTON,DAVID WARREN ETAL | | 3021 MAPU PL | KIHEI HI 96753 |
| 98 | 2210260290000 | HEWS,RICHARD & SHARON REVOC LIVING TRUST ETAL | | 925 9TH AVE SW | ALBANY OR 97321 |
| 99 | 2210260300000 | SANDY FEET FAMILY TRUST ETAL | C/O KAREN RIDDICK ETAL, TTEE | 1639 HALAMA ST | KIHEI HI 96753 |
| 100 | 2210260310000 | FELICIANO,NATHANIEL CRUZ ETAL | | 370 PUALOA NANI PL | KIHEI HI 96753 |
| 101 | 2210260320000 | MULLIGAN,PHILIP EDWIN ETAL | | 364 PUALOA NANI PL | KIHEI HI 96753 |
| 102 | 2210260700000 | BAARTMAN,JERRY HENRY ETAL | | 2806 OGDEN RD SE | CALGARY, AB CANADA |
| 103 | 2210260710000 | BONANNO,ANTHONY MARCEL ETAL | | 20837 NORTH 41ST AVE | GLENDALE AZ 85308 |
| 104 | 2210260720000 | MOE,DAVID JAMES ETAL | | P O BOX 2056 | KIHEI HI 96753 |
| 105 | 2210260730000 | ANTOLICK,PAUL JOSEPH ETAL | M/M PAUL ANTOLICK | 612 FOUNTAIN CREEK CIRCLE, 52304 RGE RD | SHERWOOD PARK, ALBERTA T8B 1C9 CANADA |
| 106 | 2210260740000 | KNAKE,ROBERT AUSTIN ETAL | | 150 HOANO PL | KIHEI HI 96753 |
| 107 | 2210260750000 | GOODFELLOW,DANIEL R & CLAUDIA TR ETAL | C/O ESTHER NOLAN, PACIFIC RIM LAND INC. | P O BOX 598 | WENATCHEE WA 98807 |
| 108 | 2210260930000 | WAILEA PUALANI ESTATES H/A ETAL | C/O HAWAIIANA MGMNT CO LTD,KAHULUI OFC CTR | 140 HOOHANA ST #210 | KAHULUI HI 96732 |

We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

Bud Pikrone
Wailea Community Association
555 Kaukahi Street, Suite 214
Wailea, Hawaii 96753-4333

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Mr. Pikrone:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

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We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

Madge Schaefer, President
Maui Meadows Neighborhood Association
520 Mikioi Place
Kihei, Hawaii 96753

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive , Kihei, Maui, Hawaii

Dear Ms. Schaefer:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

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We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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MUNEKIYO & HIRAGA, INC.

Michael T. Munekiyo
Gwen Ohashi Hiraga
Mitsuru "Mich" Hirano
Karlynn Fukuda

Mark Alexander Roy

November 19, 2010

Madge Schaefer, President
Maui Meadows Neighborhood Association
P. O. Box 160
Kihei, Hawaii 96753

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Ms. Schaefer:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

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Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

November 19, 2010

Walter Enomoto
Maui Bike Alliance
293 South Mokapu Street
Kahului, Hawaii 96732

SUBJECT: Piilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive, Kihei, Maui, Hawaii

Dear Mr. Enomoto:

The Draft Environmental Assessment (EA) for the Piilani Highway Widening Project between Kilohana Drive and Wailea Ike Drive has been filed with the Office of Environmental Quality Control (OEQC) and published in the October 23, 2010 Environmental Notice. As represented, a second community meeting with representatives of the State of Hawaii Department of Transportation has been scheduled, as follows:

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Sincerely,

Colleen Suyama
Senior Associate

CS:yp
cc: Michael Formby, Interim Director, Department of Transportation
Edwin H. Sniffen, Department of Transportation, Highways Division
Ferdinand Cajigal, Department of Transportation, Maui District Office
Charles Jencks, Honua'ula Partners, LLC
Randall Endo, A&B Wailea, LLC
Rebecca Broudy Collins, ATC Makena Holdings LLC
Don Fujimoto, Keaka LLC
Stan Watanabe, Austin Tsutsumi & Associates
Keith Niiya, Austin Tsutsumi & Associates
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# APPENDIX L.

# Photographs

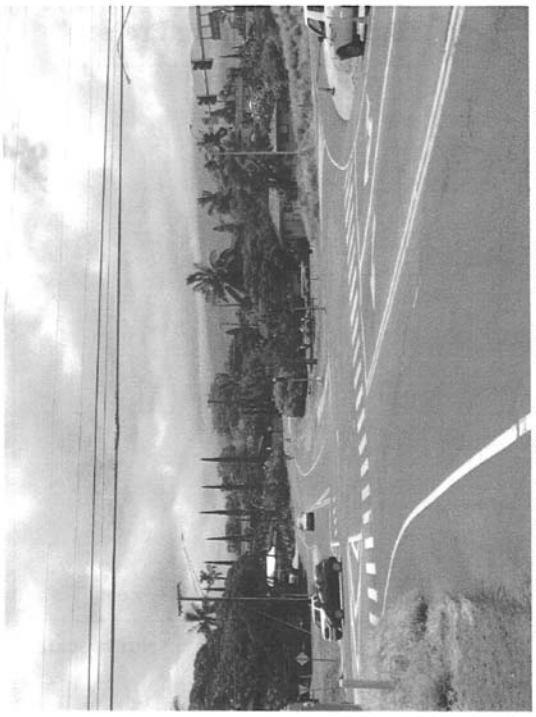


**PHOTO NO. 1 - Kilohana/Mapu/Pi`ilani Intersection**
**View East**

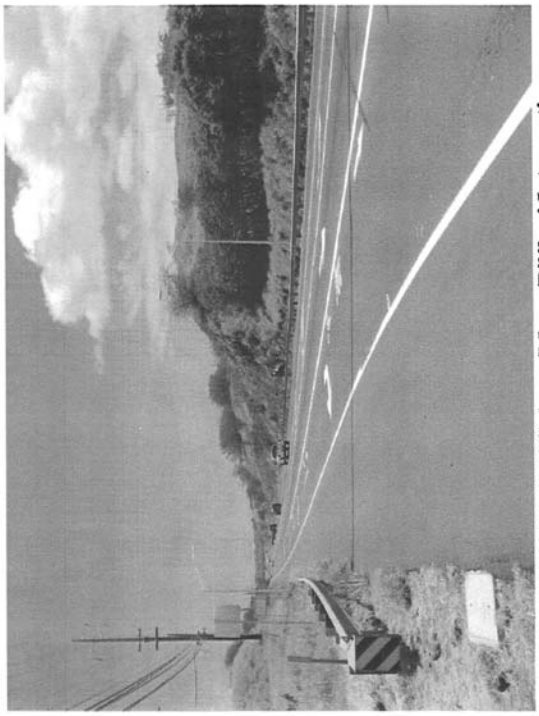
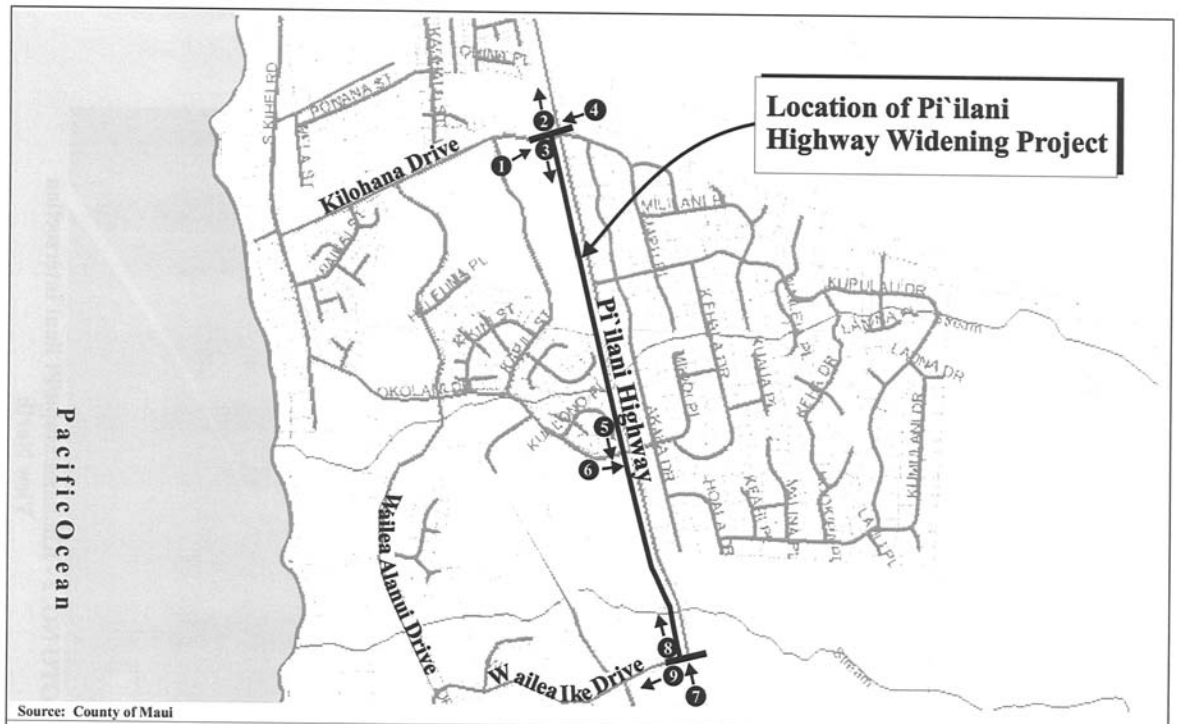


**PHOTO NO. 2 - Kilohana/Mapu/Pi`ilani Intersection**
**View North**




Source: County of Maui

# Pi`ilani Highway Widening Project
## Photographic Reference Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC, A&B Wailea LLC, Keaka LLC and ATC Makena Holdings LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Pi`ilani Widening\PhotoRef



**PHOTO NO. 3 - Kilohana/Mapu/Pi`ilani Intersection View South**

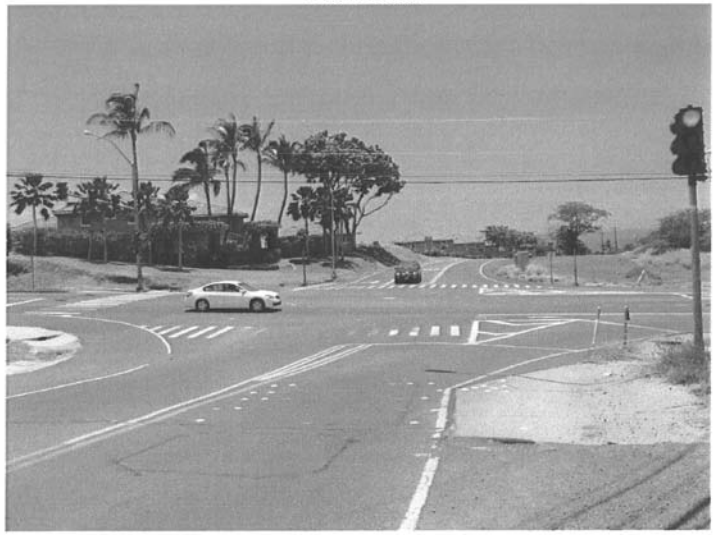


**PHOTO NO. 4 - Kilohana/Mapu/Pi`ilani Intersection View West**

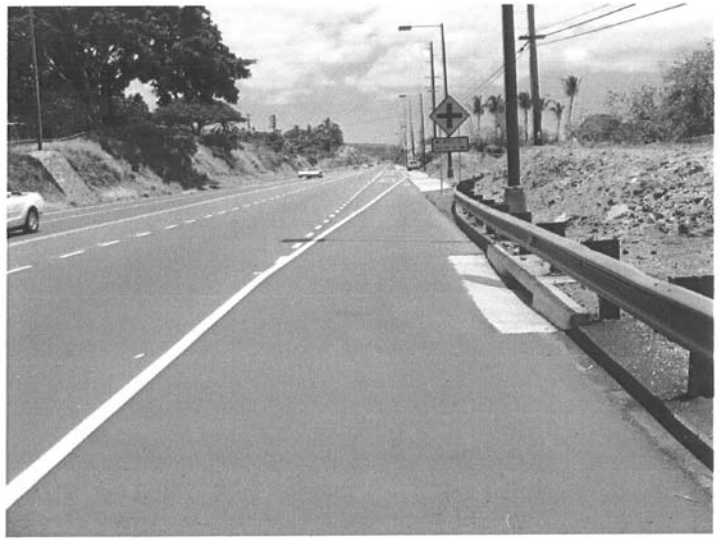


**PHOTO NO. 5 - Pi`ilani Highway View South Toward Okolani/Mikioi Street**

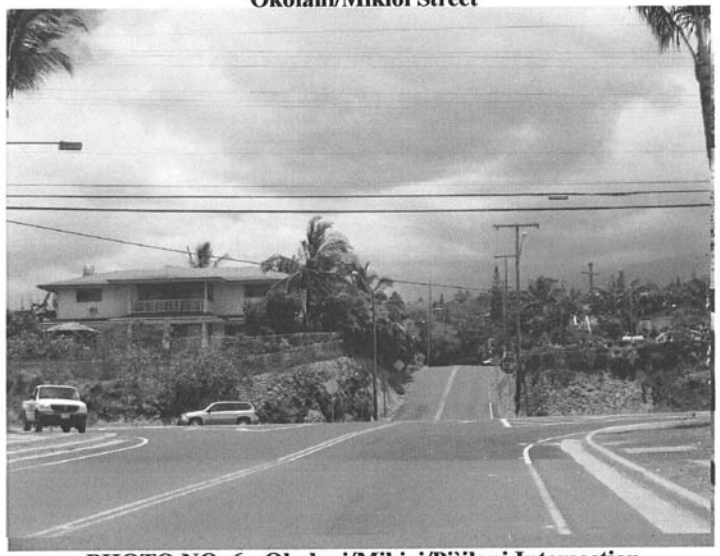


**PHOTO NO. 6 - Okolani/Mikioi/Pi`ilani Intersection View East**

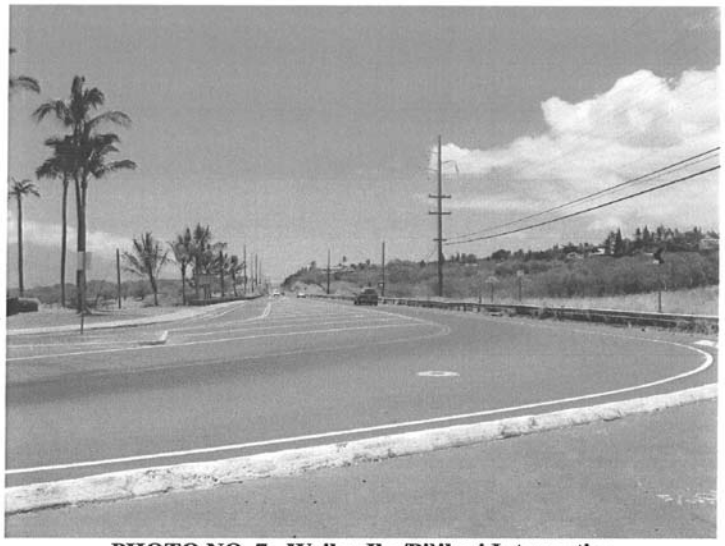


**PHOTO NO. 7 - Wailea Ike/Pi`ilani Intersection View North**

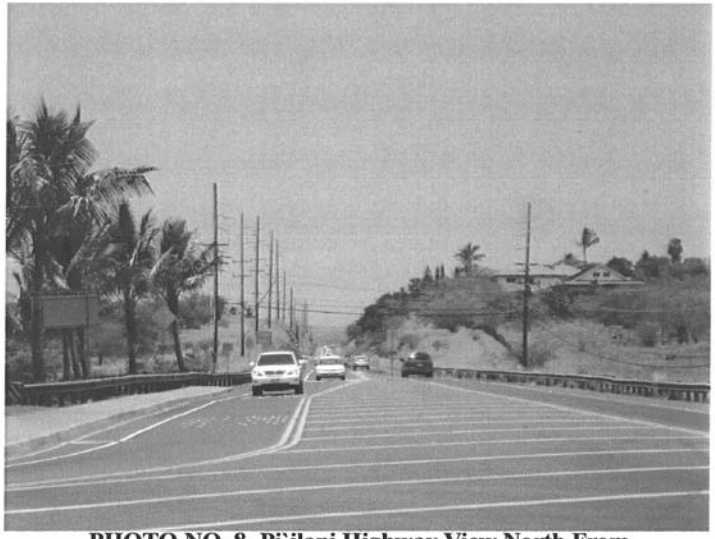


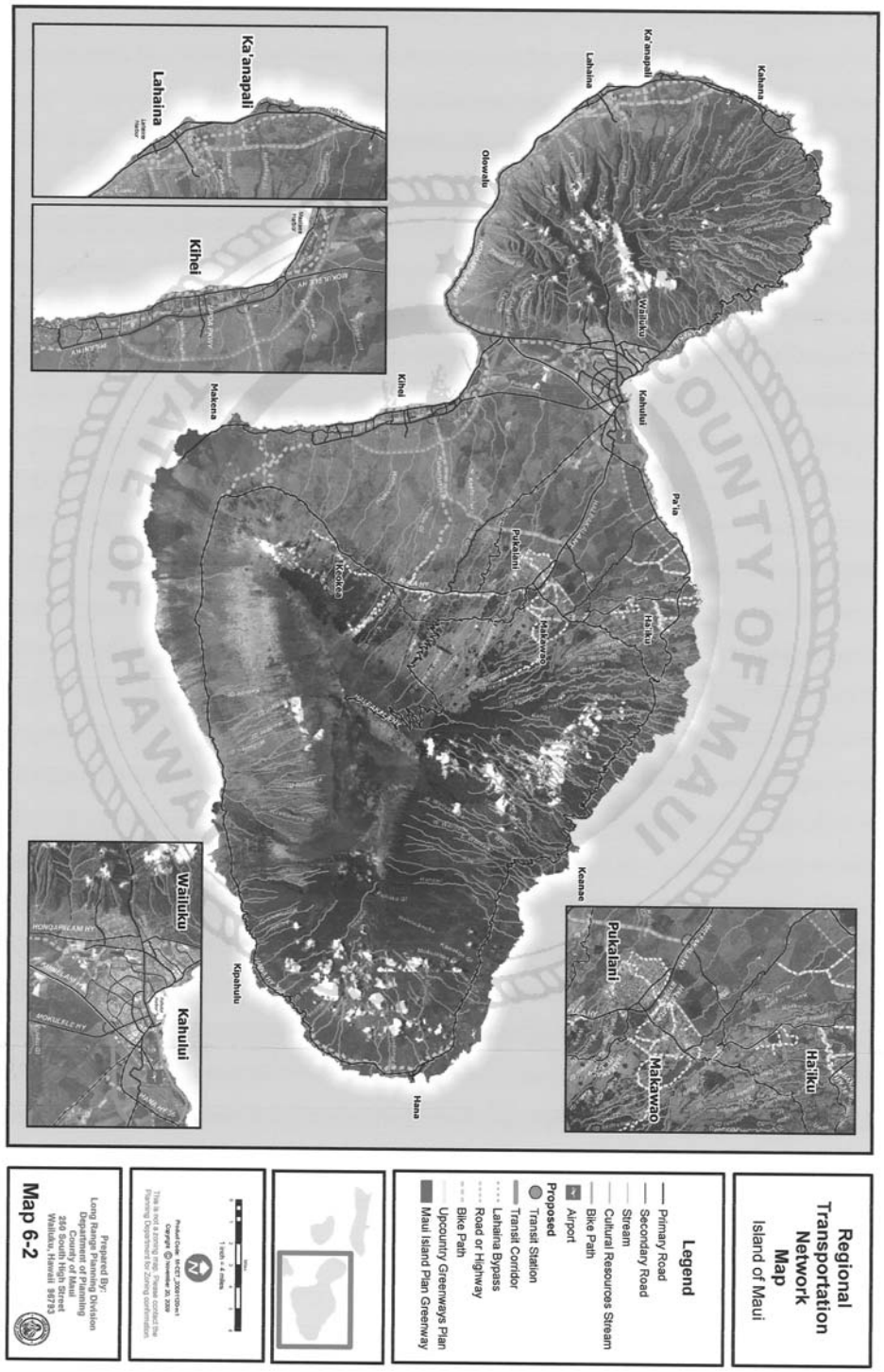
**PHOTO NO. 8- Pi`ilani Highway View North From Wailea Ike Drive**



**PHOTO NO. 9- Wailea Ike Drive View West From Pi`ilani Highway**

# APPENDIX M.

# Draft Maui Island Plan Regional Transportation Network Map



# APPENDIX N.

# Ordinance No. 3554 (Honua`ula)

For: Mayor's Office 16434
ORDINANCE NO. 3554
Effective Date: April 8, 2008

ORDINANCE NO. 3554

BILL NO. 22 (2008)

| | |
|---|---|
| Env Mgmt | ✓ |
| Finance | ✓ |
| Fire | ✓ |
| Hsg&HC | ✓ |
| Liquor | |
| Parks&R | ✓ |
| Personnel | |
| Planning | ✓ |
| Police | ✓ |
| Prosectrs | |
| Public W | ✓ |
| Transptn | ✓ |
| Water S | ✓ |
| Mgmt | ✓ |
| Mayor | ✓ |
| Budget | |
| Civil Defens | ✓ |

A BILL FOR AN ORDINANCE TO REPEAL ORDINANCE NO. 2171 (1992) AND TO ESTABLISH KIHEI-MAKENA PROJECT DISTRICT 9 (WAILEA 670) ZONING (CONDITIONAL ZONING), FOR APPROXIMATELY 670 ACRES SITUATED AT PAEAHU, PALAUEA, KEAUHOU, MAUI, HAWAII

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Ordinance No. 2171 (1992) is hereby repealed in its entirety.

SECTION 2. Pursuant to Chapters 19.45 and 19.510, Maui County Code, Kihei-Makena Project District 9 (Wailea 670) zoning (conditional zoning) is hereby granted for those certain parcels of land located at Paeahu, Palauea, Keauhou, Maui, Hawaii, identified for real property tax purposes by Tax Map Key Nos. (2) 2-1-008:056 and (2) 2-1-008:071, comprising approximately 670 acres, and more particularly described in Exhibit "A", attached hereto and made a part hereof, and in Land Zoning Map No. L-590, which is on file in the Office of the County Clerk of the County of Maui, and which is by this reference made a part hereof.

SECTION 3. Pursuant to Section 19.510.050, Maui County Code, the Kihei-Makena Project District 9 (Wailea 670) zoning granted by this ordinance is subject to the conditions set forth in Exhibit "B", attached hereto and made a part hereof, and the Unilateral Agreement and Declaration for Conditional Zoning, attached hereto and made a part hereof as Exhibit "C".

SECTION 4. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM AND LEGALITY:

JAMES A. GIROUX
Department of the Corporation Counsel
County of Maui
S:\CLERICAL\LJN\ORD\CIZ\Wailea670projdist9.doc

08 FEB 10 A9:33

EXHIBIT "B"

Conditions of Zoning

1. That Honua'ula Partners, LLC, its successors and permitted assigns, shall, at their own cost and expense, develop, maintain, and operate, or cause to be developed, maintained, and operated, a private water source, storage facilities, and transmission lines for the Wailea 670 project in accordance with Department of Water Supply standards and all applicable community plans. Honua'ula Partners, LLC, its successors and permitted assigns, shall comply with all reporting requirements of the State Commission on Water Resource Management.

   In addition, Honua'ula Partners, LLC, its successors and permitted assigns, shall comply with applicable water ordinances that pertain to the supply and transmission of water from the island of Maui when such ordinances are enacted.

   At the time the project water system is completed, Honua'ula Partners, LLC, its successors and permitted assigns, shall offer to the County the right to purchase the project water system at the cost of development of such system.

   The water rates for the residential workforce housing units shall be no higher than the general water consumer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, Maui County Code.

2. That Honua'ula Partners, LLC, its successors and permitted assigns, shall implement the following traffic improvements:

   a. Upgrade Piilani Highway, from Kilohana Drive to Wailea Ike Drive, to four lanes of traffic. The improvements shall be completed prior to the commencement of any construction on the site, with the exception of grading.

   b. Extend Piilani Highway for two lanes of traffic from Wailea Ike Drive to Kaukahi Street. The improvement shall be constructed at or prior to the completion of 50 percent of the project. Said improvement shall be maintained by Honua'ula Partners, LLC, its successors and permitted assigns.

   c. Signalize the Piilani Highway/Okolani Drive/Mikioi Place intersection and provide an exclusive left-turn lane on Okolani Drive prior to occupancy of the first unit in Kihei-Makena Project District 9.

   d. Modify the Piilani Highway/Wailea Ike Drive intersection into a signalized intersection and provide a free right-turn lane from Piilani Highway to Wailea Ike Drive and a second right-turn lane from Wailea Ike Drive to northbound Piilani Highway prior to occupancy of the first unit in Kihei-Makena Project District 9.

   e. Modify the Wailea Alanui/Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9.

   f. Modify the Piilani Highway/Kilohana Drive/Mapu Place intersection to provide an exclusive left-turn lane, and the southbound Piilani Highway approach to provide an exclusive right-turn lane into Mapu Place prior to occupancy of the first unit in Kihei-Makena Project District 9.

   g. Signalize the Wailea Ike Drive/Kalai Waa Street intersection in coordination with Wailea Resort and Makena Resort when warranted.

   h. Signalize the Wailea Alanui/Kaukahi Drive/Kaukahi Street intersection in coordination with Wailea Resort and Makena Resort when warranted.

3. That, as represented, Honua'ula Partners, LLC, its successors and permitted assigns, shall make a contribution to the County for traffic improvements in an amount equal to $5,000 per unit. The contribution shall be paid to the County prior to issuance of a building permit. Upon adoption of a traffic impact fee ordinance, Honua'ula Partners, LLC, its successors and permitted assigns, shall comply with the ordinance in lieu of this voluntary contribution. Should a traffic impact fee ordinance be adopted prior to the collection of this contribution, the applicable amount shall be the greater of the two. Such contributions or fees shall not be a substitute for any other traffic infrastructure requirements related to the Change in Zoning.

4. That Honua'ula Partners, LLC, its successors and permitted assigns, shall be responsible for all required infrastructural improvements for the project, including water source and system improvements for potable and nonpotable use and fire protection, drainage improvements, traffic-related improvements, wastewater system improvements and utility upgrades, as determined by the appropriate governmental agencies and public utility companies. Except as otherwise provided by more specific conditions of zoning, said improvements shall be constructed and implemented concurrently with the development of each phase of Kihei-Makena Project District 9, and shall be completed prior to issuance of any certificate of occupancy or final subdivision approval, unless improvements are bonded by Honua'ula Partners, LLC, its successors and permitted assigns. Honua'ula Partners, LLC shall execute appropriate agreements with governmental agencies regarding participation in improvements of infrastructure and public facilities as determined by the agencies.

5. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide workforce housing in accordance with Chapter 2.96, Maui County Code (the "Residential Workforce Housing Policy"); provided that, 250 of the required workforce housing units shall be located at the Kaonoulu Light Industrial Subdivision and completed prior to any market-rate unit, that 125 of those workforce housing units shall be ownership units, and that 125 of those units shall be rental units. In addition, construction of those workforce housing units shall be commenced within two years, provided all necessary permits can be obtained within that timeframe. Honua'ula Partners, LLC, its successors and permitted assigns, shall provide a minimum two-acre park at the Kaonoulu Light Industrial Subdivision, which shall be credited toward the requirements of Section 18.16.320, Maui County Code, for that subdivision.

6. That a Drainage Master Plan and Phasing Plan of improvements shall be submitted for review and approval during Project District Phase II processing. Said plan shall include the recommended drainage improvements as represented in the Preliminary Drainage Report. The County may require periodic updates of the Drainage Master Plan and Phasing Plan.

7. That Honua'ula Partners, LLC, its successors and permitted assigns, shall prepare an animal management plan that shall be submitted during Project District Phase II processing and approved by the Department of Land and Natural Resources prior to submittal of Project District Phase III processing. Said plan shall include procedures for the management of animal intrusions including, but not limited to, construction of boundary or perimeter fencing, wildlife control permits, and rodent and feral cat control. Honua'ula Partners, LLC, its successors and permitted assigns, shall implement the approved animal management plan. The Department of Land and Natural Resources may require periodic updates of the plan.

8. That Honua'ula Partners, LLC, its successors and permitted assigns, shall inform owners within Kihei-Makena Project District 9 that the area is subject to the intrusion of mammals such as axis deer, pigs, and rodents, and the impacts and management plan associated with such intrusions.

9. That Honua'ula Partners, LLC, its successors and permitted assigns, shall prepare an assessment of the owl (Pueo or Hawaiian Short-eared Owl) and the Hawaiian Hoary Bat in coordination with the Department of Land and Natural Resources, and, if appropriate, mitigative measures shall be incorporated into Kihei-Makena Project District 9. Said assessment shall be prepared prior to submittal of Project District Phase II processing.

10. That, in lieu of the dedication of a Little League Field and related amenities as originally specified in Ordinance No. 2171 (1992), Exhibit "B", Condition No. 8, and based on current land and construction cost estimates for the Little League Field, not less than $5,000,000 shall be paid to the County upon Project District



Phase II approval for the development of the South Maui Community Park. Said amount shall not be credited against future park assessments.

11. That Honua'ula Partners, LLC is proposing to develop 6 acres of private parks and 84 acres of open space within the development. Said private parks shall be open to the public and privately maintained. Furthermore, said private parks and open space shall not be used to satisfy the park assessment requirements under Section 18.16.320, Maui County Code, or for future credits under said subdivision ordinance. The Director of Parks and Recreation and Honua'ula Partners, LLC agree that the park assessment shall be satisfied with an in-lieu cash contribution for the entire project. The amounts and timing of payment of said in-lieu fees shall be subject to the provisions of Section 18.16.320, Maui County Code.

12. That, as represented by Honua'ula Partners, LLC, the golf course shall be subject to the following conditions:

    a. Honua'ula Partners, LLC, its successors and permitted assigns, shall permit one nonprofit organization per quarter of the calendar year, other than Maui Junior Golf Association ("Maui Junior Golf"), the use of the golf course and the clubhouse for a fund-raising activity upon terms mutually agreed upon with said nonprofit organization.

    b. Honua'ula Partners, LLC, its successors and permitted assigns, shall: (1) develop an organized instructional program for junior golfers at its facility from September to January each year; (2) permit Maui Junior Golf the use of the golf course in accordance with Honua'ula Partners, LLC's instructional program; and (3) sponsor one Maui Junior Golf fund-raising tournament per year. The terms of the Junior Golf Program by Honua'ula Partners, LLC shall be as follows:

        The instructional program will be developed to teach youngsters ages 12 to 18 years of age the fundamentals of golf and how to play the game, while also providing quality instruction/training three days a week from September 1 through January 31, with some blackout dates. This program will support the overall efforts of Maui Junior Golf.

        Private lessons will also be available at a discounted rate of 50 percent of the regular rate based on two lessons per junior golfer for a maximum of 50 lessons per month from February through August on a space-available basis.

        For the annual fund-raising event for the Maui Junior Golf, the rate per player shall be 50 percent of the regular rate with the number of golfers limited to no more than 144 players per event.

c. Honua'ula Partners, LLC, its successors and permitted assigns, shall permit the Maui Interscholastic League ("MIL") and the Hawaii High School Athletic Association ("HHSAA") to each use the golf course once per year for an official MIL golf tournament or an official HHSAA golf tournament if requested by the MIL or the HHSAA, or for regular season play-offs if requested by the MIL.

d. Honua'ula Partners, LLC, its successors and permitted assigns, shall permit Maui residents to play at the golf course on Tuesday of each week. The charge for Maui residents for green fees, including golf cart rental fees, shall not exceed 40 percent of the average market rate for green fees and golf cart rental fees in South Maui, and shall exclude all membership fees.

13. That Honua'ula Partners, LLC, its successors and permitted assigns, shall prepare a Cultural Resources Preservation Plan ("CRPP"), in consultation with: Na Kupuna O Maui; lineal descendents of the area; other Native Hawaiian groups; the Maui County Cultural Resources Commission; the Maui/Lanai Island Burial Council; the Office of Hawaiian Affairs; the State Historic Preservation Division, Department of Land and Natural Resources; the Maui County Council; Na Ala Hele; and all other interested parties. Prior to initiating this consultation process, Honua'ula Partners, LLC, its successors and permitted assigns, shall publish a single public notice in a Maui newspaper and a State-wide newspaper that are published weekly. The CRPP shall consider access to specific sites to be preserved, the manner and method of preservation of sites, the appropriate protocol for visitation to cultural sites, and recognition of public access in accordance with the Constitution of the State of Hawaii, the Hawaii Revised Statutes, and other laws, in Kihei-Makena Project District 9.

    Upon completion of the CRPP, Honua'ula Partners, LLC, its successors and permitted assigns, shall submit the plan to the State Historic Preservation Division, Department of Land and Natural Resources, and the Office of Hawaiian Affairs for review and recommendations prior to Project District Phase II approval. Upon receipt of the above agencies' comments and recommendations, the CRPP shall be forwarded to the Maui County Cultural Resources Commission for its review and adoption prior to Project District Phase II approval.

14. That a nonpotable water supply system shall be utilized for all irrigation purposes.

15. That, during construction, all dust control shall utilize nonpotable water or effluent, which may be obtained from the Kihei Wastewater Reclamation Facility when available.

16. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide a Sewage Disposal Analysis that has been reviewed and commented on by the State Department of Health, the State Department of Land and Natural Resources,



the County Department of Environmental Management, and the County Department of Water Supply prior to Project District Phase II approval. The Sewage Disposal Analysis, along with reviews and comments, shall be submitted to the Maui County Council for review and the project shall be subject to additional conditions or amendments by the Maui County Council if warranted by the Sewage Disposal Analysis.

17. That Honua'ula Partners, LLC, its successors and permitted assigns, shall construct, maintain, and/or participate in the operation of a private wastewater treatment facility and system that accommodate the needs of the entire Kihei-Makena Project District 9. All reclaimed water from the private wastewater treatment facility shall be utilized for irrigation, dust control, or other nonpotable purposes, and none of the reclaimed water shall be placed into injection wells.

    The sewer rates for the residential workforce housing units shall be no higher than the residential sewer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, Maui County Code.

18. That Honua'ula Partners, LLC, its successors and permitted assigns, shall address in their Project District Phase II application the following:

    a. Condition 1 of the Department of Health's "Twelve Conditions Applicable To All New Golf Course Development" ("12 Conditions") relating to an approved sampling plan, establishment of the baseline groundwater/vadose zone water quality, and if appropriate, nearshore water quality, has been met to the satisfaction of the Director of Health;

    b. Conditions 2 and 3 of the Department of Health's "12 Conditions" relating to groundwater monitoring have been satisfied by the Director of Health;

    c. Condition 4 relating to the preliminary proposal of the individual treatment system meets the requirements of the Department of Health, and final design shall be approved at the time of Project District Phase III;

    d. Condition 5 of the Department of Health's "12 Conditions" relating to use of effluent has been satisfied;

    e. Condition 6 of the Department of Health's "12 Conditions" relating to golf carts and storage of petroleum has been addressed and incorporated in the design and layout of the buildings;

    f. Conditions 7, 8, and 11 of the Department of Health's "12 Conditions" relating to fertilizers, biocides, and pesticides and the Integrated Golf Course Management Plan have been reviewed, and comments from the Department of Agriculture and the Department of Health have been incorporated in the design and layout of the golf courses;

g. Condition 9 of the Department of Health's "12 Conditions" relating to noise from maintenance facilities has been addressed through the location and design of the maintenance activities and facilities;

h. Condition 10 of the Department of Health's "12 Conditions" and the County Department of Environmental Management's concerns and recommendations relating to solid waste disposal management activities and facilities are identified and designed;

i. Condition 12 of the Department of Health's "12 Conditions" relating to soil runoff during construction and concerns of the State Department of Transportation; the County Department of Public Works; the State Department of Health; and the Natural Resources Conservation Service of the United States Department of Agriculture relating to drainage are addressed and incorporated in the design and layout of the plans, and a preliminary erosion control and drainage report is included in the application;

j. Confirmation from Maui Electric Company, Ltd. ("MECO") that the proposal to relocate and/or landscape MECO facilities is incorporated in the application and site plan; and

k. Roadway improvements to the satisfaction of the State Department of Transportation and the County Department of Public Works and proposed agreements are incorporated in the application and site plan and finalized as part of Project District Phase II approval.

19. That Honua'ula Partners, LLC, its successors and permitted assigns, shall execute appropriate agreements with the State of Hawaii and County of Maui agencies regarding participation in improvements of infrastructure and public facilities where such improvements are reasonably related to Honua'ula Partners, LLC 's project.

20. That marine monitoring programs shall be conducted which include monitoring and assessment of coastal water resources (groundwater and surface water) that receive surface water or groundwater discharges from the hydrologic unit where the project is located. Monitoring programs shall include both water quality and ecological monitoring.

Water Quality Monitoring shall provide water quality data adequate to assess compliance with applicable State water quality standards at Hawaii Administrative Rules Chapter 11-54. Assessment procedures shall be in accordance with the current Hawaii Department of Health ("HIDOH") methodology for Clean Water Act Section 305(b) water quality assessment, including use of approved analytical methods and quality control/quality



assurance measures. The water quality data shall be submitted annually to HIDOH for use in the State's Integrated Report of Assessed Waters prepared under Clean Water Act Sections 303(d) and 305(b). If this report lists the receiving waters as impaired and requiring a Total Maximum Daily Load ("TMDL") study, then the monitoring program shall be amended to evaluate land-based pollutants, including: (1) monitoring of surface water and groundwater quality for the pollutants identified as the source of the impairment; and (2) providing estimates of total mass discharge of those pollutants on a daily and annual basis from all sources, including infiltration, injection, and runoff. The results of the land-based pollution water quality monitoring and loading estimate shall be submitted to the HIDOH Environmental Planning Office, TMDL Program.

The ecological monitoring shall include ecological assessment in accordance with the Coral Reef Assessment and Monitoring Program protocols used by the Department of Land and Natural Resources. The initial assessment shall use the full protocol. Subsequent annual assessments can use the Rapid Assessment Techniques. Results shall be reported annually to the Aquatic Resources Division, Department of Land and Natural Resources.

21. That all exterior lighting shall be shielded from adjacent residential properties and near shore waters. Lighting requirements in force at the time of building permit application shall be applied.

22. That Honua'ula Partners, LLC, its successors and permitted assigns, shall pay the Department of Education $3,000 per dwelling unit upon issuance of each building permit to be used, to the extent possible, for schools serving the Kihei-Makena Community Plan area; provided that, should the State pass legislation imposing school impact fees that apply to Kihei-Makena Project District 9, Honua'ula Partners, LLC, its successors and permitted assigns, shall from that point forward comply with the State requirements, or contribute $3,000 per dwelling unit, whichever is greater.

23. That Honua'ula Partners, LLC, its successors and permitted assigns, shall fund and construct adequate civil defense measures as determined by the State and County of Maui civil defense agencies.

24. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide to the County two acres of land with direct access to the Piilani Highway extension for the development of fire control facilities within the village mixed-use sub-district at the time 50 percent of the total unit/lot count has received either a certificate of occupancy or final subdivision approval. The acreage provided shall have roadway and full utility services provided to the parcel.

That Honua'ula Partners, LLC, its successors and permitted assigns, shall contribute $550,000 to the County for the development of a police station in South Maui, to be paid at the time a contract is entered into for the construction of that police station.

25. That no transient vacation rentals or time shares shall be allowed within Kihei-Makena Project District 9; and further, no special use permit or conditional permit for such accommodations shall be accepted by the Department of Planning.

26. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide a preservation/mitigation plan pursuant to Chapter 6E, Hawaii Revised Statutes, that has been approved by the State Historic Preservation Division, Department of Land and Natural Resources, and the Office of Hawaiian Affairs prior to Project District Phase II approval.

27. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide the report "Remnant Wiliwili Forest Habitat at Wailea 670, Maui, Hawaii by Lee Altenberg, Ph.D.", along with a preservation/mitigation plan, to the State Department of Land and Natural Resources, the United States Fish and Wildlife Service, and the United States Corps of Engineers for review and recommendations prior to Project District Phase II approval. The Maui Planning Commission shall consider adoption of the plan prior to Project District Phase II approval.

    Such plan shall include a minimum preservation standard as follows: That Honua'ula Partners, LLC, its successors and permitted assigns, shall establish in perpetuity a Conservation Easement (the "Easement"), entitled "Native Plant Preservation Area", for the conservation of native Hawaiian plants and significant cultural sites in Kihei-Makena Project District 9 as shown on the attached map. The Easement shall comprise the portion of the property south of latitude 20°40'15.00"N, excluding any portions that the State Department of Land and Natural Resources, the United States Fish and Wildlife Service, and the United States Corps of Engineers find do not merit preservation, but shall not be less than 18 acres and shall not exceed 130 acres.

    The scope of the Easement shall be set forth in an agreement between Honua'ula Partners, LLC and the County that shall include:

    a. A commitment from Honua'ula Partners, LLC, its successors and permitted assigns, to protect and preserve the Easement for the protection of native Hawaiian plants and significant cultural sites worthy of preservation, restoration, and interpretation for public education and enrichment consistent with a Conservation Plan for the Easement developed by Honua'ula Partners, LLC and approved by the State Department of Land and Natural Resources, the United States Geological Survey, and the United States Fish and Wildlife Service; and with a Cultural Resource Preservation Plan, which includes the management and maintenance of the Easement, developed by Honua'ula Partners, LLC and approved by the State Department of Land and Natural Resources (collectively, the "Conservation/Preservation Plans").

    b. That Honua'ula Partners, LLC, its successors and permitted assigns, shall agree to confine use of the Easement to activities consistent with the purpose and intent of the Easement.

    c. That Honua'ula Partners, LLC, its successors and permitted assigns, shall be prohibited from development in the Easement other than erecting fences, enhancing trails, and constructing structures for the maintenance needed for the area, in accordance with the Conservation/Preservation Plans.

    d. That title to the Easement shall be held by Honua'ula Partners, LLC, its successors and permitted assigns, or conveyed to a land trust that holds other conservation easements. Access to the Easement shall be permitted pursuant to an established schedule specified in the Conservation/Preservation Plans to organizations on Maui dedicated to the preservation of native plants, to help restore and perpetuate native species and to engage in needed research activities. These organizations may enter the Easement at reasonable times for cultural and educational purposes only.

    e. Honua'ula Partners, LLC, its successors and permitted assigns, shall be allowed to receive all tax benefits allowable under tax laws applicable to the Easement at the time that said Easement is established in Kihei-Makena Project District 9, which will be evidenced by the recordation of the Easement in the Bureau of Conveyances, State of Hawaii.

28. That, prior to the commencement of any construction activity, Honua'ula Partners, LLC, its successors and permitted assigns, shall develop and submit a Transportation Management Plan ("TMP"), to be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation. The purpose of the TMP shall be to reduce traffic generated by construction activity related to the Kaonoulu Light Industrial Subdivision and Kihei-Makena Project District 9, including traffic generated by the improvements to Piilani Highway between Kilohana Drive and Wailea Ike Drive. The TMP shall provide for programs such as park and ride, shuttles, and/or restrictions on worker access to ongoing construction activity during peak hour traffic. Upon approval, project contractors shall implement the TMP during construction activities. Honua'ula Partners, LLC, its successors and permitted assigns, shall submit an annual report to the State Department of Transportation, the County Department of Public Works, the County Department

of Transportation, and the Maui County Council to document the success of the TMP in meeting its benchmarks of reducing traffic during project construction.

That as part of the Project District Phase II application, Honua'ula Partners, LLC, its successors and permitted assigns, shall submit a TMP to reduce the dependency on individual vehicular transportation modes. The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation prior to Project District Phase II approval.

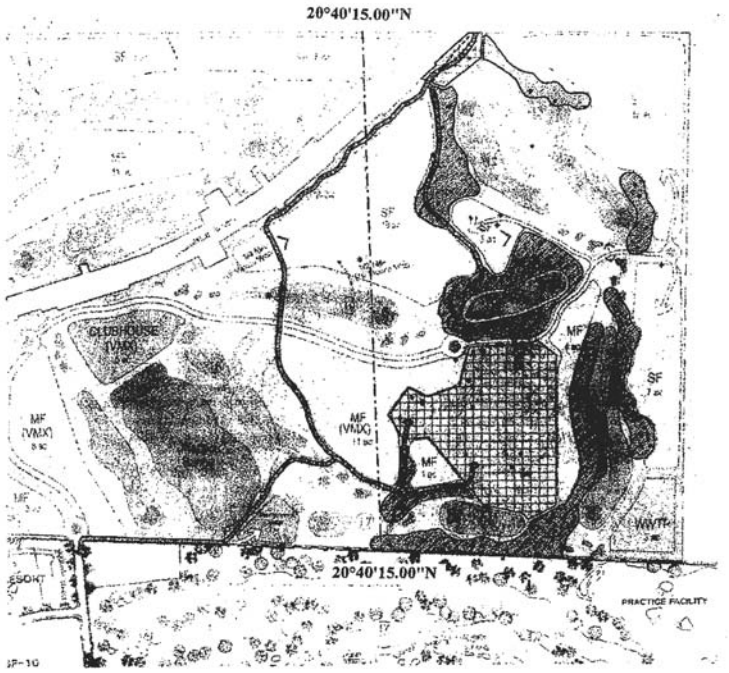
29. That Honua'ula Partners, LLC, its successors and permitted assigns, shall provide annual compliance reports to the Department of Planning and the Maui County Council on the status of the project and progress in complying with the conditions imposed, commencing within one year of the effective date of the ordinance.

30. All energy systems for all residential units shall be designed and constructed to meet all applicable ENERGY STAR requirements established by the Climate Protection Division of the United States Environmental Protection Agency in effect at the time of construction. For purposes of this condition, energy systems shall include all hot water systems, roof and attic areas, outside walls, windows, air cooling systems, and heating systems.

All residential units shall be equipped with a primary hot water system at least as energy efficient as a conventional solar panel hot water system, sized to meet at least 80 percent of the hot water demand for the respective units.

All air cooling systems and all heating systems for laundry facilities, swimming pools, and spa areas shall make maximum use of energy-efficient construction and technology.






**Legend**

Existing Native Plants (Field Surveyed)
- Canavalia Pubescens (awikiwiki)
- Erythrina Sandwicensis (wiliwili)
- Lipochaeta Rockii (nehe)

Archaeological Sites (To Be Preserved)

| BOTANICAL HABITAT PRESERVES | Approx. Area (Acres) |
|---|---|
| Native Plant Preservation Area | +/- 18 ac |
| Native Plant Management / Enhancement Area | +/- 23 ac |
| Interpretive Trail (min. 4-foot wide cinder trail with interpretive signs) | +/- 2 ac |
| TOTAL : | +/- 43 ac |

NOTE: All areas need to be field located and surveyed to establish appropriate boundaries that relate to the existing topographic and geological features with native plants located. Field adjustments for golf course, roadways and infrastructure will be necessary.
Only 5 out of 96 native plants may not be preserved.

**BOTANICAL HABITAT PRESERVATION PLAN**

# APPENDIX N-1.

# Ordinance No. 3613 (Makena Resort)

ORDINANCE NO. 3613

BILL NO. 117 (2008)

A BILL FOR AN ORDINANCE TO AMEND PORTIONS OF LAND ZONING MAP NOS. 5 AND 514 TO ESTABLISH A-2 APARTMENT DISTRICT, B-2 COMMUNITY BUSINESS DISTRICT, B-R RESORT COMMERCIAL DISTRICT, H-M HOTEL DISTRICT, PK-1 NEIGHBORHOOD PARK DISTRICT, PK-4 GOLF COURSE PARK DISTRICT, R-1 AND R-3 RESIDENTIAL DISTRICT ZONING (CONDITIONAL ZONING) FOR LANDS SITUATED AT MAKENA, MAUI, HAWAII

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Pursuant to Chapters 19.08, 19.12, 19.14, 19.18, 19.22, 19.510, and 19.615, Maui County Code, portions of Land Zoning Map Nos. 5 and 514 are hereby amended for certain parcels of land located in Makena, Maui, Hawaii, identified in Table 1, comprising approximately 603.303 acres, and more particularly described in Exhibit "A", which is attached hereto and made a part hereof, and in Land Zoning Map No. L-585, on file in the Office of the County Clerk of the County of Maui and which is by reference made a part hereof.

Table 1

| CHANGE IN ZONING | | | | |
|---|---|---|---|---|
| TMK | Lot No. | From | To | Acres |
| 2-1-5:por. 108, por. 120; 2-1-6:36, por. 57; 2-1-8:por. 78, por. 79, por. 81, por. 90 | 1, 17, 18 | County Ag, A1, A2, R1, GC & OS, R-3, OZ | PK-4 | 437.085 |
| 2-1-5:por. 108; 2-1-8:por. 78, por. 79, por. 81, por. 90 | 2A, 2C, 8A, 8C, 21B | County Ag, R1, A1, R-3, OZ, GC & OS, STP | A2 | 119.719 |
| 2-1-8:por. 90 | 4,6 | A1, A2 | R3 | 3.361 |

| | | | | |
|---|---|---|---|---|
| 2-1-7:por. 68 | 11B | R-2 | BR | 0.460 |
| 2-1-5:por. 108, por. 124; 2-1-6:por. 56, por. 57, por. 59; 2-1-7:por. 68, 93, por. 94 | 5, 12, 13, 14, 16 | Park, R-2, GC & OS, R-1, H-M | PK-1 | 4.205 |
| 2-1-5:83, 84, 85, por. 108, por. 120, 2-1-7:4 | 15B, 19 | GC & OS, B-R, A-1, OZ | HM | 28.173 |
| 2-1-5:por. 108 | 20 | A2, GC & OS, R-3 | B2 | 9.817 |
| 2-1-5:por. 108 | 22A | A2 | R1 | 0.483 |
| Total | | | | 603.303 |

SECTION 2. Pursuant to Section 19.510.050, Maui County Code, the changes in zoning established by this ordinance, as set forth in Table 1 above, comprising approximately 603.303 acres and delineated on Land Zoning Map No. L-585, are subject to the conditions set forth in Exhibit "B", which is attached hereto and made a part hereof, and the Unilateral Agreement and Declaration for Conditional Zoning, which is attached hereto and made a part hereof as Exhibit "C".

SECTION 3. Existing zoning in Land Zoning Map No. 514, which is not changed by this ordinance, identified in Table 2, comprising 152.386 acres, and more particularly described in Exhibit "D", which is attached hereto and made a part hereof, is incorporated within Land Zoning Map No. L-585, remaining in full force and effect.



Table 2

| *EXISTING ZONING (ORDINANCE NO. 832)* | | | |
|---|---|---|---|
| *TMK* | *Lot No.* | *Zoning* | *Acres* |
| 2-1-5:por. 108<br>2-1-8:por. 78, por. 79, por. 80, por. 90, 98, por. 99, 100, 106 | 2B, 3, 8B, 8D 10, 21A | A-2 | 97.628 |
| 2-1-7:92 | 7 | R-3 | 0.420 |
| 2-1-8:por. 80, por. 99 | 9 | R-2 | 2.918 |
| 2-1-7:por. 68; 2-1-8:por. 80 | 11A | B-R | 9.062 |
| 2-1-5:86, por. 124, 125; 2-1-6:37, por. 56, por. 59 | 15A | H-M | 38.262 |
| 2-1-5:por. 108 | 22B | R-1 | 4.096 |
| Total | | | 152.386 acres |

SECTION 4. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:

JAMES A. GIROUX
Deputy Corporation Counsel
County of Maui
S:\CLERICAL\LJN\ORD\CIZ\makenaciz.wpd

EXHIBIT "B"

## Conditions of Zoning

INTRODUCTORY NOTES:

A. Unless otherwise specified, each condition applies to each project.

B. The following definitions shall apply to these conditions:

"County" means the County of Maui.

"Developer" means Keaka LLC; Makena Golf, LLC; Makena Hotel, LLC; Makena MF-2&3, LLC; and Makena Resort Services LLC; their successors and permitted assigns; and any future developer or owner of any property that is the subject of this Change in Zoning.

"Project" means each development that requires an SMA permit from the Maui Planning Commission.

"SMA" means Special Management Area.

"State" means the State of Hawaii.

Density and Height Restrictions

1. In the R-1, R-2, and R-3 Residential District zoned areas, the density shall not exceed 2.5 single-family dwelling units per acre.

2. In the A-2 Apartment District zoned areas, the density shall not exceed eight units per acre, and the building height shall not exceed 45 feet. Height shall be measured from the natural or finish grade, whichever is lower.

3. In the B-2 Community Business District zoned areas, the gross floor area of each building shall not exceed 60 percent of the total lot area.

4. On Lot 19 (H-M Hotel District), the building height shall not exceed 45 feet and shall be consistent with the Urban Design Standards for Building Form in the Kihei-Makena Community Plan; no more than 89 units shall be developed; and no lockout units shall be allowed. Height shall be measured from the natural or finish grade, whichever is lower.

5. The developer shall preserve Makena's significant views of the Pacific Ocean and the broad vista to the Central Maui and Upcountry regions. The use of walls higher than four feet in frontyard setbacks shall be prohibited.

Noise Mitigation

6. In the B-2 Community Business District zoned areas, the following permitted uses shall incorporate acoustical measures into the facility to mitigate potential noise impacts: amusement enterprises, including billiard and pool halls; auditoriums and theaters; baseball and football stadiums and other sport activities and amusements; bowling alleys; dancing and hula studios; gymnasiums; miniature golf courses; music conservatories and music studios; physical-culture studios; and printing, lithography, and publishing shops.

Lighting Standards

7. All exterior lighting shall be shielded from adjacent residential properties and nearshore waters, and shall be fully shielded to prevent uplight. Lighting requirements in force at the time of building permit application shall be applied.

Screening of Certain Uses

8. In the B-2 Community Business District zoned areas, merchandise, equipment, and supplies shall be stored within enclosed buildings or enclosed areas that are appropriately screened with fencing and landscape planting for the following permitted uses: equipment rental and sales yards; hardware and garden supply

stores; parcel delivery stations; and printing, lithography, and publishing shops.

Education

9. The developer, its successors and permitted assigns, shall pay the Department of Education $3,000 per dwelling unit upon issuance of each building permit to be used, to the extent possible, for schools serving the Kihei-Makena Community Plan area; provided that, should the State pass legislation imposing school impact fees that apply to the Makena Resort Area, the developer, its successors and permitted assigns, shall from that point forward comply with the State requirements, or contribute $3,000 per dwelling unit, whichever is greater. Should a previous agreement exist between the Department of Education and the landowner, this condition shall prevail.

Transportation

10. The developer shall provide pedestrian and bicycle access ways within the roadways throughout and fronting the Makena Resort Area. A schematic plan for pedestrian and bicycle access ways throughout and fronting the Makena Resort Area shall be submitted to the Department of Planning for consideration by the Maui Planning Commission in conjunction with SMA permit applications.

11. The developer shall make a contribution to the County for traffic improvements in an amount equal to $5,000 per unit. The contribution shall be paid to the County prior to issuance of the initial building permit. Upon adoption of a traffic impact fee ordinance, the developer shall comply with the ordinance in lieu of this voluntary contribution. Should a traffic impact fee ordinance be adopted prior to the collection of this contribution, the applicable amount shall be the greater of the two. Such contributions or fees shall not be counted towards Condition No. 12 below.

12. Upon commencement of the first phase of construction, the developer shall pay its pro-rata share to upgrade



Piilani Highway from Kilohana Drive to Wailea Ike Drive to four lanes of traffic, and shall cooperate with the State Department of Transportation and other area developers to implement such improvements concurrent with development.

13. The developer shall provide construction access roads from Piilani Highway to the construction sites. Construction traffic shall be prohibited on Kilohana Drive, Wailea Ike Drive, Wailea Alanui Drive, and Makena Alanui Drive to the extent practicable.

14. The developer shall develop and submit a Transportation Management Plan ("TMP"), to be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation. The purpose of the TMP shall be to reduce traffic generated by construction activity related to the Makena Resort Area. The TMP shall provide for programs such as park and ride, shuttles, and/or restrictions on worker access to ongoing construction activity during peak hour traffic. Upon approval, project contractors shall implement the TMP during construction activities. The developer shall submit an annual report to the State Department of Transportation, the County Department of Public Works, the County Department of Transportation, and the Maui County Council to document the success of the TMP in meeting its benchmarks of reducing traffic during project construction.

    The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation prior to issuance of each SMA permit within the Makena Resort Area.

15. As part of the first SMA application, the developer shall submit a TMP to reduce the dependency on individual vehicular transportation modes. The TMP shall be reviewed and approved by the State Department of Transportation, the County Department of Public Works, and the County Department of Transportation to address post-construction traffic issues.

Civil Defense

16. The developer shall participate in the pro rata funding and construction of adequate civil defense measures as determined by the State and County civil defense agencies.

Historical and Cultural Resources

17. Should any human burials or any historic sites such as artifacts, charcoal deposits, stone platforms, pavings, or walls be found, the developer shall stop construction work in the immediate vicinity and notify the State Historic Preservation Division (SHPD), the Maui/Lanai Island Burial Council (MLIBC), and the Maui County Cultural Resources Commission (CRC).

18. The developer, its successors and permitted assigns, shall provide a comprehensive preservation/mitigation plan pursuant to Chapter 6E, Hawaii Revised Statutes, that has been approved by the State Historic Preservation Division, Department of Land and Natural Resources, and the Office of Hawaiian Affairs prior to any grading within the project area.

Nearshore Water Quality

19. Marine monitoring programs shall be conducted which include monitoring and assessment of coastal water resources (groundwater and surface water) that receive surface water or groundwater discharges from the hydrologic unit where the project is located. Monitoring programs shall include both water quality and ecological monitoring.

    Water Quality Monitoring shall provide water quality data adequate to assess compliance with applicable State water quality standards at Hawaii Administrative Rules Chapter 11-54. Assessment procedures shall be in accordance with the current Hawaii Department of Health ("HIDOH") methodology for Clean Water Act Section 305(b) water quality assessment, including use of approved analytical methods and quality control/quality assurance measures. The water quality



data shall be submitted biannually, or every six months, to HIDOH for use in the State's Integrated Report of Assessed Waters prepared under Clean Water Act Sections 303(d) and 305(b). If this report lists the receiving waters as impaired and requiring a Total Maximum Daily Load ("TMDL") study, then the monitoring program shall be amended to evaluate land-based pollutants, including: (1) monitoring of surface water and groundwater quality for the pollutants identified as the source of the impairment; and (2) providing estimates of total mass discharge of those pollutants on a daily and annual basis from all sources, including infiltration, injection, and runoff. The results of the land-based pollution water quality monitoring and loading estimate shall be submitted to the HIDOH Environmental Planning Office, TMDL Program.

The ecological monitoring shall include ecological assessment in accordance with the Coral Reef Assessment and Monitoring Program protocols used by the Department of Land and Natural Resources. The initial assessment shall use the full protocol. Subsequent biannual assessments can use the Rapid Assessment Techniques. Results shall be reported biannually to the Aquatic Resources Division, Department of Land and Natural Resources.

The monitoring and assessments shall be conducted by degreed scientists experienced with Clean Water Act programs, water quality monitoring, water quality assessment, water quality-based permitting, water quality modeling, watershed planning, and TMDL. Study design should be made available for both public review and peer review by the State Department of Health, Department of Aquatic Resources, and the University of Hawaii researchers. Results of monitoring shall be published and publicly available online.

20. The developer shall implement efficient soil-erosion and dust-control measures during and after development to the satisfaction of DOH and the County.

Transfer of Ownership

21. The developer shall give notice to the Department of Planning and the Council of any intent to sell, lease, assign, place in trust, or otherwise voluntarily alter the ownership interests in the Makena Resort Area, prior to any development.

Compliance with Conditions

22. The developer shall provide timely annual compliance reports to the Planning Director and the Council. The compliance reports shall include: (a) the status of the developer's compliance with each of these conditions; and (b) a reasonable estimate of the time needed for full compliance.

23. Failure to fulfill any condition may result in a reversion to former or more appropriate zoning or community plan designations or other remedies.

24. If any of the property subject to this Change in Zoning is consolidated with other property for purposes of an SMA permit application, these conditions shall apply to the entirety of the consolidated property.

Residential Workforce Housing

25. The developer shall comply with the County's Residential Workforce Housing Policy as provided in Chapter 2.96, Maui County Code.

Water

26. The developer shall comply with all applicable County water ordinances.

    The water rates for the residential workforce housing units shall be no higher than the general water consumer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, Maui County Code.



27. The developer shall provide a water conservation plan for the Makena Resort Area, approved by the Department of Water Supply, prior to the issuance of any SMA permits. For each project, the developer shall construct a dual waterline system to accommodate the use of non-potable water for landscaping and irrigation purposes prior to the issuance of any building permits.

Energy

28. All energy systems for all residential, commercial, and hotel units shall be designed and constructed to meet all applicable ENERGY STAR® requirements established by the Climate Protection Division of the United States Environmental Protection Agency in effect at the time of construction. For purposes of this condition, energy systems shall include all hot-water systems, roof and attic areas, outside walls, windows, air-cooling systems, and heating systems.

29. All residential, commercial, and hotel units shall comply with Chapter 16.16, Maui County Code.

30. All air-cooling systems and all heating systems for laundry facilities, swimming pools, and spa areas shall make maximum use of energy-efficient construction and technology.

Access for Parks and Recreation

31. The developer shall construct a minimum of 60 new parking stalls at Maluaka Beach, including at least 10 at the north end, within one year of the issuance to the developer of any SMA permit by the Maui Planning Commission relating to a parcel or a portion thereof that is a subject of this Change in Zoning. Unless necessary to protect public safety or to comply with State or Federal law, the required parking stalls need not be asphalt surfaced. Development costs and land shall not satisfy park dedication requirements.

32. The developer shall develop an expansion of the beach park at the south end of Maluaka Beach, such that the beach park shall comprise at least 1.5 acres of land

area for public use and beach access. The developer shall submit the necessary applications required for the expansion within six months of the approval of this Change in Zoning. The land area of the expansion of the existing park shall be applied as credit toward satisfying a portion of any applicable park dedication requirements.

33. To the extent practicable, the developer shall provide, in perpetuity, traversable lateral shoreline access in the area between the shoreward boundary and the mauka boundary of the Makena Resort Area. Costs associated with this condition shall not satisfy park dedication requirements.

34. Within one year of the approval of this Change in Zoning, the developer shall initiate and fund a plan for the development of the State Park at Makena for the State Department of Land and Natural Resources and the Department of Parks and Recreation, soliciting and taking into consideration the comments of various user groups, including Surfrider Foundation, Savemakena.org, Maui Tomorrow, the Kihei Community Association, and the Makena Homeowner's Association. The plan shall incorporate recreational, landscaping, parking, and facility concepts as a guide for future development of the park. Costs associated with this condition shall not satisfy park dedication requirements.

35. The developer shall renovate and beautify Makena Landing (TMK: 2-1-007:094), see attached map, in coordination with the Department of Parks and Recreation and the State Department of Land and Natural Resources. Costs associated with this condition shall not satisfy park dedication requirements.

36. The developer shall maintain Makena Landing (TMK: 2-1-007:094), North Maluaka (TMK: 2-1-007:068), and South Maluaka (TMK: 2-1-005:124), see attached map, and all future parklands within the Makena Resort Area.



Hawaiian Island Architecture

37. To exhibit respect for the Hawaiian culture and a Hawaiian sense of place, structures within the Makena Resort Area shall be based on or inspired by principles of Hawaiian island architecture in design and construction.

Native Forests and Species

38. The developer shall provide a baseline study survey of flora and fauna as part of each SMA permit application within the Makena Resort Area; the study shall be conducted by recognized independent experts on Hawaiian flora and fauna and list all endemic, indigenous, and endangered species, their distribution in the Makena Resort Area and adjacent shorelines. This study shall also include a preservation/mitigation plan and comments from the State Department of Land and Natural Resources, the U.S. Fish and Wildlife Service, and the U.S. Corps of Engineers, and the Maui representative of the Hawaii Wildlife Fund and The Nature Conservancy.

Transient Vacation Rentals/Time Shares

39. No transient vacation rentals or time shares shall be allowed within this Makena Resort rezoning application area; and further, no special use permit or conditional permit for such accommodations shall be accepted by the Department of Planning.

Hotel Limitation

40. A second hotel shall not be constructed within the Makena Resort Area.

LEED Certified Buildings

41. All buildings constructed within the Makena Resort Area shall be LEED (Leadership in Energy and Environmental Design) certified if they are 500 square feet or larger.

Dwelling Units

42. New dwelling units shall not exceed 800, excluding residential workforce housing.

Police

43. The developer, its successors and permitted assigns, shall contribute $1,000 per market-priced unit, collected at issuance of building permit, to the County, for the development and maintenance of a police station in South Maui.

Emergency Evacuation

44. The developer shall provide Driveway "D" from Makena Alanui Road to Makena Resort Sewage Treatment Plant and beyond as an emergency evacuation route for the area.

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# Appendix S

## Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA

# Final Environmental Assessment

## WAILEA IKE DRIVE AND WAILEA ALANUI DRIVE INTERSECTION IMPROVEMENTS

**Prepared for:**

**Honua`ula Partners, LLC**

**Accepting Authority:**

**County of Maui,**
**Department of Public Works**

**January 2010**

MUNEKIYO HIRAGA, INC.

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## Executive Summary

| | |
|---|---|
| **Project Name:** | Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements |
| **Type of Document:** | Final Environmental Assessment |
| **Legal Authority:** | Chapter 343, Hawaii Revised Statutes |
| **Agency Determination:** | Finding of No Significant Impact (FONSI) |
| **Applicable Environmental Assessment review "trigger"** | Use of County Lands |
| **Location:** | Wailea Alanui Drive at its intersection with Wailea Ike Drive (TMK 2-1-008 and 2-1-008:131)<br>TMK 2-1-008:118 (por.) and 134 (por.) Wailea Old Blue Golf Course<br>Kihei<br>Island of Maui |
| **Landowners:** | Parcel 131: County of Maui (road right-of-way)<br>Parcels 118 and 134: Wailea Old Blue LLC |
| **Applicant:** | Honua`ula Partners, LLC<br>P.O. Box 220<br>Kihei, Hawaii 96753<br>Contact: Charles Jencks<br>Phone: (808) 879-5205 |
| **Accepting Authority:** | Department of Public Works<br>County of Maui<br>200 South High Street<br>Wailuku, Hawaii 96793<br>Contact: Milton Arakawa, Director of Public Works<br>Phone: (808) 270-7845 |
| **EA Preparer:** | Munekiyo & Hiraga, Inc.<br>305 High Street, Suite 104<br>Wailuku, Hawaii 96793<br>Contact: Gwen Ohashi Hiraga<br>Phone: (808) 244-2015 |



**Project Summary:**

Honua`ula Partners, LLC proposes to modify the Wailea Ike Drive and Wailea Alanui Drive intersection by widening the north and south portion of the intersection to accommodate a double right-turn movement from northbound Wailea Alanui Drive onto eastbound Wailea Ike Drive and a double left-turn configuration from Wailea Ike Drive onto Wailea Alanui Drive.

Appurtenant improvements include the construction of concrete curb and gutter, sidewalk and curb ramps, installation of asphalt concrete pavement, relocation and/or modification of the traffic signal system, roadway pavement marking and signing, and grassing and/or landscaping.

# I. PROJECT OVERVIEW

# I. PROJECT OVERVIEW

## A. BACKGROUND

Honua`ula Partners, LLC, through Ordinance No. 3554 enacted on April 8, 2008 for the Kihei-Makena Project District 9, (hereinafter referred to as "Honua`ula") is required as a condition of zoning to construct roadway improvements at the intersection of Wailea Ike Drive and Wailea Alanui Drive.

In particular, Condition No. 2.e of Ordinance No. 3554 requires Honua`ula Partners, LLC to "Modify the Wailea Alanui and Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9."

As fulfillment of Condition No. 2.e, Honua`ula Partners, LLC proposes to design and construct improvements to the intersection.

## B. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

Honua`ula Partners, LLC, in coordination with the County of Maui, Department of Public Works (DPW), proposes to implement the construction of improvements to the Wailea Ike Drive and Wailea Alanui Drive intersection located in the Wailea Resort on the island of Maui. See **Figure 1**.

Both Wailea Ike Drive and Wailea Alanui Drive are owned by the County of Maui (identified as TMKs 2-1-008:131 [Wailea Ike Drive] and 2-1-008 [Wailea Alanui Drive]). The proposed improvements will require land acquisition from the adjoining golf course properties located on the east side of the intersection owned by Wailea Old Blue, LLC (identified as TMKs 2-1-008:118 and 134). The land to be acquired is located on the north and south side of Wailea Ike Drive. Honua`ula Partners, LLC is in discussion with Wailea Old Blue, LLC regarding the land acquisition.

Wailea Ike Drive and Wailea Alanui Drive are located within the Special Management Area for the island of Maui.

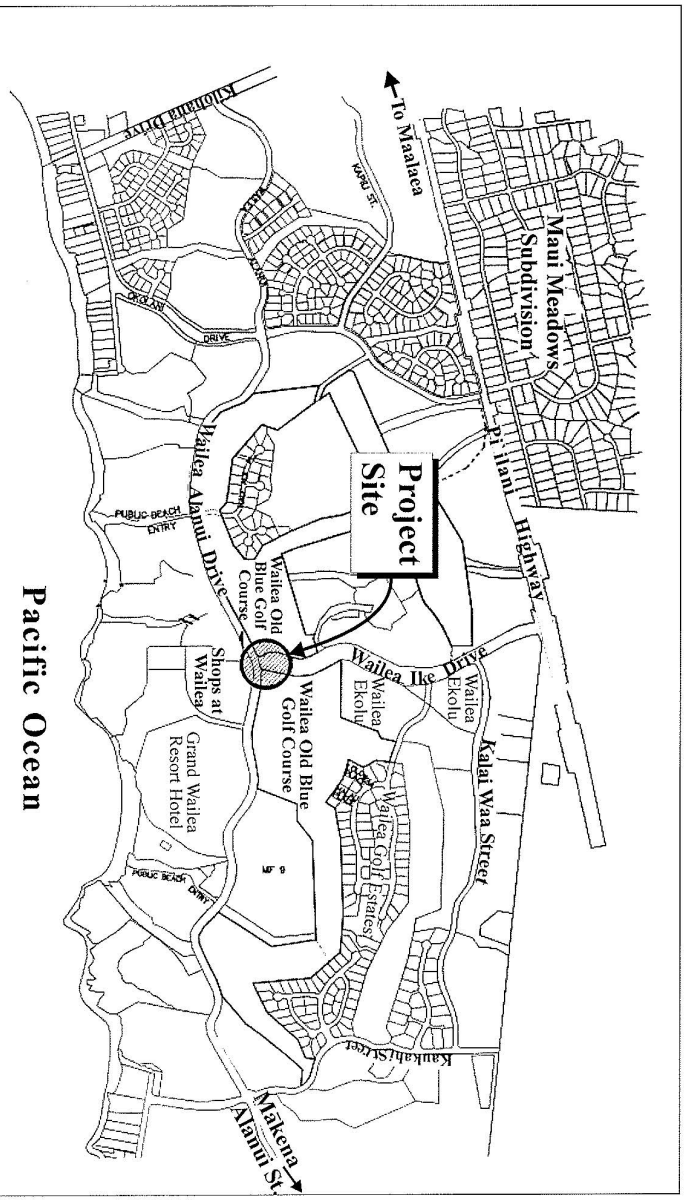



Figure 1 Wailea Ike Drive and Wailea Alanui Drive
Intersection Improvements
Vicinity Map

NOT TO SCALE

Source: R.T. Tanaka Engineers, Inc.

Prepared for: Honua'ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

W:\CP\1\intersection\vicinity map

## C. PROPOSED ACTION

Wailea Alanui Drive and Wailea Ike Drive provide "gateway" accesses to the Wailea Resort and Makena Resort to the south. At their intersection, the roadways are controlled by a traffic signal with exclusive left-turn and right-turn channels. See **Figure 2**. The intersection is bounded by the Shops at Wailea complex to the west and the Wailea Old Blue Golf Course to the north. The Matteos Pizzeria restaurant is located southeast of the intersection.

Wailea Alanui Drive and Wailea Ike Drive are both four (4) lane facilities providing a parkway character via landscaped medians. Southbound (Makena-bound) traffic on Wailea Alanui Drive is accommodated by two (2) through lanes with a separate left-turn lane for traffic traveling onto Wailea Ike Drive. Northbound traffic is accommodated by two (2) lanes, one (1) through lane and a separate right-turn channel onto Wailea Ike Drive. Westbound or makai-bound traffic on Wailea Ike Drive have separate lanes to turn right and left at the intersection.

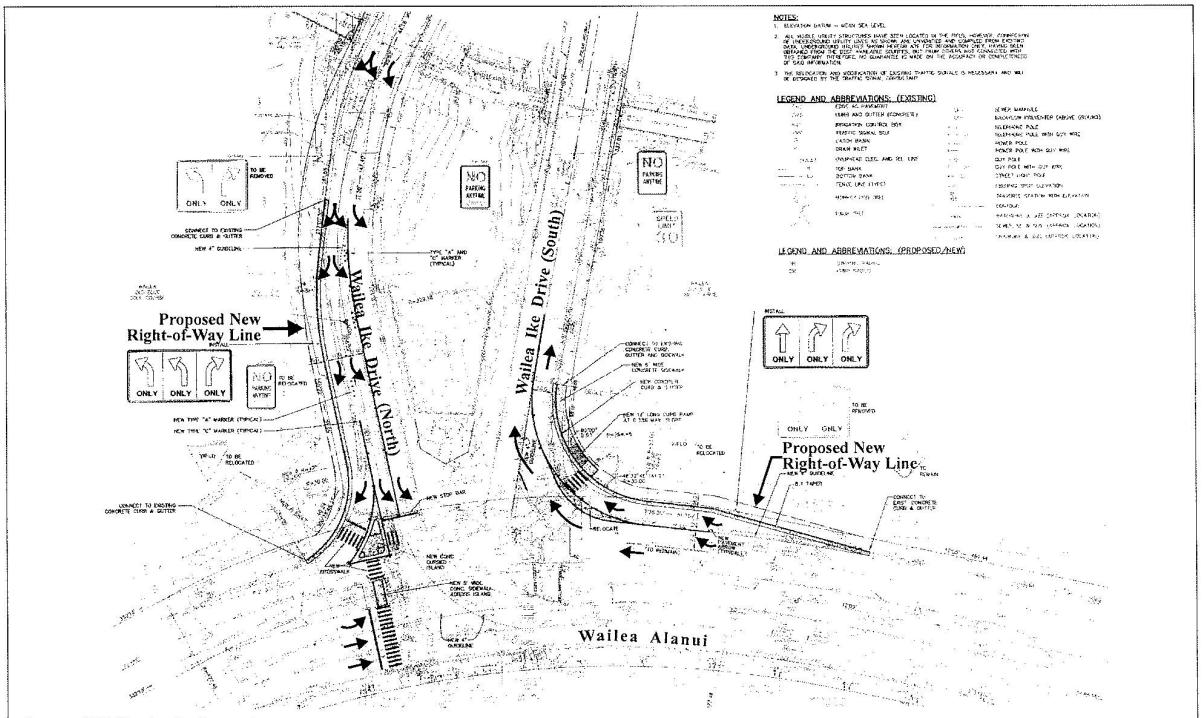
To fulfill Condition No. 2.e of Ordinance No. 3554, Honua`ula Partners, LLC proposes to modify the Wailea Ike Drive and Wailea Alanui Drive intersection by widening the north and south portion of the intersection to accommodate double right-turn lanes on Wailea Alanui Drive for northbound traffic to turning east onto Wailea Ike Drive. The intersection improvements will also include the provision of two (2) left-turn lanes for southbound traffic turning from Wailea Ike Drive onto Wailea Alanui Drive. See **Figure 3**.

Appurtenant improvements include the construction of concrete curb and gutter, sidewalk and curb ramps, installation of asphalt concrete pavement, relocation and/or modification of the traffic signal system, roadway pavement marking and signing, and grassing and/or landscaping. See **Appendix "A"**.

The foregoing improvements are intended to improve intersection operations as traffic volumes increase over time.

## D. REGULATORY CONTEXT AND CHAPTER 343, HAWAII REVISED STATUTES

The Wailea Ike Drive and Wailea Alanui Drive intersection improvements involve the use of County land. The processing of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) is therefore required. This Environmental Assessment is being prepared pursuant to HRS, Chapter 343 and Chapter 200 of Title 11, Department of




Source: R.T. Tanaka Engineers, Inc.

Figure 3

# Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

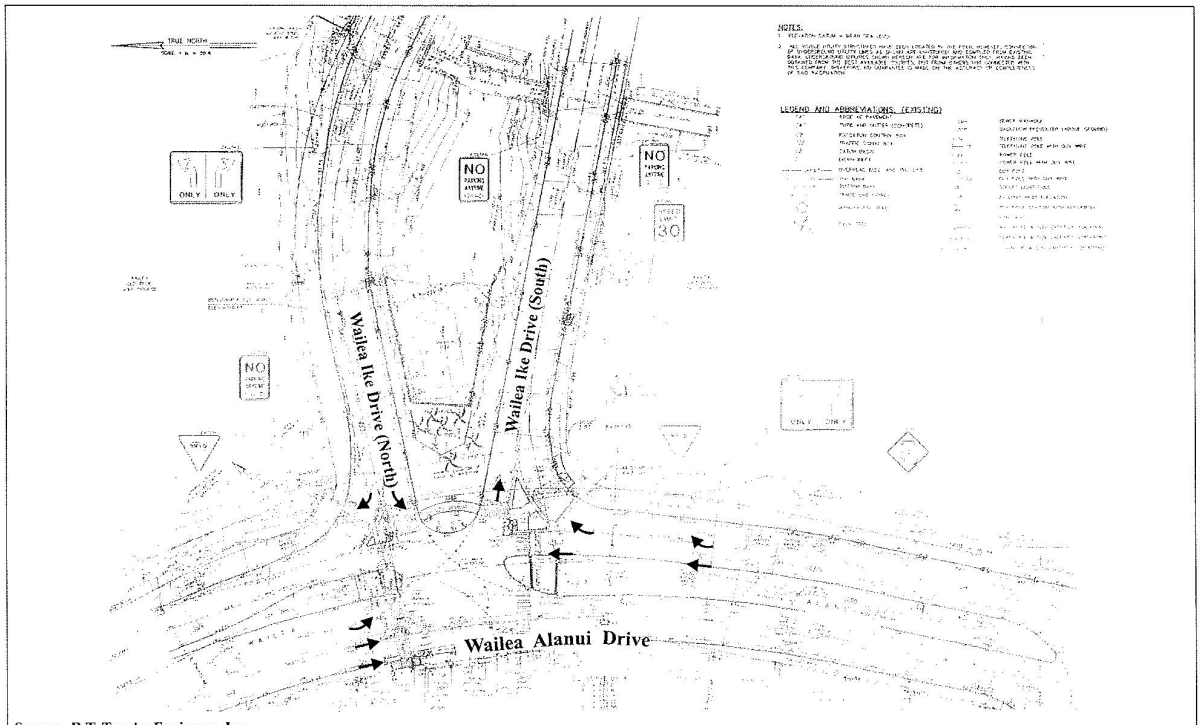
## Proposed Intersection Configuration

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\ProIntersectionConfig




Source: R.T. Tanaka Engineers, Inc.

Figure 2

# Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

## Existing Intersection Conditions

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\ExistIntersectionConditions

Health Administrative Rules, Environmental Impact Statement Rules. Accordingly, this document (prepared for the approving agency, the County of Maui Department of Public Works) addresses the project's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the proposed action.

In addition, the project site is located within the County of Maui's Special Management Area or SMA. An application for a SMA Use Permit was prepared and filed with the Maui Planning Department. The Maui Planning Commission is the granting authority for the SMA permit.

## E. ESTIMATED PROJECT COST AND CONSTRUCTION CONSIDERATIONS

The proposed project will involve the use of County land with design and construction by the Honua`ula Partners, LLC. It is estimated the proposed construction of the improvements will cost $798,000.00.

Construction of the project will commence upon receipt of applicable regulatory permits and approvals and contractor selection. The construction of the project is estimated to last approximately three (3) months once all permits are obtained.

# II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

# II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

## A. PHYSICAL SETTING

### 1. Surrounding Land Uses

#### a. Existing Conditions

Wailea Ike Drive follows an east-west alignment from its intersection with Piilani Highway to its intersection with Wailea Alanui Drive. Wailea Alanui Drive is a north-south roadway traveling parallel with the shoreline. Wailea Alanui Drive terminates at Kilohana Drive to the north, while at its southern extent at Kaukahi Street, the roadway transitions to Makena Alanui Road.

The Wailea Ike Drive and Wailea Alanui Drive intersection is adjacent to the Wailea Old Blue Golf Course to the northeast and southeast, with the Shops at Wailea located directly across the tee-intersection to the west. Refer to **Figure 1.**

#### b. Potential Impacts and Mitigation Measures

The proposed action is intended to address anticipated increases in traffic volume through the intersection. Traffic volume increase is anticipated with the development of Honua'ula, Wailea Resort and Makena Resort. Anticipated future traffic flows will be accommodated by the improvements. Land use patterns at the intersection and beyond are not anticipated to change as a result of the proposed action. Land use designations set forth by the Kihei-Makena Community Plan will continue to guide growth and development in the project area.

## 2. Climate

### a. Existing Conditions

The Kihei coast is generally sunny, warm and dry the entire year. The average annual temperatures in Kihei range between the low 60's to the low 90's. June through August are historically the warmer months of the year, while the cooler months are January to March.

Average rainfall distribution in the Kihei-Makena region varies from under ten (10) inches per year to twenty (20) inches per year in the higher elevations. Rainfall in the Kihei-Makena region is highly seasonal, with most of the precipitation occurring in the winter months.

Northeast tradewinds prevail approximately 80 to 85 percent of the time. Winds average ten (10) to fifteen (15) miles per hour during afternoons, with slightly lighter winds during mornings and nights (Maui County Data Book, 2008).

### b. Potential Impacts and Mitigation Measures

The project will not impact climatic conditions and local microclimate variables in the Wailea Resort.

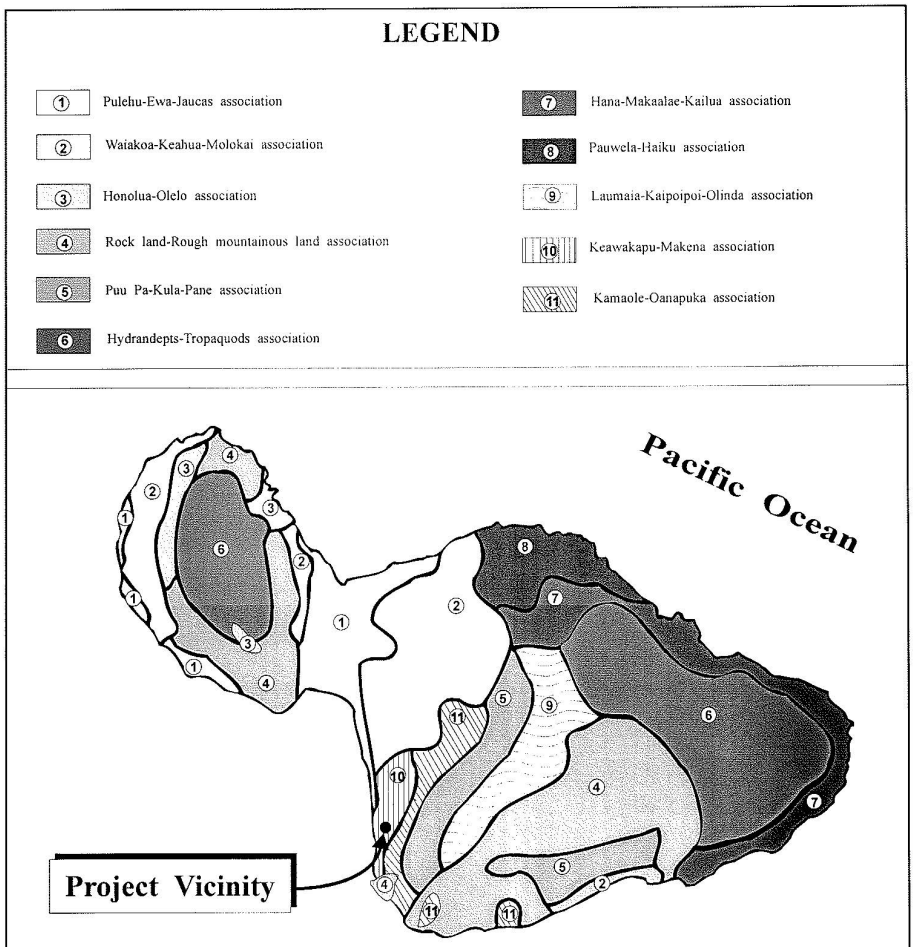
## 3. Topography and Soils Conditions

### a. Existing Conditions

Underlying the project site is the Keawakapu-Makena soil association. See **Figure 4**. The Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii characterizes the soils of this association as gently sloping to moderately steep and well drained. The underlying material is fine-textured to medium-textured subsoil and ranges in depth from shallow to deep and is comprised of fragmented Aa lava.

The Soil Survey, prepared by the U.S. Soil Conservation Service, identifies the soils in the project area as Makena loam, stony complex, 3 to 15 percent slopes (MXC). See **Figure 5**.






Source: USDA, Soil Conservation Service

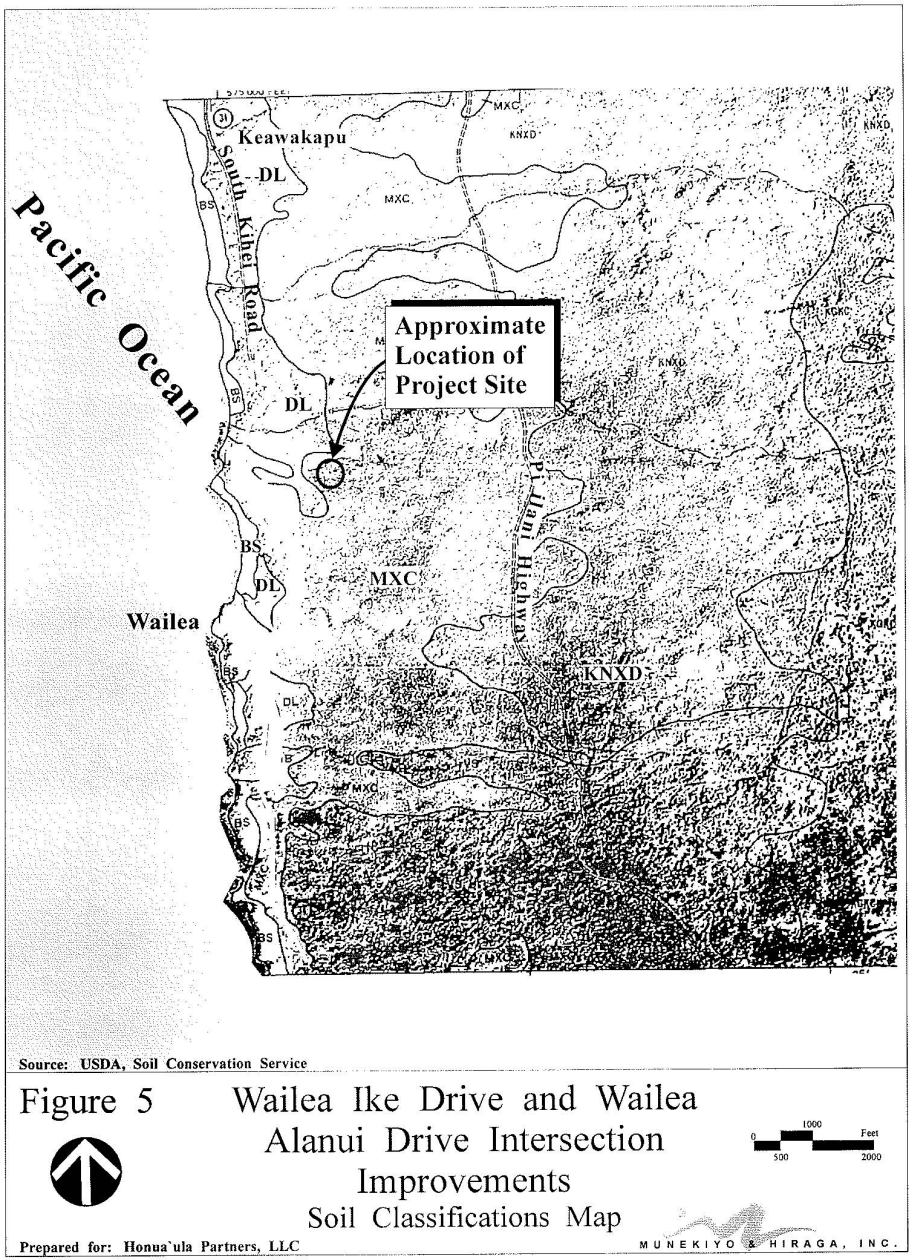
Figure 4 Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements
Soil Association Map

NOT TO SCALE

Prepared for: Honua'ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT/Intersection/SOILS




Source: USDA, Soil Conservation Service

Figure 5 Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements
Soil Classifications Map

0 500 1000 2000 Feet

Prepared for: Honua'ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPTJntersection\SoilClass

Makena loam, stony complex, is generally found on the lower leeward slopes of Haleakala, between Makena and Kamaole, and consists of Makena loam and stony land. Stony land occurs on the low ridges and make up to 30 to 60 percent of the complex. Makena loam is a dark brown to dark yellowish brown well drained soil, developed from volcanic ash, and is usually located between the low ridges of stony land. Makena loam is characterized by a relatively high permeability, and a low shrink swell potential. Permeability is characterized as moderately rapid, slow to medium runoff, and slight to moderate erosion hazard.

**b. Potential Impacts and Mitigation Measures**

Limited grading will be required to widen the asphalt pavement and for the installation of new curbs and gutters. Appropriate Best Management Practices (BMPs) will be utilized during construction. Soil and topographic conditions are not limiting factors which will affect project implementation.

**4. Flood and Tsunami Hazard**

**a. Existing Conditions**

The project site is located in flood zone "X", areas of minimal flooding. Further, the project site is located significantly inland from the shoreline and outside of any tsunami inundation zone. Flood zone information is obtained from the Federal Emergency Management Agency, Flood Insurance Rate Map (FIRM), Panel No. 150003 0676 E, dated September 25, 2009. See **Figure 6**.

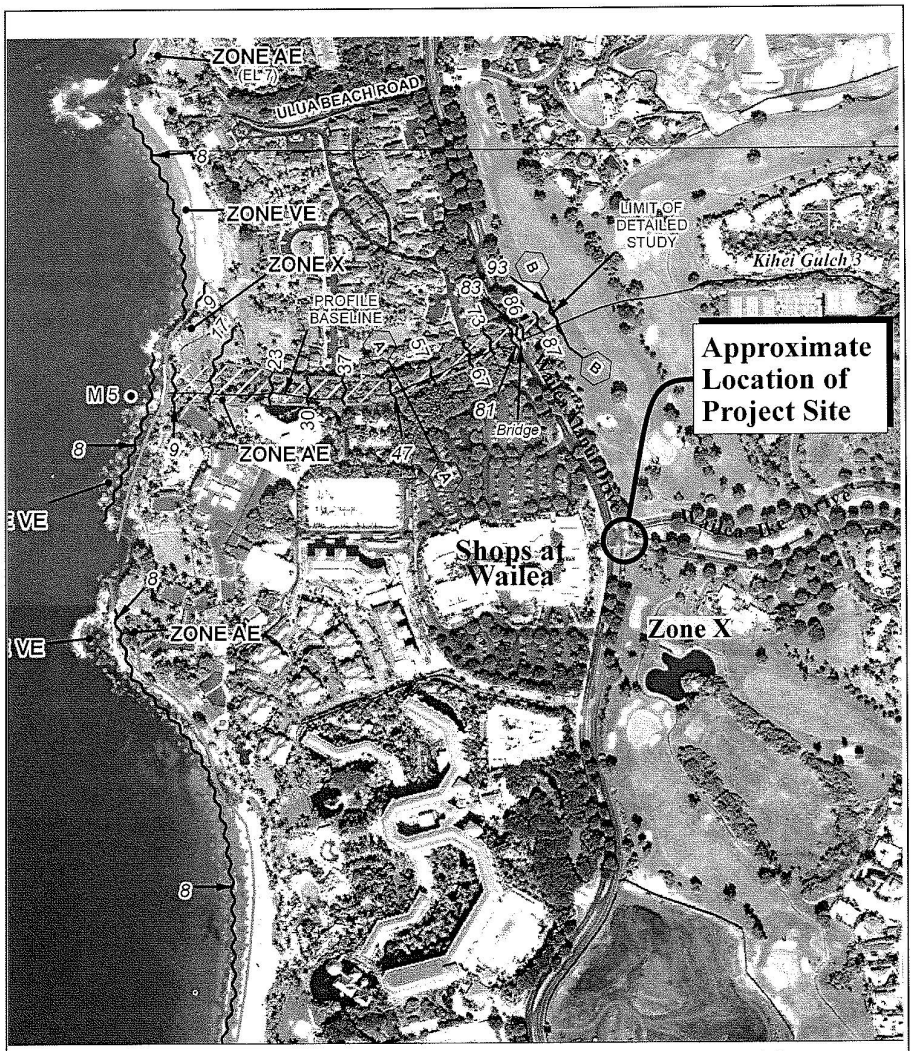
**b. Potential Impacts and Mitigation Measures**

The project site is located outside of any flood and tsunami areas with no impacts to hazard conditions anticipated from the proposed action.

**5. Flora and Fauna**

**a. Existing Conditions**

A biological resources survey was conducted at the project site. See **Appendix "B"**. Flora and fauna found within the survey area are those




Source: National Flood Insurance Program, Federal Emergency Management Agency, Panel No. 150003 0676E

Figure 6 Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements
Flood Insurance Rate Map

NOT TO SCALE

Prepared for: Honua'ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT/Intersection/firm

commonly identified throughout Maui and the main Hawaiian Islands. No Federally listed, threatened, or candidate endangered species of flora or fauna were found.

**b. Potential Impacts and Mitigation Measures**

There are no anticipated adverse impacts to fauna or avifauna as a result of the proposed action. Lighting fixtures will not be increased nor modified to alter downlighting design elements.

Landscaping for the project is limited to restoring the area disturbed by construction activity, primarily re-establishing grassed areas. However, if additional landscaping is to be installed, native plants will be employed for the newly constructed areas to the extent practicable. The use of plants within the Solenaceae (nightshade family) will be avoided so as not to attract endangered Blackburn sphinx moths to the roadside where they are at higher risk for species injury or death. Refer to **Appendix "B"**.

**6. Air Quality**

**a. Existing Conditions**

There are no point sources of airborne emissions in the immediate vicinity of the project site. Airborne pollutants are primarily attributed to automobile exhaust from vehicles traveling on area roadways. Another source of airborne emissions may include smoke from sugar cane burning which occurs in the Central Maui isthmus. This source, however, is intermittent. Nevertheless, the air quality of the Kihei area is considered good and prevailing tradewinds quickly disperse particulates which are generated from these sources.

**b. Potential Impacts and Mitigation Measures**

The proposed improvements to the Wailea Ike Drive and Wailea Alanui Drive intersection are required to accommodate anticipated growth in traffic in the Kihei-Wailea-Makena area. The proposed improvements will facilitate traffic flow and reduce emission concentration levels. The presence of relatively constant tradewinds will dissipate vehicular emissions minimizing the potential adverse air quality impacts.

Short-term impacts on air quality could potentially occur during project construction from fugitive dust and vehicle movement, soil excavation and exhaust emissions from onsite construction equipment.

Adequate fugitive dust control can be provided through BMPs, such as establishment of a frequent watering program, limiting the area disturbed, applying soil stabilizers, mulching, and wind screens. With careful planning and attention to dust control, potential short-term air quality impacts from project construction can be mitigated.

7. **Noise Characteristics**

a. **Existing Conditions**

The project site is located in the midst of a high quality visitor destination area. Existing noise in the area is attributed to vehicular traffic traversing the intersection.

b. **Potential Impacts and Mitigation Measures**

Potential short-term construction noise impacts are possible during the project construction period in the project area. However, minimizing these types of noise impacts is possible using standard construction curfew periods, properly muffled equipment, administrative controls, and construction barriers as required.

8. **Scenic and Open Space Resource**

a. **Existing Conditions**

In proximity to the project site, the lands makai (west) of the tee-intersection are developed with commercial/retail and hotel uses. The lands in the northern and southern portions of the project site are part of the Wailea Old Blue Golf Course. Vertical improvements in the project site are limited to the installation of directional signs and traffic signals. The existing intersection of Wailea Ike Drive and Wailea Alanui Drive is a signalized intersection.



b. **Potential Impacts and Mitigation Measures**

The proposed project will not create a visual character inconsistent with its present use nor with surrounding uses. Views available from Wailea Ike Drive from an east to west direction will continue, as well as any views toward Haleakala Mountain available in the west to east direction. Similarly, views along Wailea Alanui Drive are anticipated to remain the same.

The proposed work within the intersection will not impinge upon any significant scenic view corridors or open space resources.

9. **Archaeological Resources**

a. **Existing Conditions**

The land underlying the project site was previously disturbed during the construction of the Wailea Ike Drive, Wailea Alanui Drive, and the Wailea Old Blue Golf Course. Since improvements will be located mainly in the existing right-of-way, as well as the adjacent golf course property, an archaeological resources inventory was not required. The Department of Land and Natural Resources, State Historic Preservation Division concurred that archaeological monitoring will be sufficient. An Archaeological Monitoring Plan will be prepared for the project. See **Appendix "G"**.

b. **Potential Impacts and Mitigation Measures**

The proposed action will create minimal disturbances outside the existing right-of-way and golf course property which has already been cleared and developed. Based on early consultation with the State Historic Preservation Division (SHPD), a monitoring plan will be submitted to SHPD prior to and an archaeological monitor will be present during any ground altering activities. These measures will assure that proper mitigation and consultation will occur to protect archaeological and cultural resources which may be encountered during project development.

## 10. Historic and Cultural Resources

### a. Existing Conditions

The project area is at the tip of the traditional district of Honua'ula and southwest district called Kula. For years, the only way to get to Wailea Ike and Makena from Kihei was by an ancient walkway starting at the ocean side of Kalama Park. As South Maui continually expanded, the residents found it necessary to find other methods and roadways to reach Makena. Ancient methods of canoeing and coming down from Ulupalakua upon the footpaths continued but walking along the sea coast eventually gave in to horses and ox drawn carts. The same path gave way to a dirt road for Model-T cars.

A cultural impact assessment prepared for the nearby Piilani Highway Widening project for Honua'ula Partners, LLC notes the cultural eras which shaped the Native Hawaiian lifestyle (Hana Pono, LLC 2009). These eras started from the mythical creation era and encompasses the current Captain Cook era (1778 to present). From a roadway and access standpoint, the Hana Pono, LLC cultural assessment notes that in the early days there was no road between Kihei to Makena, except for a walking trail along the shoreline. Horses and mules were used to transport supplies to the Makena area. It was during World War II that the military constructed the access road for vehicular use to Makena.

In Hana Pono, LLC's interview with Herman Clark, Mr. Clark recalled traveling to Makena

> *...all the way down to La Perouse Bay...all dirt road. Then when you come down to the lava flow it's all gravel.*

### b. Potential Impacts and Mitigation Measures

The proposed intersection improvements will traverse lands, which in the prehistoric period were used for trails between the mauka and makai settlements and in the period after 1850 was mainly used for cattle ranching. There are no known historic resources which will be adversely impacted by the proposed project.



The Wailea Alanui Drive and Wailea Ike Drive intersection has been in existence since the 1970s when Wailea Resort was developed by A&B Hawaii and serves as a primary roadway service facility for all traffic accessing the Wailea Resort and Makena Resort to the south. The scale and scope of the project is limited to work to be performed within and adjacent to existing rights-of-way. While there are no cultural practices affected by the proposed action, it is recognized that from a historical perspective, the Wailea region holds archaeological and cultural values which are evidenced through previous archaeological works. As previously stated, an archaeological monitoring plan will be prepared and implemented for this reason.

Based on the existing land use context, there is no evidence of current or recently occurring cultural practices at the project site.

# B. SOCIO-ECONOMIC ENVIRONMENT

## 1. Regional Land Use and Community Character

From a regional standpoint, the project site is in the Kihei-Makena Community Plan region which encompasses the area from Maalaea to La Perouse Bay. The region includes a diverse range of physical and socio-economic environments. With its dry and mild climate and proximity to recreation-oriented shoreline resources, the visitor-based economy has grown steadily over the past few years. The town of Kihei serves as the commercial and residential center of the region with the master-planned communities of Wailea and Makena serving as the focal point for visitor activities.

## 2. Population

### a. Existing Conditions

The population of the County of Maui has exhibited a relatively strong growth in recent years. The resident population increased approximately 21 percent in the seven-year span from 2000 to 2007, from 117,644 to 141,902 persons (Maui County Data Book, 2008). Growth in the County is expected to continue with the resident population projected to 140,289 people by 2010 and 151,011 people by 2015 (Maui County Planning Department, June, 2006).

The population of the Kihei-Makena region increased at greater rates than the County as a whole. In the 10-year span from 1990 to 2000, the population of the Kihei-Makena region grew by 49 percent, from 15,365 to 22,870 persons (Maui County Data Book, 2008). The regional population is projected to grow to 28,114 people in 2010 and 30,597 people in 2015 (Maui County Planning Department, June 2006).

**b. Potential Impacts and Mitigation Measures**

The proposed action is not anticipated to have significant adverse impacts on population. As an improvement to an existing roadway system there will be no increase in dwelling units that would generate population growth.

**3. Economy**

**a. Existing Conditions**

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in Kihei-Makena, which is one of the State's major resort destination areas. The foundation for the region's visitor strength lies in world-class resorts and recreational facilities located in Wailea and Makena. Support for the visitor industry is found in Kihei, where numerous retail commercial centers are found.

According to data from the State Department of Labor and Industrial Relations, of the 76,050 civilian labor force 69,050 individuals were employed in Maui County in October 2009. Approximately 6,950 individuals, comprising 9.2 percent of the labor force, were unemployed in October 2009. Maui island had a civilian labor force of 71,850 individuals of which approximately 6,450 individuals comprising 9 percent of the labor force were unemployed in October 2009. The unemployment rate in October 2009 was 7.1 percent for the State of Hawaii, 9.2 percent for Maui County and 9.0 percent for Maui island, an increase in unemployment figures from October 2008 of 2.7, 3.7, and 3.8 percent, respectively (Department of Labor and Industrial Relations, December 2009).

**b. Potential Impacts and Mitigation Measures**

On a short-term basis, the proposed action will support construction and



construction-related employment. Over the long term, the proposed project will provide for the more efficient movement of people and goods throughout the Kihei-Wailea-Makena area and thereby improve business production and operation levels.

## C. PUBLIC SERVICES

**1. Police and Fire Protection**

**a. Existing Conditions**

The County of Maui's Police Department is headquartered in Wailuku at its Mahalani Street facility. The Maui Police Department (MPD) consists of several patrol, investigative and administrative divisions. The MPD's Kihei Patrol covers the Kihei-Makena region. The department's Kihei Substation is located at the Kihei Town Center northwest of the project corridor. A new Kihei Police Station is proposed mauka of Piilani Highway near Ke Alii Alanui Drive.

Fire prevention, suppression and protection services are offered by the County's Department of Fire and Public Safety. The department's Kihei Station, which services the Kihei-Makena region is located on South Kihei Road near Kalama Park, while the Wailea Fire Station is located off of Kilohana Drive, just makai (west) of its intersection with Piilani Highway. The Wailea Fire Station services the area from Kamaole Beach Park II to Makena.

**b. Potential Impacts and Mitigation Measures**

The proposed intersection improvements will enhance traffic movement through the intersection and will support the service capabilities of police, fire and emergency medical operations by reducing emergency response time in the area.

During project construction, appropriate coordination will be undertaken with emergency services to ensure that response requirements for such services are not adversely impacted due to delays which may be attributed to construction work.

## 2. Medical, Recreational, and Educational Facilities

### a. Existing Conditions

Maui Memorial Medical Center, the only major medical facility on the island, services the Kihei-Makena region. Acute, general and emergency care services are provided by this facility, which is licensed for 231 beds and is situated in Wailuku, in the vicinity of Mahalani Street and Maui Lani Parkway. Privately operated medical/dental offices are located in the Kihei area to serve the region's residents and visitors. There are ambulance stations located in north Kihei, at the former Kihei Elementary School, as well as a temporary station in the Maui Meadows subdivision. In addition, a new ambulance station is proposed adjacent to the Wailea Fire Station site.

Diverse recreational opportunities are available in the Kihei-Makena region. Recreational facilities near the project site include Kilohana Park, the Wailea Old Blue, Gold and Emerald Golf Courses and various beach parks in Wailea Resort. Shoreline recreation includes swimming, fishing, picnicking, snorkeling, and windsurfing.

The 12.9-acre Kilohana Park is located at the corner of Kilohana Drive and Kapili Street north of the project site. This park has an athletic field for soccer, picnic areas, and restrooms.

The Makena resort area to the south offers additional opportunities for golf, tennis and ocean-related activities.

The County's Kihei Community Center complex located near Lipoa Street, provides for a community center, swimming pool, and athletic playfields. There are various other athletic fields and shoreline parks in the Kihei-Makena region. The South Maui Community Park is proposed to be built off of Liloa Drive south of Lokelani Intermediate School.

The State Department of Education (DOE) operates three (3) schools in the Kihei area. Kihei Elementary School and Kamalii Elementary School cover grades K to 5, with 2007-2008 enrollments of approximately 799 and 650 students, respectively. Lokelani Intermediate School includes grades 6 to 8, with a 2007-2008 enrollment of approximately 651 students. Public school



students in grades 9 through 12 attend Maui High School in Kahului. According to the DOE, the Kihei Charter School, which also serves the Kihei-Makena region, has an enrollment of 277 students (Department of Education, 2007-2008 school year).

### b. Potential Impacts and Mitigation Measures

The proposed action is not considered a direct population generator, but rather an infrastructure upgrade which will provide for an improved regional transportation network. The proposed improvements will not place new demand on medical, recreational, and educational facilities.

## 3. Solid Waste

### a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews are disposed at the County's Central Maui Landfill located 4.0 miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies. Privately owned facilities, such as the Maui Demolition and Construction Landfill and the Pohakulepo Concrete Recycling Facility accept solid waste and concrete from demolition and construction activities. These facilities are located about nine (9) miles to the northwest of the project site near Honoapiilani Highway's junctions with North Kihei Road and Kuihelani Highway. A privately operated green waste recycling facility, Maui Earth Compost Company, is situated at Pulehu Road and Hansen Road, while Eko Compost is operated at the Central Maui Landfill.

### b. Potential Impacts and Mitigation Measures

Construction waste will not be transported to the County landfill. Instead, alternative sites, such as the Maui Demolition and Construction Landfill and Pohakulepo Concrete Recycling Facility, will be utilized. The proposed action is not anticipated to adversely impact the County's solid waste disposal facilities.

## D. INFRASTRUCTURE

### 1. Roadway System

#### a. Existing Conditions

**Wailea Ike Drive** - is a four-lane, divided, east/west County collector roadway that is striped as a two-lane roadway just before its connection to Piilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Piilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph.

Wailea Ike Drive, from its intersection with Wailea Ekolu Place to Wailea Alanui Drive, has a major drainage channel in its median area.

**Wailea Alanui Drive** - is a four-lane, divided, north/south County collector roadway between Kaukahi Street to the south and Okolani Drive to the north. North of Okolani Drive, Wailea Alanui Drive narrows to a two-lane, undivided, north/south County collector road to its intersection with Kilohana Drive.

Wailea Alanui Drive becomes Makena Alanui Road at its intersection with Kaukahi Street. The segment of Wailea Alanui Drive between Wailea Ike Drive and Kaukahi Street has a rolling profile and meandering alignment. The segment of Wailea Alanui Drive north of Wailea Ike Drive has a less pronounced rolling profile and meandering alignment. The posted speed limit on Wailea Alanui Drive is 30 mph.

Wailea Alanui Drive/Wailea Ike Drive form a signalized tee-intersection with Wailea Ike Drive as the stem of the "tee". The current lane configuration at each approach is as follows:

- Northbound approach: Accommodated by a through lane and an exclusive right-turn lane. The right-turn lane is controlled by a yield sign.
- Southbound approach: Accommodated by two (2) through lanes and an exclusive left-turn lane.



- Westbound approach: Accommodated by an exclusive left-turn lane and an exclusive right-turn lane controlled by a stop sign.

The Shops of Wailea is located on the makai (west) side of the tee-intersection.

#### b. Potential Impacts and Mitigation Measures

There will be short-term construction related impacts from traffic disruptions. Appropriate construction traffic controls, including the use of flag persons to direct traffic, will be utilized.

Although the Wailea Ike Drive and Wailea Alanui Drive intersection currently operates adequately, the proposed improvements will ensure that future traffic movements through the intersection will continue to operate well by accommodating anticipated traffic from planned developments in the Honua'ula, Wailea and Makena regions. Refer to **Appendix "C"**. The following improvements are proposed:

- Northbound Approach: Provide an exclusive through lane and two (2) exclusive right-turn lanes onto Wailea Ike Drive. Signalize the two (2) exclusive right-turn lanes.
- Westbound Approach: Provide two (2) exclusive left-turn lanes and an exclusive right-turn lane onto Wailea Alanui Drive.

According to the Traffic Impact Analysis Report prepared for the proposed action, the Wailea Ike Drive and Wailea Alanui Drive intersection will operate sufficiently and no other improvements are needed. Refer to **Appendix "C"**.

### 2. Water System

#### a. Existing Conditions

The water system in the vicinity of the project site consist of 16-inch, 20-inch and 30-inch waterlines. The transmission lines are part of the Central Maui Water Transmission System serving the Wailea/Makena region. See **Appendix "D"**.

b. **Potential Impacts and Mitigation Measures**

The proposed project is limited to roadway intersection improvements and does not involve any improvements that will require additional water usage or relocation of existing waterlines. The project will not increase water demand from the Central Maui Water System. Refer to **Appendix "D"**.

3. **Wastewater Systems**

a. **Existing Conditions**

The existing wastewater system in the vicinity of the project site consists of 6-inch, 8-inch, 10-inch and 18-inch gravity sewer pipes and 12-inch force mains which serve the existing developments within the Wailea Resort area. Refer to **Appendix "D"**.

b. **Potential Impacts and Mitigation Measures**

The proposed project is limited to roadway intersection improvements and does not involve any improvements that will generate additional wastewater flows. No relocation of existing sewerlines will be required and there are no anticipated impacts to the Kihei Wastewater Reclamation Facility operated by the County of Maui. Refer to **Appendix "D"**.

4. **Drainage**

a. **Existing Conditions**

Storm water generated by the project and surrounding areas are collected and disposed of by the existing roadway drainage system. Runoff from the north portion of the intersection flows northward toward an existing catch basin about 300 feet away; while the runoff from the south portion of the intersection flows southward to a catch basin about 400 feet away.

Roadway runoff above (east) of the intersection is collected by the existing catch basins and conveyed to an existing channel by underground culverts. The existing CRM-lined channel and five 65-inch by 40-inch CMP culverts across Wailea Alanui Drive, convey offsite runoff from tributary areas above the intersection. The tributary area extend to lands east (mauka) of Piilani



Highway. Refer to **Appendix "D"**.

b. **Potential Impacts and Mitigation Measures**

A summary of anticipated storm runoff discharges from the project area under existing and future (developed) conditions is shown below:

**North Portion:**

| | |
|---|---|
| 10-year storm: | 0.9 cfs (Existing, Area 1) |
| | 1.0 cfs (Future, Area A) |
| Increase: | 0.1 cfs |
| 50-year storm: | 1.2 cfs (Existing, Area 1) |
| | 1.4 cfs (Future, Area A) |
| Increase: | 0.2 cfs |

**South Portion:**

| | |
|---|---|
| 10-year storm: | 1.0 cfs (Existing, Area 2) |
| | 1.2 cfs (Future, Area B) |
| Increase: | 0.2 cfs |
| 50-year storm: | 1.3 cfs (Existing, Area 2) |
| | 1.6 cfs (Future, Area B) |
| Increase: | 0.3 cfs |

The anticipated increase in runoff due to the proposed project are nominal; hence, there are no drainage improvements proposed for this project and completion of the proposed project will not have adverse drainage effects on the existing drainage facilities and downstream properties. Existing drainage flow patterns will not be altered. The existing drainage system has the capacity to accommodate the minor increase in runoff. Refer to **Appendix "D"**.

### 5. Electrical, Telephone and Cable TV Systems

#### a. Existing Conditions

Electrical, telephone, and cable television (CATV) services in the Wailea Resort area are located underground and are provided by Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable of Hawaii, respectively.

#### b. Potential Impacts and Mitigation Measures

The proposed project does not involve connection to or relocation of existing services and no impacts to the electric, telephone, and CATV facilities are anticipated.

## E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as impacts on the environment which result 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.

The proposed action is to construct needed roadway infrastructure to keep pace with future growth planned for the Kihei-Makena region. In particular, the proposed action is considered an appropriate mitigation measure to address traffic impacts associated with the Honua`ula, Wailea Resort and Makena Resort projects. There are no other infrastructure projects anticipated within the project context. The scope of the proposed project is limited to the construction of the Wailea Ike Drive and Wailea Alanui Drive intersection improvements.

Secondary impacts are those which have the potential to occur later in time or farther in distance, but are still reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of the project. The secondary impacts associated with the proposed action relate to the future implementation of land uses for Honua`ula, Wailea Resort and Makena Resort. Such impacts relate to infrastructure requirements, as well as public service and environmental elements which may be affected by new development in these areas. Each project, Honua`ula, Wailea Resort and Makena Resort, however, is master planned and will be implemented in a phased and orderly fashion which ensures concurrent development of infrastructure and service systems, including the proposed intersection



improvements. Conditions of zoning, as well as conditions of Special Management Area (SMA) Permit approvals for those actions falling within the SMA, support the notion that applicable mitigation measures must be addressed prior to or concurrent with each phase of project development. In this regard, there are no secondary impacts associated with the Wailea Ike Drive and Wailea Alanui Drive intersection improvement project which are considered adverse in the context of regulatory and statutory requirements, and common practice mitigation measures.

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

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

## A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes the four (4) major Land Use Districts in which all lands in the State are placed. The Districts are classified "Urban", "Rural", "Agricultural", and "Conservation". The project intersection is located in the "Urban" district. See **Figure 7**. Public roadways are permissible within this district.

## B. 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 objectives and policies which contribute to the implementation rationale for the proposed project include the following:

**Sec. 226-14 Objective and policies for facility systems - in general.**

Objective (a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

Policy (b) (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

**Sec. 226-17 Objectives and policies for facility systems - transportation.**

Policy (b) (2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives.

Policy (b) (6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

Policy (b) (10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

The proposed project will promote the public health and safety by improving the Wailea Ike Drive and Wailea Alanui Drive intersection to accommodate vehicles and pedestrians in keeping with current design and safety standards.

## C. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the County of Maui Charter,

> *"... 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 the 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."*

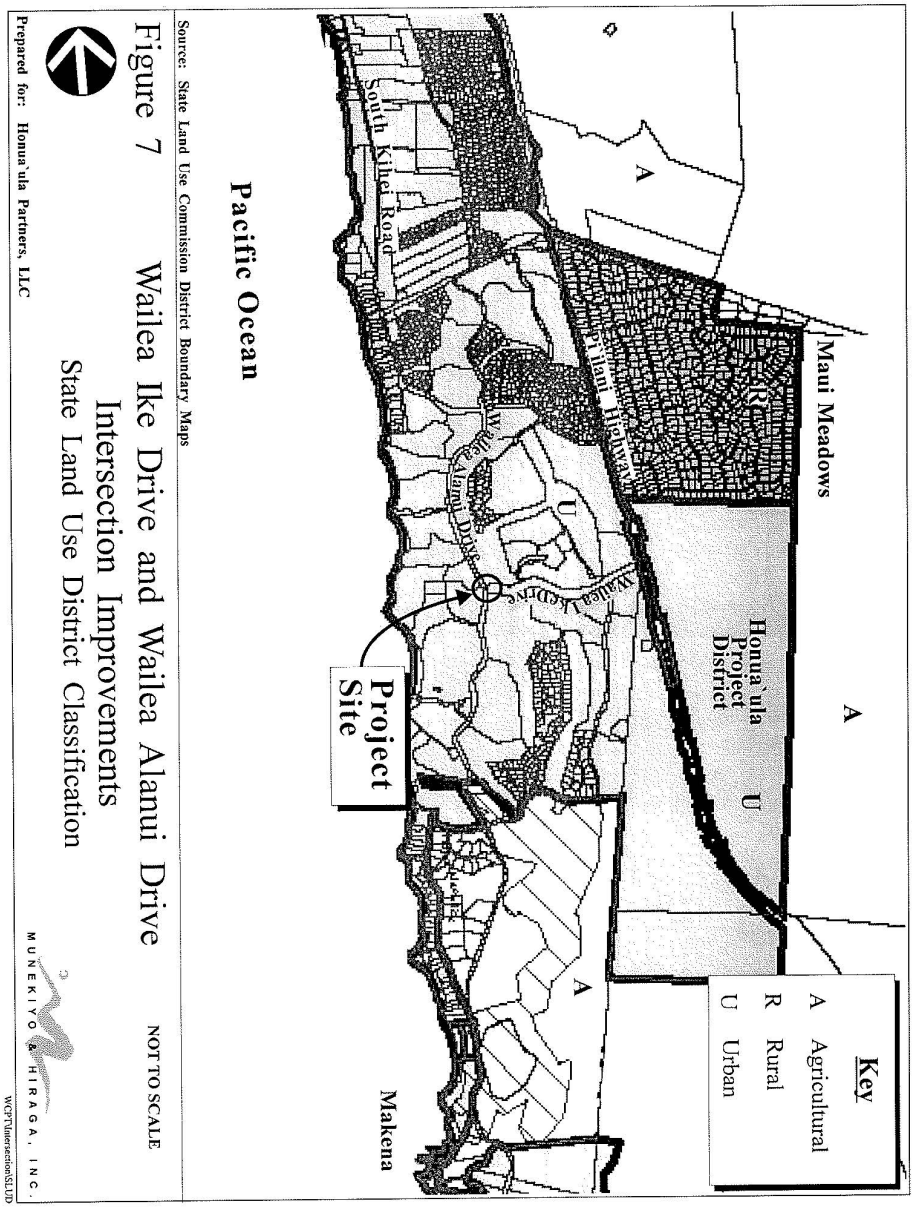
The proposed action is in keeping with the following General Plan objectives and policies:

**Objectives:**

To support an advanced and environmentally sensitive transportation system which will enable people and goods to move safely, efficiently, and economically.

To develop a program for anticipating and enlarging the local street and highway systems in a timely response to planned growth.






Source: State Land Use Commission District Boundary Maps

Figure 7 Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements State Land Use District Classification

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPTUIntersectionSLUD

**Policy:**

Ensure that transportation facilities are anticipated and programmed for construction in order to support planned growth.

## D. KIHEI-MAKENA COMMUNITY PLAN (1998)

The project site is located in the Kihei-Makena Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are 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 lands adjoining the project site include the following uses identified by the Community Plan land use map: Business (B) and Park-Golf Course (PK/GC). See **Figure 8**.

### 1. Community Plan Theme

In 1998, the County of Maui completed its comprehensive update of the Kihei-Makena Community Plan. One of the underlying themes which provides the basis or rationale affecting a broad spectrum of functional areas is the "provision of needed public facilities and infrastructure". The plan states:

> *"The County of Maui in general, and Kihei-Makena in particular, witnessed significant growth in the 1980s and early 1990s. In many instances, however, public facility and infrastructure improvements lagged behind development in the region. As such, a significant upgrade and expansion of existing public facilities and infrastructure is necessary."*

The proposed improvements to the Wailea Ike Drive and Wailea Alanui Drive intersection is supportive of this basic theme and will help upgrade the transportation infrastructure in the Kihei-Makena area prior to development of Honua`ula and ongoing development in Wailea Resort and Makena Resort.



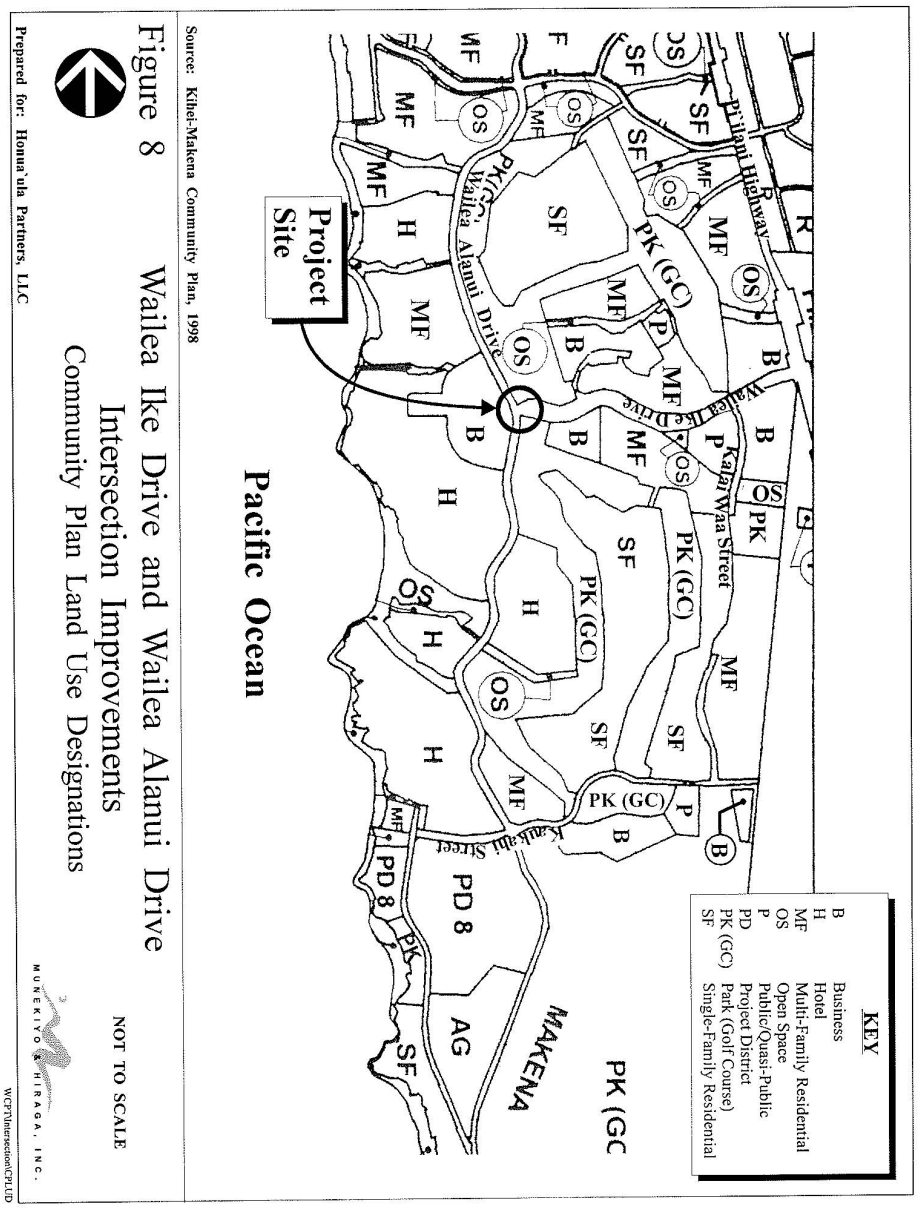



Figure 8 Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Community Plan Land Use Designations

NOT TO SCALE

Source: Kihei-Makena Community Plan, 1998

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCP\Intersection\CPLUD

2. **Community Plan Land Use Goal**

A goal in the Community Plan related to land use states:

> *"A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructure and community needs while preserving and enhancing the unique character of Maalaea, Kihei, Wailea and Makena as well as the region's natural environment, marine resources and traditional shoreline uses."*

The Wailea Ike Drive and Wailea Alanui Drive intersection improvements is a response to this goal by providing timely transportation infrastructure to address community needs.

3. **Transportation Objectives and Policies**

The Community Plan includes the following applicable goals and objectives:

- Develop and implement a well-planned road and public transportation system to allow residents and visitors to move safely, effectively and comfortably within the region. Roadway improvements should be planned, designed, and constructed as prioritized under the Implementing Actions section below, and as generally described in the Kihei Traffic Master Plan.
- Encourage joint public/private participation in the planning, design and construction of roadway improvements, especially those identified in this plan.

The proposed project supports the foregoing goal and objectives of the Community Plan.

## E. COUNTY ZONING

Both Kihei Land Zoning Map No. 5 and Wailea Land Zoning Map No. 511 delineate Wailea Ike Drive and Wailea Alanui Drive as public roadways, while the portion of land to be acquired from the golf course is zoned PK-4, Park (Golf Course). Pursuant to Chapter 19, Maui County Code, 1980 as amended, roadways are permitted in all zoning districts.



## F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

The Wailea Ike Drive and Wailea Alanui Drive intersection is located within the County of Maui's Special Management Area. This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

(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 uses 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, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

**Response:** The proposed action is not anticipated to affect existing coastal recreational resources. Access to the shoreline areas will remain unaffected by the proposed roadway improvements.

**(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:** Work will be confined to the existing right-of-way (ROW) and developed portion of the Wailea Old Blue Golf Course. A monitoring plan will be submitted to SHPD and an archaeological monitor will be present during ground



altering activities. As a result, the proposed project will not affect historic resources.

**(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 that are not coastal dependent to locate in inland areas.

**Response:** The proposed project is not anticipated to impact coastal and scenic open space resources. The project will involve roadway and landscaping improvements.

**(4) Coastal Ecosystems**

**Objective:**

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

**Policies:**

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

(B) Improve the technical basis for natural resource management;

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

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

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

**Response:** The proposed roadway improvements are not expected to adversely impact coastal ecosystems. The project site is not located adjacent to the shoreline.

**(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 project will support short-term construction and construction-related jobs. The project area does not affect coastal development necessary to the State's economy.

**(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; and

(D) Prevent coastal flooding from inland projects.

**Response:** The proposed project is located within Zone "X", which is defined as areas of minimal flooding. It is noted that changes in drainage patterns are not anticipated with the construction of the proposed improvements and no adverse drainage impacts to surrounding properties are anticipated.

**(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 proposed project shall be reviewed and processed pursuant to Chapters 343 and 205A, Hawaii Revised Statutes (HRS). Public review will be coordinated through these processes. A public informational meeting was held at the Kihei Community Center on April 16, 2009. Although the Wailea Community Association, Maui Meadows Homeowners Association and Kihei Community Association were invited, no one attended the community informational meeting. See **Appendix "E"**. In conjunction with the Special Management Area permit application process, public notification of surrounding land owners and a public hearing will be conducted.

**(8) Public Participation**

**Objective:**

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

**Policies:**

(A) Promote public involvement in coastal zone management processes;

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

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

**Response:** As noted above, opportunity for public awareness, education and participation pertaining to significant resource attributes of the coastal zone is provided through Chapter 343 and 205A, HRS procedures, as well as the Special



Management Area (SMA) Rules of the Maui Planning Commission.

**(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, minimize interference with natural shoreline processes, and 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 will not impact shoreline activities. No adverse impact to beach processes is anticipated.

**(10) Marine Resources**

**Objective:**

Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

**Policies:**

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal

agencies in the sound management of ocean resources within the United States exclusive economic zone;

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

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

**Response:** The improvements proposed for the Wailea Ike Drive and Wailea Alanui Drive intersection will not adversely impact ocean resources. Construction activities will be limited to the existing road ROW and portions of the previously disturbed Wailea Old Blue Golf Course. Runoff from the pavement widening is negligible and will be accommodated by the existing drainage system.

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. The proposed improvements do not include any relocated or new lighting fixtures.

# IV. ALTERNATIVES TO THE PROPOSED ACTION

## A. PREFERRED ALTERNATIVE

The proposed project represents the preferred alternative. The intersection operates adequately, and the improvements will improve future vehicular traffic flow on Wailea Ike Drive and Wailea Alanui Drive by accommodating future traffic to be generated by planned developments in the Wailea-Makena region. The private-public partnership allows private development of public infrastructure.

The improvements are required pursuant to the zoning condition imposed on Honua`ula Partners, LLC in Ordinance No. 3554. The Maui County Council made a legislative decision that as a mitigation measure this improvement is necessary to accommodate future traffic from the future implementation of land uses for Honua`ula, Wailea Resort, and Makena Resort.

## B. NO ACTION ALTERNATIVE

Although the existing intersection operates adequately, the "no action alternative" does not represent a responsible option toward improving future traffic circulation from planned growth in the Honua`ula, Wailea and Makena area. It is noted that the public/private partnership opportunity for planning, design, and construction would be removed under this alternative.

## C. DEFERRED ACTION ALTERNATIVE

A "deferred action" alternative will have similar consequences as a "no action" alternative. Growth in the area will continue and will generate additional traffic which will require future improvements to the intersection. Deferring the development will eliminate the public/private partnership opportunity for planning, design, and construction of the improvement. Deferred action will result in future need for public funding of the infrastructure improvements, as well as it may result in higher implementation costs in the future due to cost escalations.

# V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

## V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project will result in impacts as described in Chapter II, Potential Impacts and Mitigation Measures.

Potential effects include noise-generated impacts occurring from construction activities. In addition, impacts will result in increased traffic congestion during construction. These impacts will be temporary and not expected to create long-term adverse environmental effects.

The proposed project is intended to improve future roadway operating conditions at the Wailea Ike Drive and Wailea Alanui Drive intersection. From a long-term perspective, there are no significant adverse environmental effects anticipated which cannot be mitigated as a result of the proposed intersection improvements.

# VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

## VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The design and implementation of the proposed project will involve the commitment of certain material and fiscal resources required to construct and maintain the improvements. The future commitment of resources for the project is consistent with the need to provide an appropriate level of transportation service for the area. Impacts relating to the use of these resources should be weighed against the expected positive benefits to be derived from the project versus the consequences of taking no action.

# VII. SIGNIFICANCE CRITERIA ASSESSMENT

## VII. SIGNIFICANCE CRITERIA ASSESSMENT

The Wailea Ike Drive and Wailea Alanui Drive intersection is under the jurisdiction of the County of Maui. The proposed project will involve widening the north and south portion of the intersection to accommodate a double right-turn movement from Wailea Alanui Drive northbound traffic to eastbound turns on Wailea Ike Drive and two (2) left-turn lanes for southbound traffic on Wailea Alanui Drive from Wailea Ike Drive. The proposed improvements will require land acquisition on the adjoining Wailea Old Blue Golf Course.

Since a portion of the proposed action is on County lands, an Environmental Assessment (EA) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 200 of Title 11, Administrative Rules of the State Department of Health.

Every phase of the proposed action, expected consequences, both primary and secondary, 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. Based on the analysis, the proposed project is not anticipated to result in any significant impacts. Discussion of project conformance to the criteria is noted as follows:

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

   Lands bordering the project site are vegetated with ornamental landscaping typical of golf courses and commercial developments. No wetlands will be impacted by the proposed action.

   From an archaeological standpoint, the lands underlying and immediately surrounding the project site have been previously altered. Work will be carried out within the ROW and developed portions of the golf course. A monitoring plan will be submitted to SHPD for review and approval prior to construction. An archaeologist will monitor ground altering work to ensure the proposed project will not adversely impact archaeological resources.

   The area in the vicinity of the project site has not been used for cultural gatherings, nor has it been cultivated using traditional Hawaiian practices. The proposed project

is not anticipated to adversely impact cultural resources.

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

The roadway intersection encompassed by the proposed action encompasses lands which are designated for roadway and golf course uses. The proposed action is not anticipated to have a significant effect on beneficial uses 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 Environmental Policy and Guidelines are set forth in Chapter 344, HRS. The proposed action is in consonance with the following policies and guidelines:

**Environmental Policy:**

Enhance the quality of life by:

(A) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian.

**Guidelines:**

Transportation

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

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. The proposed project will also have a beneficial effect upon the socio-economic fabric of the community by providing for the safe, convenient and efficient movement of traffic in the Kihei-Wailea-Makena area. By improving roadway conditions, the proposed project will promote the public welfare by providing vehicular facilities which meet current design and safety standards. As previously noted, cultural practices will not be



affected by the proposed action.

5. **Substantially affects public health.**

No adverse impacts to the public's health and welfare are anticipated.

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.

The project does not require any relocation of existing utilities or improvements to existing facilities. Stormwater runoff will not be affected by the proposed project and there will be minimal impact to the existing drainage system. The proposed project is not anticipated to have any adverse impacts upon public services and facilities.

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

Construction activities will create temporary short-term nuisances related to noise, dust, and traffic disruptions. 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. Additionally, appropriate construction traffic controls will be implemented to ensure the safe passage of vehicles, pedestrians and bicyclists around active construction zones.

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

The proposed action is an upgrade of an existing intersection to accommodate future vehicular traffic requirements. This action is not expected to result in additional environmental effects as project-related work will be carried out within the existing roadway right-of-way and developed portions of the Wailea Old Blue Golf Course.

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 impacted by the proposed project as work will be conducted

within the existing roadway ROW and developed portions of the Wailea Old Blue Golf Course.

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

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize wind-blown emissions. 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, are anticipated to mitigate noise from construction activities.

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.**

Existing drainage patterns will be maintained. Increase in storm water runoff as a result of the proposed project are minimal and will be accommodated by the existing drainage system. There will be no adverse impacts to environmentally sensitive areas nor to fresh or coastal waters.

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

Vertical construction is limited to installation of traffic signs and traffic signals. The proposed project will not affect coastal scenic and open space resources and will not affect scenic view corridors.

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.

Based on the foregoing findings, the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, this final environmental assessment is being processed with a Finding of No Significant Impact (FONSI) determination by the DPW.

# VIII. LIST OF PERMITS AND APPROVALS

## VIII. LIST OF PERMITS AND APPROVALS

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

**State of Hawaii**

1. National Pollutant Discharge Elimination System (NPDES) Permit.
2. Noise Permit, if required.

**County of Maui**

1. Special Management Area Permit
2. Construction Permits
3. Work to Perform Within County Right-of-Way

# IX. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED; AND RESPONSES TO SUBSTANTIVE COMMENTS

# IX. PARTIES 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 included herein.

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P. O. Box 621
Honolulu, Hawaii 96809

15. 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

16. Hinano Rodrigues
**Maui/Lanai Islands Burial Council**
130 Mahalani Street
Wailuku, Hawaii 96793

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

cc: Fred Cajigal

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

19. Haunani Apoliona
**Office of Hawaiian Affairs**
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

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

21. Orlando "Dan" Davidson, Executive Officer
State of Hawaii
**State Land Use Commission**
P.O. Box 2359
Honolulu, Hawaii 96804

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

## COUNTY AGENCIES

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

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

25. Gen Iinuma, Administrator
**Maui Civil Defense Agency**
200 South High Street
Wailuku, Hawaii 96793

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



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

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

29. Jeffrey Hunt, Director
County of Maui
**Department of Planning**
250 South High Street
Wailuku, Hawaii 96793

30. Thomas Phillips, Chief
County of Maui
**Police Department**
55 Mahalani Street
Wailuku, Hawaii 96793

31. Milton Arakawa, Director
County of Maui
**Department of Public Works**
200 South High Street
Wailuku, Hawaii 96793

32. Cheryl Okuma, Director
County of Maui
**Department of Environmental Management**
One Main Plaza
2200 Main Street, Suite 176
Wailuku, Hawaii 96793

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

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

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

## UTILITIES

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

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

## COMMUNITY ORGANIZATIONS

38. **Kihei Community Association**
P. O. Box 662
Kihei, Hawaii 96753

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

40. Carol Reimann, Executive Director
**Maui Hotel Association**
1727 Wili Pa Loop, Suite B
Wailuku, Hawaii 96793

41. Bud Pikrone
**Wailea Community Association**
555 Kaukahi Street, Suite 214
Wailea, Hawaii 96753-8333

42. Anne Takabuki
**Wailea Golf Club**
4030 Kalai Wai
Kihei, Hawaii 96753

43. Barry Helle and Ron Allred
**Wailea Old Blue LLC**
120 Kaukahi Street
Kihei, Hawaii 96753

44. Sandy Baz, Executive Director
**Maui Economic Opportunity**
99 Mahalani Street
Wailuku, Hawaii 96793

APR 0 3 2009

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

REPLY TO ATTENTION OF:

April 1, 2009

Regulatory Branch

File No. POH-2009-109

Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Ms. Hiraga,

This letter is in response to your request, dated March 20, 2009, for early consultation comments on the preparation of the Draft Environmental Assessment (DEA) for the **Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements** located in Wailea, Island of Maui, Hawai'i.

Section 10 of the Rivers and Harbors Act (RHA) of 1899 requires that a Department of Army (DA) permit be obtained for structures or work in or affecting navigable waters (e.g., Pacific Ocean) of the U.S. (33 U.S.C. 403). Section 10 waters are those subject to the ebb and flow of the tide extending shoreward to the mean high water mark. Section 404 of the Clean Water Act (CWA) of 1972 requires that a DA permit be obtained for the discharge (placement) of dredge and/ or fill material into waters of the U.S., including jurisdictional wetlands. The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

We have reviewed the above cited project information with respect to the Corps' authority to issue DA permits pursuant to Section 10 of the RHA and Section 404 of the CWA. Based on the information you provided, we are unable to verify whether waters of the United States exist within the project area and if so, the extent of our geographical jurisdiction. We recommend your DEA identify all streams and wetlands on the project site and in the immediate vicinity of the proposed project, characterize the hydrology and ecology of those features, and provide a description of all ground-disturbing activities associated with the project construction occurring on the project site.

Thank you for the opportunity to comment. If you have any questions, please contact Ms. Meris Bantilan-Smith, of my Regulatory staff at 808-438-7701 (FAX: 808-438-4060) or by electronic mail at Meris.Bantilan-Smith@usace.army.mil. Please include File No. POH-2009-109 in any future correspondence regarding this project. Please be advised you can provide comments on your experience with the Corps' Honolulu District Regulatory Branch by accessing our web-based customer survey form at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

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

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

George P. Young, Chief
Regulatory Branch
**Department of the Army**
U.S. Army Corps of Engineers
Honolulu District
Fort Shafter, Hawai`i 96858-5440

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Young:

Thank you for your letter dated April 1, 2009. In response to your comments, the proposed improvements will be located within the existing roadway right-of-ways and portions of the Wailea Old Blue Golf Course and does not involve any wetlands. We understand that a Department of Army permit may be required for the project prior to the initiation of construction.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.a
F:\DATA\WCPT\intersection\DOAecres.wpd

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

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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

03128PDCL.09

March 30, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hiraga:

**Subject: Early Consultation Comments for Environmental Assessment (EA) Preparation for Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort, Wailea, Island of Maui, Hawaii**

The Department of Health (Department), Clean Water Branch (CWB), acknowledges receipt of your memorandum, dated March 20, 2009, requesting early consultation comments for the EA preparation for the subject project. The CWB has reviewed the memorandum and offers these comments on your project. Please note that our review is based solely on the information provided in the memorandum 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 are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater into State surface waters (HAR, Chapter 11-55). This includes discharges of storm water associated with construction activities (excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, storage areas, etc.)





that result in the disturbance of one (1) acre or more 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.

For discharges of storm water associated with construction activities into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form. The NOI must be submitted 30 calendar days before the start of construction activities. The NOI form 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 No. 2 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. Class 1 waters include, but is not limited to, all State waters in natural reserves, preserves, sanctuaries, and refuges established by the Department of Land and Natural Resources under chapter 195, Hawaii Revised Statutes (HRS), or similar reserves for the protection of aquatic life established under Chapter 195, HRS.

   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. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. The EA should specify all types of pollutant discharges to State waters from project construction.

6. All State waters that may be impacted by project construction should be identified in the EA.

7. The EA should address construction and post construction Best Management Practices (BMPs) that will be implemented to minimize storm water runoff, to reduce the risk of erosion, and to prevent water quality degradation of State waters downstream of the project site.

8. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 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.

03128PDCL.09

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:cu

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Alec Wong, P.E., Chief
Clean Water Branch
**Department of Health**
State of Hawai`i
P.O. Box 3378
Honolulu, Hawai`i 96801-3379

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Wong:

Thank you for your letter dated March 30, 2009, providing a detailed list of regulations that may be applicable to the proposed project. As the project continues to move forward, the applicable project consultant(s) will ensure that compliance with the Department of Health regulations are met. We are aware that a National Pollutant Discharge Elimination System (NPDES) permit will be required for the project prior to the initiation of construction.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
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IDA LINGLE
GOVERNOR

APR 0 7 2009

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1109.9

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

APR - 6 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ohashi Hiraga:

Subject: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort
Wailea, Maui, Hawaii

Thank you for the opportunity to provide comments on the Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvement within the Wailea Resorts. 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 your staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

RUSS K. SAITO
State Comptroller

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

APR 0 8 2009

PHONE (808) 733-4300
FAX (808) 733-4287

**STATE OF HAWAII**
**DEPARTMENT OF DEFENSE**
**OFFICE OF THE DIRECTOR OF CIVIL DEFENSE**
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

April 7, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ohashi Hiraga:

Early Consultation Request on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements Within the Wailea Resort, Wailea, Maui, Hawai`i

Thank you for the opportunity to comment on this development. After a review of the information on this project, we have no comments to make. The proposed area falls within coverage arcs of existing warning sirens. We will anticipate reviewing the Environmental Assessment when it is completed and make any appropriate comments at that time.

If you have any questions please call Ms. Havinne Okamura, Hazard Mitigation Planner, at (808) 733-4300, extension 556.

Sincerely,

EDWARD T. TEIXEIRA
Vice Director of Civil Defense

APR 1 3 2009

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

April 9, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Ms. Ohashi Hiraga:

**Subject: Early Consultation on the Wailea Alanui Drive & Wailea Ike Drive Intersection Improvements within the Wailea Resort, Wailea, Maui**

Thank you for the opportunity to comment on the Early Consultation. The following comments are offered:

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

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
Acting District Environmental Health Program Chief

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Patti Kitkowski
Acting District Environmental Health Program Chief
Department of Health
Maui District Health Office
State of Hawai`i
54 High Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Ms. Kitkowski:

Thank you for your letter of April 9, 2009. We are aware that a noise permit may be required prior to the initiation of construction. We will review the Department's standard comments and incorporate applicable comments for the project.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC

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LINDA LINGLE
GOVERNOR

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

APR 15 2009

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

STP 8.3216

April 13, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hiraga:

Subject: Honua'ula Partners, LLC
Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements
Within the Wailea Resort
Wailea, Maui, Hawaii
Early Consultation (EC)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project for improvements to the Wailea Alanui Drive and Wailea Ike Drive intersection located within the Wailea Resort in the Kihei-Makena region of Maui.

DOT's previous comments on Honua'ula Partners' related projects, including the project to widen Piilani Highway (letter STP 8.3152, dated March 5, 2009, attached) and the Honua'ula development (letter STP 8.3207 dated April 6, 2009, attached), are also applicable to the subject project.

As stated in these prior letters, DOT reserves the right to provide supplemental comments pending the outcome of the cost-sharing meeting between the major developers for projects in the area. Further, the environmental documents and associated traffic impact assessment report (TIAR) for the subject intersection improvements project should be consistent with the TIAR's for both the Piilani Highway widening project and the Honu'aula development project. The applicant should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office, and may need to direct all design and construction plans to these offices, subject to the results of the consultations.





DOT appreciates the opportunity to provide comments and requests four (4) copies of the project's Draft Environmental Assessment (DEA). If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

c: Mr. Jeffrey Hunt, Maui Planning Department
Ms. Kathy Kealoha, Office of Environmental Quality Control
Mr. Tom Schnell, PBR Hawaii

MAR 1 0 2009

LINDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

STP 8.3152

March 5, 2009

Mr. Mark Roy
Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Subject: Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive – Early Consultation (EC)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project to widen Piilani Highway from two to four lanes between Kilohana Drive to Wailea Ike Drive. DOT welcomes this consultation process.

DOT understands your firm is working with the DOT Highways Division Planning Branch to arrange a meeting regarding the subject project and the cost-sharing agreement for highway improvements between developers of the three major projects in the Wailea-Makena area. Your firm should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office. All plans and designs for the construction of the project should be directed to these offices.

In response to the subject EC and in anticipation of the proposed meeting, the following comments by the DOT Highways Division are offered.

1. The environmental documents related to the proposed widening of Piilani Highway should be submitted to DOT for review and acceptance before being published.

2. The applicant must completely resurface any and all existing highway lanes damaged during the widening of the highway.

3. The design guidelines and/or the basis of design for all widening of Piilani Highway should be included in the Draft Environmental Assessment (DEA).

4. The undergrounding of the existing overhead electric transmission lines should be considered along Piilani Highway.





5. Detouring of traffic and/or a temporary closure of Piilani Highway will most likely be required as the excavation of 40 to 50-feet of the rock embankment is anticipated with this proposed widening project. The potential impacts of such detours and/or road closures on adjacent roadways should be considered and appropriately addressed.

6. A Traffic Impact Assessment Report (TIAR) should be prepared as a part of the DEA. This TIAR should be submitted for DOT's review and acceptance.

7. The DEA should address the acquisition of right-of-way (ROW) necessary to construct the proposed improvements.

8. County zoning requires the developer to extend Piilani Highway to Kaukahi Street along an alignment that includes unimproved State highway ROW. Any such proposed improvements on State highway ROW must be submitted for review and approval by DOT. If an extension is being proposed, then it should also be appropriately addressed in the DEA.

DOT appreciates the opportunity to provide comments and requests that four (4) copies of the project DEA, including the TIAR, be provided. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

DIR 0366
STP 8.3207

April 6, 2009

Mr. Tom Schnell
PBR HAWAII
ASB Tower, Suite 650
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Schnell:

Subject: Honua'ula
Environmental Impact Statement Preparation Notice (EISPN)
TMK: 2-1-008: 056 and 71

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project for the Honua'ula mixed-use development project, located in the Kihei-Makena region of Maui, adjacent to the Wailea Resort.

DOT's previous comments on Honua'ula Partners' related projects, including the project to widen Piilani Highway (letter STP 8.3152, dated March 5, 2009, is attached), are also applicable to the subject project.

DOT staff and the applicant are coordinating a meeting to discuss the proposed projects in the Wailea-Makena area, and the cost-sharing agreement for highway improvements between developers of the three major projects in this area. DOT reserves the right to provide supplemental comments pending the outcome of this meeting.

In the interim, the environmental documents and associated traffic impact assessment report (TIAR) for the subject land development project should be consistent with the TIAR for the Piilani Highway widening project. The applicant should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office, and should direct all design and construction plans to these offices.





DOT appreciates the opportunity to provide comments and requests four (4) copies of the project's Draft Environmental Impact Statement (DEIS). If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

Attach.

SLP:km

c: Katherine Kealoha, Office of Environmental Quality Control
Jeffrey Hunt, Maui Planning Department

bc: HWY-P(PS 09-102), -M, STP(SLP)

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Brennon T. Morioka, PH.D., P.E.
Director
**Department of Transportation**
State of Hawai`i
869 Punchbowl Street
Honolulu, Hawai`i 96813

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements, STP 8.3216

Dear Mr. Morioka:

Thank you for your letter of April 13, 2009. We are aware of the previous comments on Honua`ula Partner's related projects. The traffic engineer for the Pi`ilani Widening project, the Honua`ula Project District and this project, has coordinated the findings in the various Traffic Impact Analysis Reports with the other Honua`ula projects. Your comments of March 5, 2009 and April 6, 2009 will be addressed in the Pi`ilani Widening Project and Honua`ula Project District environmental documents, respectively.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
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APR 1 5 2009

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
ABBEY SETH MAYER
DIRECTOR
OFFICE OF PLANNING

**DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM**

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

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-12523

April 13, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ohashi Hiraga:

Subject: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements Within the Wailea Resort
Wailea, Maui, Hawaii

Thank you for your request for early consultation regarding the Environmental Assessment (EA) for the above referenced proposal in Wailea, Maui.

The Office of Planning requests that the Environmental Assessment consider the impacts of the proposed project on the following issues of State concern:

1. **Cultural, Archaeological, and Historic Resources** – Please include an inventory of archaeological and historic sites on the subject property. Please also identify the status of any monitoring and preservation plans being prepared for or approved by the State Historic Preservation Division. Please identify and describe any cultural resources and cultural practices, including visual landmarks, if applicable, on the subject property and within the ahupua`a in which the property is situated. Please discuss the impact of the proposed project on identified cultural resources and practices, alternatives considered, and proposed mitigation measures.

2. **Environmental, Recreational, and Scenic Resources** – Please include an inventory of flora and fauna, including invertebrates, found on or in proximity to the project site and in any lava tubes and caves on the property. Flora and fauna of concern should not be limited to listed threatened or endangered species or those under consideration for listing, and should include those species and ecosystems identified as "rare" by The Nature Conservancy of Hawai`i. The EA should discuss measures to be taken to protect rare, threatened or endangered species or ecosystems of concern. You should consider in the design of your field

observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. A description of scenic resources should also be included.

3. **Coastal Zone Management (CZM)** – The State oversees protection of natural, cultural, and economic resources within the coastal zone, which is defined as all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the United States territorial sea (§205A-1, Hawaii Revised Statutes). Please discuss how the proposed project will balance the competing values of economic development and preservation of coastal resources, including the following CZM objective areas.

   a. **Coastal and Ocean Resources** – The State has an affirmative duty to protect Hawaii's nearshore waters. Please discuss important coastal and marine resources and ecosystems that may be impacted by the proposed project. Please discuss how stormwater and wastewater generated by the project will be prevented from reducing the quality of nearshore waters.

      The EA should discuss the impact of the project on existing site and offsite hydrology and how the project will manage stormwater and runoff. OP recommends the use of best management practices (BMP) that promote onsite infiltration and minimize runoff from storm events. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

   b. **Coastal and Other Hazards** – Please describe any hazard conditions that are relevant to the site, such as potential risk or harm from flood, erosion, earthquake, landslide, and point and nonpoint source pollution. Please describe the measures that are proposed to mitigate any hazard impacts.

The Office of Planning looks forward to receiving the EA with the potential impacts and mitigation measures for the above issues addressed. If you have any questions, please call Scott Derrickson in the Land Use Division at 587-2888.

Sincerely,

Abbey Seth Mayer
Director

c: Theodore Liu, DBEDT

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Abbey Seth Mayer, Director
**Department of Business, Economic Development & Tourism**
Office of Planning
P.O. Box 2359
Honolulu, Hawai`i 96804

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Mayer:

Thank you for your letter of April 13, 2009. In response to your comments, the following are noted:

1. Pursuant to early consultation with the State Historic Preservation Division (SHPD), it was determined that an archaeological inventory survey would not be required provided a monitoring plan is reviewed and approved by SHPD. Prior to construction a monitoring plan will be submitted to SHPD for review and approval and implemented during construction.

2. A Biological Study was conducted for the project site and is included in the Draft Environmental Assessment (EA). A description of recreational resources and scenic resources is also included in the Draft EA.

3. The subject site is located within the Special Management Area for the island of Maui and has been evaluated pursuant to Chapter 205-A, Hawai`i Revised Statutes. A Special Management Area application will be filed with the County of Maui Planning Department.



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environment planning government

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Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft EA will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
F:\DATA\WCPT\Intersection\DBEDTecres.wpd

APR 1 5 2009

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

April 13, 2009

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

Attention: Ms. Gwen Ohashi Hiraga, Principal

Ladies and Gentlemen:

Subject: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements Within the Wailea Resort

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

Sincerely,

Morris M. Atta
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

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

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**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

| | |
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March 27, 2009

MEMORANDUM

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

FROM: ~~for~~ Morris M. Atta
SUBJECT: Early consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 9, 2009.

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

Signed:
Date: 5 April 2009

RECEIVED
MAR 30 2009
AQUATIC RESOURCES



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

March 27, 2009

MEMORANDUM

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

DEPT OF LAND & NATURAL RESOURCES STATE OF HAWAII
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LAND DIVISION

FROM: ~~for~~ Morris M. Atta
SUBJECT: Early consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort
LOCATION: Wailea, Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 9, 2009.

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.
(✓) Comments are attached.

Signed:
Date: 4/3/09

**DEPARTMENT OF LAND AND NATURAL RESOURCES**
**ENGINEERING DIVISION**

**LD/ Morris Atta**
**Ref.: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort**
**Maui.005**

**COMMENTS**

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

( X) **Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zone C. The National Flood Insurance Program (NFIP) does not regulate developments within Zone C.**

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

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

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

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) 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 Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER

Date: 4/3/09



APR 2 0 2009

PHONE (808) 594-1888 FAX (808) 594-1865

**STATE OF HAWAI'I**
**OFFICE OF HAWAIIAN AFFAIRS**
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD09/3208 E

April 16, 2009

Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, Hawai'i 96793

**RE: Early consultation request for proposed improvements to the Wailea Alanui Drive and Wailea Ike Drive intersection within the Wailea Resort, Wailea, Maui**

Aloha e Kyle Ginoza,

The Office of Hawaiian Affairs (OHA) received the above-mentioned letter, dated March 20, 2009, which requests early consultation on modifying the Wailea Alanui and Wailea Ike drives intersection to add a turn lanes and signals prior to re-zoning for the Kihei-Makena Project District 9 (Honua'ula). OHA apologizes for the delayed response, and offers the following comments.

OHA has substantive obligations to protect the cultural and natural resources of Hawai'i for its beneficiaries, the people of this land. The Hawaii Revised Statutes mandate that OHA "[s]erve as the principal public agency in the State of Hawaii responsible for the performance, development, and coordination of programs and activities relating to native Hawaiians and Hawaiians; . . . and [t]o assess the policies and practices of other agencies impacting on native Hawaiians and Hawaiians, and conducting advocacy efforts for native Hawaiians and Hawaiians." (HRS § 10-3)

Chapter 343 of the Hawaii Revised Statues (HRS) requires that the Draft EA include a Cultural Impact Assessment (CIA). The CIA should include information relating to the traditional and customary practices and beliefs of the area's Native Hawaiians, and the community should be involved in this assessment. Consideration must also be afforded to any individuals accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, Section 7.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for the subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Thank you for the opportunity to comment at this early juncture. We look forward to reviewing the forthcoming Draft Environmental Assessment. If you have further questions, please contact Heidi Guth by phone at (808) 594-1962 or e-mail her at heidig@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA Maui CRC Office



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Clyde W. Nāmu`o, Administrator
**Office of Hawaiian Affairs**
State of Hawai`i
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai`i 96813

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Nāmu`o:

Thank you for your letter dated April 16, 2009. In response to your comments, we note that the intersection improvements will be located within the existing right-of-ways and portions of the existing Wailea Old Blue Golf Course. Based on early consultation with the Department of Land and Natural Resources, State Historic Preservation Division (SHPD), it was determined that an archaeological inventory survey would not be required, provided an archaeological monitoring plan is submitted to SHPD for review and approval. Accordingly, an archaeological monitoring plan is being prepared.

A review and assessment of cultural considerations will be included in the Draft Environmental Assessment (EA).

Further, should iwi kupuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease in the immediate area of the find and the appropriate agencies will be contacted. Recommended measures shall be followed prior to commencement of further construction work.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft EA will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
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MAR 3 1 2009

CHARMAINE TAVARES
MAYOR

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

**COUNTY OF MAUI**
**DEPARTMENT OF FIRE AND PUBLIC SAFETY**
**FIRE PREVENTION BUREAU**

780 ALUA STREET
WAILUKU, HAWAII 96793
(808) 244-9161
FAX (808) 244-1363

March 25, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

**Subject: Early Consultation for Wailea Alanui Drive & Wailea Ike Drive Intersection Improvements, Wailea, Maui, Hawaii**

Dear Ms. Hiraga.

I have had the opportunity to review the subject correspondence. Our office has no specific concerns at this time.

Please feel free to contact me if there are any questions or concerns about this project..

Sincerely,

Valeriano F. Martin
Captain
Fire Prevention Bureau



APR 0 6 2009

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

March 31, 2009

Ms. Gwen Ohashi Hiraga
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort

Dear Ms. Hiraga,

Thank you for the opportunity to comment on this project.

We currently have a bus stop just east of the proposed intersection improvements on Wailea Ike Drive. The proposed double right hand turn lane onto Wailea Ike Drive will create a safety issue with our current bus stop. We would propose that a bus pull in and shelter with benches be installed at a new bus stop location to mitigate this issue.

Please feel free to contact me if you have any questions.

Sincerely,

Don Medeiros
Director

Xc: Jeff Hunt, Department of Planning Director
Milton Arakawa, Department of Public Works Director

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Don Medeiros, Director
**Department of Transportation**
County of Maui
200 S. High Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Medeiros:

Thank you for your letter of March 31, 2009. We will make every effort to coordinate the intersection improvements with your agency to maintain public safety for the current County of Maui bus stop.

Should you require additional clarification please do not hesitate to contact me at 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
F:\DATA\WCPT\intersection\DOTMauiecres.wpd



LINDA LINGLE
GOVERNOR OF HAWAII

**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**

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

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

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
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

July 16, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793
planning@mhplanning.com

LOG NO: 2009.1118
DOC NO: 0907PC31
Archaeology

**SUBJECT: Chapter 6E-42 Historic Preservation Review – Early Consultation on the Wailea Resort Intersection Improvements to Wailea Alanui Drive and Wailea Ike Drive**
**Paeahu Ahupua'a, Makawao District, Island of Maui**
**TMK: (2) 2-1-008:999**

Thank you for the opportunity to comment on the aforementioned project, correspondence for which we received on March 20 of 2009. Please accept our apologies for the lengthy delay in responding.

Based on the submitted document, the project involves intersection improvements to Wailea Alanui Drive and Wailea Iki Drive, as requested by the County of Maui in association with the rezoning application made by Honua'ula Partners, LLC. More specifically, the County requested that the applicant "*modify the Wailea Alanui/Wailea Ike Drive intersection to add signalized double right-turn movement from northbound to eastbound turning traffic and to provide two left-turn lanes for southbound traffic from Wailea Ike Drive...*" The proposed area of effect is within an existing County roadway/road right-of-way. The proposed project is also located in an area where numerous isolated and clustered pre-Contact period human burials and other culturally significant deposits have been found. Given the above information, the most reasonable form of mitigation appears to be precautionary archaeological monitoring during all project related ground altering disturbance.

Therefore, upon review of any permit application associated with the proposed project forwarded to us by the County of Maui, we will likely recommend the following:

A qualified archaeological monitor shall be present during *those portions of the project which involve ground altering disturbance* in order to document any historic properties which may be encountered and to provide mitigation measures as necessary. *Please note that ground altering disturbance includes previously disturbed stratigraphy, as culturally significant subsurface deposits are often found in these contexts.*

As per Hawai'i Administrative Rules (HAR) §13-279, this means that prior to the commencement of ground altering disturbance associated with the proposed project, the project developer or developer's agent must submit an appropriately prepared *monitoring plan* to this office for review and acceptance. The plan must contain the following provisions:

1) Specify the kinds of historically or culturally significant sites or remains of sites anticipated and where in the construction area they are likely to be found;
2) Specify how such sites or remains of sites will be documented;
3) Specify how such sites or remains of sites will be treated;
4) Specify that the archaeologist (s) conducting the monitoring has (have) the authority to halt construction in the immediate area of the find in order to carry out the plan;
5) Specify that coordination between the archaeologist and construction crew has been scheduled so that all involved parties are aware of the plan and what it means;
6) Specify what laboratory work will be performed on any cultural sites or remains of sites that might be found in the project area;
7) Specify details concerning the archiving of any collections that are made;
8) Specify a schedule of report preparation and that the report will be submitted within the required 180 days after completion of the proposed undertaking.

A list of those meeting the requirements to perform such work can be obtained on the SHPD's website at http://hawaii.gov/dlnr/hpd/pdfs/2009-Permittee.pdf or by contacting our main office at (808) 692-8015.

If you have any questions or comments regarding this letter, please contact the SHPD's Lead Maui Archaeologist, Ms. Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Sinoto Consulting, LLC: akihikosinoto@aol.com
Jeff Hunt, Director, Dept. of Planning, FAX (808) 270-7634



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Nancy McMahon, Deputy SHPO
State Archaeologist
**State Historic Preservation Division**
Department of Land and Natural Resources
601 Kamokila Boulevard, Room 555
Kapolei, Hawai`i 96707

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Ms. McMahon:

Thank you for your letter of July 16, 2009 and concurrence that due to the scope of the project an archaeological inventory survey is not required. However, an archaeological monitoring plan will be prepared and submitted to the State Historic Preservation Office (SHPO) for review and approval prior to the initiation of any ground altering disturbance.

Should you require additional clarification please contact me at (808) 244-2015 or email colleen@mhplanning.com. A copy of the Draft Environmental Assessment (EA) will be forwarded to your agency.

Very truly yours,

Colleen Suyama
Project Manager

CS:yp
cc: Charles Jencks, Honua`ula Partners, LLC
Aki Sinoto, Aki Sinoto Consulting and Cultural Resource Management
F:\DATA\WCPT\Intersection\SHPD.ecres.wpd

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APR 0 9 2009

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

CHARMAINE TAVARES
Mayor

LORI TSUHAKO
Director

JO-ANN T. RIDAO
Deputy Director

2200 MAIN STREET • SUITE 546 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165
MAILING ADDRESS: 200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • EMAIL director.hhc@mauicounty.gov

April 7, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hiraga:

**SUBJECT: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort, Wailea, Maui, Hawaii**

The Department has reviewed the Early Consultation Request 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. Wayde Oshiro of our Housing Division at 270-7355 if you have any questions.

Sincerely,

LORI TSUHAKO, LSW, ACSW
Director of Housing and Human Concerns

xc: Housing Division



APR 1 5 2009

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

April 9, 2009

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

**SUBJECT: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements within the Wailea Resort, Wailea, Maui, Hawaii**

Dear Ms. Ohashi Hiraga:

We have reviewed the proposed subject project and have no comments or objections to submit at this time.

Thank you for the opportunity to review and comment on this matter. Please feel free to contact me or Mr. Patrick Matsui, Chief of Parks Planning and Development at 270-7387 should you have any other questions.

Sincerely,

TAMARA HORCAJO
Director of Parks & Recreation

xc: Patrick Matsui, Chief of Parks Planning and Development

TH:PM:do

APR 1 5 2009

CHARMAINE TAVARES
Mayor

CHERYL K. OKUMA, Esq.
Director

GREGG KRESGE
Deputy Director

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

April 13, 2009

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

**SUBJECT: WAILEA ALANUI DRIVE AND WAILEA IKI DRIVE INTERSECTION IMPROVEMENTS WITHIN THE WAILEA RESORT EARLY CONSULTATION WAILEA, MAUI, HAWAII**

Dear Ms. Ohashi Hiraga,

We reviewed the subject project as a pre-application consultation and have the following comments:

1. Solid Waste Division comments:
   a. None.
2. Wastewater Reclamation Division (WWRD) comments:
   a. The Wastewater Reclamation Division has existing wastewater system improvements within the proposed project area, therefore proposed construction plans shall reflect the aforementioned wastewater system improvements and be submitted to our division for review and approval prior to construction.

If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

Cheryl K. Okuma

Cheryl Okuma, Director



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Cheryl Okuma, Director
**Department of Environmental Management**
County of Maui
2200 Main Street, Suite 100
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Ms. Okuma:

Thank you for your letter of April 13, 2009. We will coordinate the intersection improvements with the County of Maui to ensure that construction of the improvements will not adversely impact the County's wastewater system.

Should you require additional clarification please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
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APR 1 5 2009

CHARMAINE TAVARES
MAYOR

OUR REFERENCE
YOUR REFERENCE

# POLICE DEPARTMENT
COUNTY OF MAUI

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

THOMAS M. PHILLIPS
CHIEF OF POLICE

GARY A. YABUTA
DEPUTY CHIEF OF POLICE

April 13, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Ohashi Hiraga:

SUBJECT: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements with the Wailea Resort

Thank you for your letter of March 20, 2009, requesting comments on the above subject.

We have enclosed our comments and would also like to have the opportunity to review the Draft Environmental Assessment when it is produced. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

AC Wayne T. Ribao

Assistant Chief Wayne T. Ribao
for: Thomas M. Phillips
Chief of Police

c: Jeffrey Hunt, Planning Department



COPY

CONCUR
AC 10.Ri
4/9/09

TO : THOMAS PHILLIPS, CHIEF OF POLICE, COUNTY OF MAUI

VIA : CHANNELS 04-08-09

FROM : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHEI

SUBJECT : EARLY CONSULTATION ON THE WAILEA ALANUI DRIVE AND WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS WITHIN THE WAILEA RESORT, WAILEA, MAUI, HAWAII

APPLICANT INFORMATION:

The applicant, Gwen OHASHI HIRAGA of Munekiyo & Hiraga, Inc. is requesting Early Consultation on the Wailea Alanui Drive/Wailea Ike Drive Intersection Roadway Improvements.

The information is being requested on behalf of the Honua'ula Partners, LLC in preparation for the Draft Environmental Assessment (EA).

The roadway widening and intersection improvements are a condition which Honua'ula Partner's, LLC must compete prior to the commencement of any construction on the future Honua'ula-Wailea 670 job site.

POLICE CONCERNS:

After reviewing the information received it was discovered the request for Early Consultation does not specify information regarding road closers, redirecting traffic or the effect the intersection improvements may have on the businesses in the area.

Based upon the information received I have no further concerns or comments regarding this project. I would however appreciate the opportunity to submit my comments and concerns after reviewing the Draft Environmental Assessment (EA).

Respectfully Submitted,

Officer Brad Hickle E-9966
04/04/09 10:15 hours

COMMENTS:
OFFICER B. HICKLE'S CONCERNS ARE VALID AND I AGREE THAT WE BE AFFORDED AN OPPORTUNITY TO REVIEW & COMMENT ONCE THE DRAFT DOCUMENT IS PREPARED.

#1446
04/01/09

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Gary Yabuta, Chief
**Maui Police Department**
County of Maui
55 Mahalani Street
Wailuku, Hawai`i 96793

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Chief Yabuta:

Thank you for your department's letter of April 13, 2009. Prior to the initiation of construction we will coordinate construction activity with the Police Department to ensure the efficient and safe movement of traffic in the area.

Should you require additional clarification, please do not hesitate to contact me at (808) 244-2015. A copy of the Draft Environmental Assessment will be provided to your agency.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
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CHARMAINE TAVARES
Mayor

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

MICHAEL M. MIYAMOTO
Deputy Director

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

APR 16 2009

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

April 14, 2009

Ms. Gwen Ohashi Hiraga, Principal
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Ohashi:

**SUBJECT: EARLY CONSULTATION ON THE WAILEA ALANUI DRIVE AND WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS WITHIN THE WAILEA RESORT, WAILEA, MAUI, HAWAII**

We reviewed your early consultation request and comments will be provided upon submittal of more detailed documentation regarding traffic signal operations and traffic volume counts.

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\Wailea_Alanui_Dr_Wailea_Ike_Dr_Intersec_ec_ls.wpd

**Maui Electric Company, Ltd.** • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

MAR 3 0 2009

March 27, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Maui, Hawaii, 96793

Dear Ms. Hiraga,

Subject: Early Consultation on the Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements Within the Wailea Resort
Wailea Alanui Drive and Wailea Ike Drive
Wailea, Maui, Hawaii

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 (MECO) has underground facilities in the project site and may need to get involved in the process. We would highly encourage the customer to submit survey and civil plans to us as soon as practical to verify the project's location requirements and address any possible relocations or conversions of our facilities.

Should you have any questions or concerns, please call me at 871-2340.

Sincerely,

Ray Okazaki
Staff Engineer

U3

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Ray Okazaki
**Maui Electric Company**
P.O. Box 398
Kahului, Hawai`i 96732

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Okazaki:

Thank you for your letter of March 27, 2009. We will coordinate the plans for the intersection improvements with Maui Electric Company (MECO) to ensure MECO's underground facilities are not impacted by the project as well as any electrical upgrades for the project.

Should you require additional clarification, please do not hesitate to contact me at 244-2015. A copy of the Draft Environmental Assessment will be provided to you.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
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MAR 2 6 2009

**Wailea Community Association**

555 Kaukahi Street
Wailea, Hawaii 96753-8333
(808) 874-6866 • FAX (808) 874-4027
info@wcamaui.com

March 24, 2009

Gwen Ohashi Hiraga, Principal
Munikeyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Aloha Gwen,

Thank you for the opportunity to comment on the "intersection improvements within the Wailea Resort". Whoever in the Council suggested this as a condition for Honua'ula, did so without consulting the community it directly affects – Wailea Resort.

I drive this route 4 times a day and have not encountered any problem that would warrant this change. I can only surmise that this so called improvement, as well as the widening of Piilani Highway and the additional turn lanes onto Ike Drive from Piilani, is geared toward future traffic going to Makena. I don't believe either properly addresses the future needs of Makena and yet impact the very heart of Wailea Resort.

The real solution to present and future traffic to Makena is the extension of Piilani Highway through Honua'ula to Makena. The community has stressed this for years with no support from the County. The reasons are simple, as Makena develops this extension will become its primary entry road, instead of funneling all traffic through Wailea and onto Makena Alanui. It also would provide a much needed safety outlet even today as present Makena properties would be isolated should something happen to Makena Alanui.

Widening roads and intersections is not the answer to our future traffic problems, building more roads creates alternatives during peaks and disasters while preserving our island ambience. This notion was proposed in 2003 by the South Maui Coalition of Community Associations, but was stopped by the former Planning Director for fear of development. Let's not keep making the same mistakes because certain small special interest groups on this island want to punish developers by adding conditions that make no sense.

I suggest that the resources and effort for this project be redirected to getting the Piilani Highway extended for the present and future well-being of south Maui residents.

Sincerely,

Frank "Bud" Pikrone
General Manager



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Frank "Bud" Pikrone
**Wailea Community Association**
555 Kaukahi Street
Wailea, Hawai`i 96753

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Pikrone:

Thank you for your letter of March 24, 2009. As you have noted, the improvement to the intersection was made a condition of the zoning approval (Condition No. 2.e. of Ordinance 3554) for the Honua`ula Project District.

While the proposed action does not relate to the extension of Pi`ilani Highway, the applicant will continue its coordination efforts with the Wailea Community Association to ensure that regional traffic matters are addressed in a collaborative manner.

We appreciate your comments, and will provide a copy of the Draft Environmental Assessment (EA) to your association. Should you have any questions, please do not hesitate to call me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
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MAR 2 5 2009

**Wailea Old Blue**
GOLF CLUB

120 Kaukahi Street, Wailea, Maui, Hawaii 96[illegible]
Tel 808.879.2530 Fax 808.875.5162

March 25, 2009

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

Subject: Wailea Alanui and Wailea Ike Drive Intersection Improvements

Dear Ms. Hiraga:

Thank you for the opportunity to provide comments regarding the Wailea Alanui and Wailea Ike Drive intersection improvements.

We understand that the proposed improvements are a requirement on Honua'ula Partners, LLC., by the County of Maui as part of the approval for their rezoning application. As the owner of the land adjacent to this intersection we have no objections to the project.

We also understand that the majority of the land is owned by the County of Maui, however a very small portion of the improvements will require land owned by Wailea Old Blue LLC. We have no objection to use of this land for the subject improvement provided proper easements are executed by Wailea Old Blue LLC and the involved parties.

Again, I would like to thank you for the opportunity to review and comment on this project.

Sincerely,

Barry Helle

Barry Helle
General Manager



MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

August 24, 2009

Barry Helle
**Wailea Old Blue Golf Club**
120 Kaukahi Street
Wailea, Hawai`i 96753

SUBJECT: Early Consultation on the Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Mr. Helle:

Thank you for your letter of March 25, 2009. We acknowledge that a small portion of the improvements are to be located on property owned by Wailea Old Blue LLC. As noted in our preliminary discussions, land acquisitions will be sought from Wailea Old Blue LLC prior to the initiation of construction.

Should you require additional clarification please call me at 244-2015. A copy of the Draft Environmental Assessment will be provided to you.

Very truly yours,

Gwen Ohashi Hiraga

Gwen Ohashi Hiraga
Principal

GOH:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Kirk Tanaka, R.T. Tanaka Engineers, Inc.
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# X. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT REVIEW PERIOD AND RESPONSES TO SUBSTANTIVE COMMENTS

## X. LETTERS RECEIVED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT REVIEW PERIOD AND RESPONSES TO SUBSTANTIVE COMMENTS

A Draft Environmental Assessment for the subject project was filed and published in the Office of the Environmental Quality Control's The Environmental Notice on October 23, 2009.

Comments on the Draft EA were received during the 30-day public comment period. Comments, as well as responses to substantive comments, are included in this chapter.

09/10801

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPOH-EC-T

October 27, 2009

Civil Works Technical Branch

Ms. Colleen Suyama, Staff Planner
County of Maui
Department of Planning
250 South High Street
Wailuku, Maui, Hawaii 96793

'09 OCT 28 A11 :43

DEPT
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Dear Ms. Suyama:

Thank you for the opportunity to review and comment on the Special Management Area Use Permit and Draft Environmental Assessment (DEA) for the Wailea Ike/Alanui Intersection Improvements Project, Wailea, Maui (TMK 2-1-8: portions of parcels 118, 131 and 134)). We concur with the Zone C flood hazard designation provided on page 11 of the DEA.

Should you require additional information, please call Ms. Jessie Dobinchick of my staff at 438-8876.

Sincerely,

Steven H. Yamamoto, P.E.
Chief, Civil Works Technical Branch

NOV 0 2 2009

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

REPLY TO
ATTENTION OF:

October 30, 2009

Regulatory Branch

File No. POH-2009-109

Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Ms. Suyama:

This letter is in response to your request, dated October 23, 2009, for our review of the Draft Environmental Assessment (DEA) for the proposed Wailea Ike-Wailea Alanui Intersection improvements located in Kihei, Island of Maui, Hawai'i (TMK 221008131, 118, and 134).

Based on the information furnished to our office there do not appear to be any water resources (i.e. streams and wetlands) within or around the proposed Wailea Ike Drive-Wailea Alanui Drive Intersection improvements. Please note that under Section 404 of the Clean Water Act (33 U.S.C. 1344) Department of Army (DA) authorization is required for any activities that result in the discharge (placement) of dredge and/ or fill material into waters of the U.S. Section 10 of the Rivers and Harbors Act requires that a Department of Army (DA) permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403).

Thank you for the opportunity to comment. If you have any questions, please contact Ms. Meris Bantilan-Smith, of my Regulatory staff at 808-438-7023 (FAX: 808-438-4060) or by electronic mail at Meris.Bantilan-Smith@usace.army.mil. Please include File No. POH-2009-109 in any future correspondence regarding this project. Please be advised you can provide comments on your experience with the Corps' Honolulu District Regulatory Branch by accessing our web-based customer survey form at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

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

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 7, 2009

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

SUBJECT: Draft Environmental Assessment for the Wailea Ike Drive and Wailea Alanui Drive Intersection at TMK (2)2-1-008:118, 131, and 134, Wailea, Kihei, Maui, Hawaii

Dear Mr. Young:

Thank you for your letter dated October 30, 2009. At present, no discharge of dredge and/or fill material into waters of the U.S. is proposed. However, should the situation change and if required, a Department of Army permit will be obtained prior to initiation of construction.

Should you require additional clarification, please call me at (808) 244-2015 or by email: planning@mhplanning.com.

Very truly yours,

Colleen Suyama, Project Manager

CS:lfm
cc: Charles Jencks, Honua`ula Partners, LLC
Milton Arakawa, Director, Department of Public Works
Jeffrey S. Hunt, Director, Department of Planning
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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

November 10, 2009

Ms. Colleen Suyama
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Ms. Suyama:

**Subject:** **Wailea Ike/Wailea Alanui Intersection Improvements**
**Applicant:** **Charlie Jencks, Honua'ula Partners, LLC**
**Subject I.D.:** **SM1 2009/0012**
**TMK:** **2-1-008 & 2-1-008:131 (POR)-Roadway**
**2-1-008:118 (POR) & 2-1-008:134 (POR)-Park-Golf Course (PK-GC)**
**2-1-008:118 (POR) & 2-1-008:131 (POR)-Open Space or Golf Course**
**Description:** **Intersection improvements at Wailea Ike Dr. & Wailea Alanui Dr.**

Thank you for giving us the opportunity to review and comment on this project. The following comment is offered:

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

Should you have any questions, please call me at 808 984-8230 or e-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski
Acting District Environmental Health Program Chief

c Gina M. Flammer

Attachment

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 7, 2009

Patti Kitkowski, Acting District
Environmental Health Program Chief
Department of Health
Maui District Health Office
State of Hawaii
54 High Street
Wailuku, Hawaii 96793-2102

SUBJECT: Draft Environmental Assessment for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Dear Ms. Kitkowski:

In response to your letter dated November 10, 2009, should it be determined that a noise permit is required, we will obtain a permit prior to the initiation of construction.

Should you require additional clarification, please call me at 244-2015 or by email: planning@mhplanning.com.

Very truly yours,

Colleen Suyama, Project Manager

CS:lfm
cc: Charles Jencks, Honua`ula Partners, LLC
Milton Arakawa, Director, Department of Public Works
Jeffrey S. Hunt, Director, Department of Planning
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LINDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

STP 8.3460

December 1, 2009

Mr. Jeffrey S. Hunt, AICP
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Hunt:

Subject: Honua'ula Partners, LLC
Wailea Ike/Wailea Alanui Intersection Improvements
Special Management Area (SMA) Application (SM1 2009/0012) and
Draft Environmental Assessment (DEA

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project application for improvements to the Wailea Alanui Drive and Wailea Ike Drive intersection located within the Wailea Resort in the Kihei-Makena region of Maui.

DOT previously commented on this case during the early consultation period. DOT's comments in its letter STP 8.3216 dated April 13, 2009 (attached) to the consultant are still relevant and should be fully addressed in the subject project application. This letter also included prior DOT correspondence and comments regarding Honua'ula Partners' related projects, including the project to widen Piilani Highway (letter STP 8.3152, dated March 5, 2009) and the Honua'ula development (letter STP 8.3207 dated April 6, 2009).

DOT Highways Division is still completing its review of the subject project. DOT may provide supplemental comments upon completion of this review. Further, as stated before, this project may be impacted by the pending cost-sharing arrangement between the major developers in the Wailea Resort area. As such, DOT reserves the right to provide supplemental comments pending the outcome of this agreement.

DOT appreciates the opportunity to provide comments. 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,

Francis Paul Keeno

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

Attachments

c: Colleen Suyama, Munekiyo & Hiraga, Inc.
Kathleen Kealoha, Office of Environmental Quality Control

LINDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

DIR 0451
STP 8.3216

April 13, 2009

Ms. Gwen Ohashi Hiraga
Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hiraga:

Subject: Honua'ula Partners, LLC
Wailea Alanui Drive and Wailea Ike Drive Intersection Improvements
Within the Wailea Resort
Wailea, Maui, Hawaii
Early Consultation (EC)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project for improvements to the Wailea Alanui Drive and Wailea Ike Drive intersection located within the Wailea Resort in the Kihei-Makena region of Maui.

DOT's previous comments on Honua'ula Partners' related projects, including the project to widen Piilani Highway (letter STP 8.3152, dated March 5, 2009, attached) and the Honua'ula development (letter STP 8.3207 dated April 6, 2009, attached), are also applicable to the subject project.

As stated in these prior letters, DOT reserves the right to provide supplemental comments pending the outcome of the cost-sharing meeting between the major developers for projects in the area. Further, the environmental documents and associated traffic impact assessment report (TIAR) for the subject intersection improvements project should be consistent with the TIAR's for both the Piilani Highway widening project and the Honu'aula development project. The applicant should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office, and may need to direct all design and construction plans to these offices, subject to the results of the consultations.

DOT appreciates the opportunity to provide comments and requests four (4) copies of the project's Draft Environmental Assessment (DEA). If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

SLP:cc

c: Mr. Jeffrey Hunt, Maui Planning Department
Ms. Kathy Kealoha, Office of Environmental Quality Control
Mr. Tom Schnell, PBR Hawaii

bc: HWY-M, -P (PS 09-122), STP (SLP)

NDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

DIR 0199
STP 8.3152

March 5, 2009

Mr. Mark Roy
Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Roy:

Subject: Piilani Highway Widening to Four Lanes Between Kilohana Drive and Wailea Ike Drive – Early Consultation (EC)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project to widen Piilani Highway from two to four lanes between Kilohana Drive to Wailea Ike Drive. DOT welcomes this consultation process.

DOT understands your firm is working with the DOT Highways Division Planning Branch to arrange a meeting regarding the subject project and the cost-sharing agreement for highway improvements between developers of the three major projects in the Wailea-Makena area. Your firm should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office. All plans and designs for the construction of the project should be directed to these offices.

In response to the subject EC and in anticipation of the proposed meeting, the following comments by the DOT Highways Division are offered.

1. The environmental documents related to the proposed widening of Piilani Highway should be submitted to DOT for review and acceptance before being published.

2. The applicant must completely resurface any and all existing highway lanes damaged during the widening of the highway.

3. The design guidelines and/or the basis of design for all widening of Piilani Highway should be included in the Draft Environmental Assessment (DEA).

4. The undergrounding of the existing overhead electric transmission lines should be considered along Piilani Highway.

5. Detouring of traffic and/or a temporary closure of Piilani Highway will most likely be required as the excavation of 40 to 50-feet of the rock embankment is anticipated with this proposed widening project. The potential impacts of such detours and/or road closures on adjacent roadways should be considered and appropriately addressed.

6. A Traffic Impact Assessment Report (TIAR) should be prepared as a part of the DEA. This TIAR should be submitted for DOT's review and acceptance.

7. The DEA should address the acquisition of right-of-way (ROW) necessary to construct the proposed improvements.

8. County zoning requires the developer to extend Piilani Highway to Kaukahi Street along an alignment that includes unimproved State highway ROW. Any such proposed improvements on State highway ROW must be submitted for review and approval by DOT. If an extension is being proposed, then it should also be appropriately addressed in the DEA.

DOT appreciates the opportunity to provide comments and requests that four (4) copies of the project DEA, including the TIAR, be provided. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

LINDA LINGLE
GOVERNOR

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

BRENNON T. MORIOKA
DIRECTOR

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

IN REPLY REFER TO:

DIR 0366
STP 8.3207

April 6, 2009

Mr. Tom Schnell
PBR HAWAII
ASB Tower, Suite 650
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Schnell:

Subject: Honua'ula
Environmental Impact Statement Preparation Notice (EISPN)
TMK: 2-1-008: 056 and 71

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project for the Honua'ula mixed-use development project, located in the Kihei-Makena region of Maui, adjacent to the Wailea Resort.

DOT's previous comments on Honua'ula Partners' related projects, including the project to widen Piilani Highway (letter STP 8.3152, dated March 5, 2009, is attached), are also applicable to the subject project.

DOT staff and the applicant are coordinating a meeting to discuss the proposed projects in the Wailea-Makena area, and the cost-sharing agreement for highway improvements between developers of the three major projects in this area. DOT reserves the right to provide supplemental comments pending the outcome of this meeting.

In the interim, the environmental documents and associated traffic impact assessment report (TIAR) for the subject land development project should be consistent with the TIAR for the Piilani Highway widening project. The applicant should continue consultation with the DOT Highways Division Planning Branch and the Highways Division Maui District Office, and should direct all design and construction plans to these offices.

DOT appreciates the opportunity to provide comments and requests four (4) copies of the project's Draft Environmental Impact Statement (DEIS). If there are any questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at (808) 587-2356.

Very truly yours,

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

Attach.

SLP:km

c: Katherine Kealoha, Office of Environmental Quality Control
Jeffrey Hunt, Maui Planning Department

bc: HWY-P(PS 09-102), -M, STP(SLP)

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 8, 2009

Brennon T. Morioka, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

SUBJECT: Draft Environmental Assessment for the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements (STP 8.3460

Dear Mr. Morioka:

We are in receipt of your letter to the Department of Planning dated December 1, 2009. As stated in our August 24, 2009 response to your early consultation comment letter of April 13, 2009, we are aware of the previous comments on Honua`ula Partner's related projects. A comprehensive Traffic Impact Analysis Report (TIAR) for the Honua`ula projects was submitted to the Department of Transportation (DOT) for review and comment on August 18, 2009. By letter dated October 15, 2009, DOT issued their comments on the TIAR. Traffic consultant Austin Tsutsumi & Associates, Inc. (ATA) responded to DOT's comments on October 30, 2009.

We acknowledge that DOT is still reviewing the draft of the Draft Environmental Assessment (EA) for the Piilani Highway Widening Project transmitted on September 1, 2009 and that DOT may provide supplemental comments upon completion of this review. Further, please be advised that the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements is the sole responsibility of Honua`ula Partners, LLC and is not included in the proposed cost-sharing agreement between the major landowners in the Wailea-Makena Resort area.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

environment planning government

Printed on Recycled Paper

Should you require additional clarification, please call me at (808) 244-2015.

Very truly yours,

Colleen Suyama, Project Manager

CS:lfm
cc: Charles Jencks, Honua`ula Partners, LLC
Milton Arakawa, Director, Department of Public Works
Keith Niiya, Austin, Tsutsumi & Associates, Inc.
F:\DATA\WCPT\Intersection\DOTRespLtr.DEA.doc

CHARMAINE TAVARES
Mayor

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

MICHAEL M. MIYAMOTO
Deputy Director

NOV 0 9 2009

RALPH M. 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
**DEVELOPMENT SERVICES ADMINISTRATION**
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 3, 2009

MEMO TO: JEFFREY S. HUNT, A.I.C.P., PLANNING DIRECTOR

FROM: MILTON M ARAKAWA, A.I.C.P, DIRECTOR OF PUBLIC WORKS

**SUBJECT: WAILEA IKE/WAILEA ALANUI INTERSECTION IMPROVEMENTS**
**TMK (2) 2-1-008 And 2-1-008:131 (Por.)-Roadway**
**2-1-008:118 (Por.) And 2-1-008:134 (Por) - Park Golf Course**
**2-1-008:118 (Por.) And 2-1-008:131 (Por.) - Open Space or Golf Course**

We reviewed the subject application and have no comments at this time.

If you have any questions regarding this memorandum, please call Michael Miyamoto at 270-7845.

MMA:MM:ls
S:\LUCA\CZM\Wailea_Ike_Wailea_Alanui_Intersec_Improv_sm1_ls.wpd

c Highways Division
Engineering Division
Colleen Suyama, Proj. Mgr.

2009/10648-GM

CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

**TRANSMITTAL** **October 23, 2009**

| | STATE AGENCIES |
|---|---|
| X | Dept of Health, Honolulu |
| X | Dept of Health, Maui (2) |
| X | DLNR-SHPD |
| X | DOT, Maui |
| X | DOT, Statewide Planning Office (4) |
| X | Office of Hawaiian Affairs |
| X | Office of Planning |
| | **OTHER** |
| X | Maui Electric Company |
| X | Wailea Community Association (1 HC, 1CD) |
| X | Wailea Old Blue Golf Course (1 HC) |

| | COUNTY AGENCIES |
|---|---|
| X | Dept of Env Mgt, Solid Waste |
| X | Dept of Env Mgt, WasteWater Reclamation |
| X | Dept of Public Works (3 Hard Copies) |
| X | Dept of Transportation |
| X | Dept of Water Supply |
| X | Police Department |
| X | ZAED, Zoning & Enforcement Division |
| | **FEDERAL AGENCIES** |
| X | U.S. Army Corp. of Engineers (Hard Copy) |
| | |
| | |

| | |
|---|---|
| **PROJECT:** | **WAILEA IKE/WAILEA ALANUI INTERSECTION IMPROVEMENTS** |
| **APPLICANT:** | **Charles Jencks, Honua'ula Partners, LLC** |
| **PERMIT NO.:** | **SM1 2009/0012** |
| **TMK(S):** | **2-1-008 and 2-1-008:131 (POR.)-Roadway**<br>**2-1-008:118 (POR.) and 2-1-008:134 (POR.)-Park-Golf Course (PK/GC)**<br>**2-1-008:118 (POR.) and 2-1-008:131 (POR.)-Open Space or Golf Course** |
| **PROJECT DESCRIPTION:** | **Intersection improvements at Wailea Ike Dr. and Wailea Alanui Dr.** |

**TRANSMITTED TO YOU ARE THE FOLLOWING:**

| | |
|---|---|
| X | Application and Draft Environmental Assessment |

**THESE ARE TRANSMITTED AS CHECKED BELOW:**

| | |
|---|---|
| X | For your Comment and Recommendation |

Please first identify any comments and second identify any items you would like the Final Environmental Assessment (EA) to address and recommendations you would like the Department of Planning to recommend as conditions of project approval. Please also provide any previous comments, letters, etc. pertinent to this application and Draft EA. Please submit your comments by Friday, November 20, 2009.

**Please submit your comments to:**

Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

DEPT OF PLANNING
COUNTY OF MAUI
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A comment box is also provided to further assist you. If no comment, please sign the "No Comment" box below and return. Thank you for your cooperation. For additional clarification, please contact me via email at gina.flammer@mauicounty.gov, at (808) 270-5780, or contact Project Manager Colleen Suyama at Munekiyo & Hiraga, Inc. at colleen@mhplanning.com or at (808) 244-2015, Ext. 221.

Sincerely,

Gina Flammer

Gina M. Flammer, Staff Planner

xc: Clayton I. Yoshida, AICP, Planning Program Administrator
Gina M. Flammer, Staff Planner
Colleen Suyama, Project Manager, Munekiyo & Hiraga, Inc
Frank "Bud" Pikrone, Wailea Community Association
Barry Helle, Wailea Old Blue Golf Course
Project File
General File

GMF:vb
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**NO COMMENT**

| | | | |
|---|---|---|---|
| Commenting Agency: | Planning Zaed | Phone: | 270 7197 |
| Signed: | Gerald Azbill | Dated: | 10/30/09 |
| Print Name: | Gerald Azbill | Title: | Plans Technician |

**COMMENT/RECOMMENDATION BOX**

| | | | |
|---|---|---|---|
| Commenting Agency: | | Phone: | |
| Signed: | | Dated: | |
| Print Name: | | Title: | |

NOV 1 8 2009

# 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

November 10, 2009

**MEMORANDUM**

TO : GINA M. FLAMMER, STAFF PLANNER
DEPARTMENT OF PLANNING

FROM : GARY A. YABUTA, CHIEF OF POLICE

SUBJECT :

| | | |
|---|---|---|
| I.D. | : | SM1 2009/0012 |
| TMK | : | 2-1-008 AND 2-1-008:131 (por.)-Roadway 2-1-008:118 (por.) and 2-1-008:134 (por.) – Park-Golf Course (PK/GC) 2-1-008:118 (por.) and 2-1-008:131 (por.) –Open Space or Golf Course |
| Project Name | : | Intersection improvements at Wailea Ike Drive and Wailea Alanui Dr. |
| Applicant | : | Charles Jencks, Honua'ula Partners, LLC |

____ No recommendation or comment to offer.

_x_ Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.

Assistant Chief Danny J. Matsuura
For: GARY A. YABUTA
Chief of Police

c: ✓Colleen Suyama, Munekiyo & Hiraga, Inc.

Enclosure

COP

Concur w/ Ofc Hick assessment
AC Matsuura 11/9/09

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

VIA : CHANNELS Concur – Cont. 110009

FROM : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHEI

SUBJECT : APPLICATION FOR SPECIAL MANAGEMENT AREA PERMIT

**APPLICANT INFORMATION:**

The applicant Charles JENCKS, on behalf of Honua'ula Partners, LLC has submitted a Special Management Area Permit Application.

The permit is needed in order to make modifications to the Wailea Ike Drive/Wailea Alanui Drive Intersection. The modifications will include a double right-turn movement from Wailea Alanui Drive to Wailea Ike Drive and a double left-turn movement from Wailea Ike Drive to Wailea Alanui Drive.

The proposed modifications at the intersection are just one of the conditions which Honua'ula Partners, LLC must complete prior to the commencement of any construction upon the future Wailea 670/Honua'ula jobsite which will be located "mauka" of the Wailea Ike Drive/Piilani Highway intersection.

**IMPACT ON POLICE:**

Upon reviewing the application I was unable to locate a traffic mitigation plan.

Will the aforementioned streets be completely closed during the construction of the intersection or will traffic control personnel be directing vehicles and pedestrians through the construction area? It is my belief that there will undoubtedly be traffic delays under either circumstance. All emergency medical personnel including Police, Fire and Medics responding to the areas south of this intersection will be affected by traffic delays during the construction of this intersection.

**RECOMMENDATIONS:**

Prior to beginning the roadwork construction at this intersection it is recommended that all South Maui District emergency medical services groups be informed of a traffic mitigation plan including road closures, alternate routes as well as dates and times of the construction.

Respectfully Submitted,

Officer Brad Hickle
11/02/09 12:20 hours

SUGGEST APPLICANT PROVIDE THE REQUESTED INFORMATION SO EMERGENCY SERVICES ARE AWARE AND CAN PLAN ACCORDINGLY.
ALT. D. Matsuura
11.06.09 @ 0715 HRS

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 7, 2009

Gary A. Yabuta, Chief
Maui Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793-2102

SUBJECT: Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection at TMK (2)2-1-008:118, 131, and 134, Wailea, Kihei, Maui, Hawaii

Dear Chief Yabuta:

Thank you for your letter dated November 10, 2009. Please be assured that prior to initiation of construction, a traffic mitigation plan will be developed in coordination with the Police Department and other emergency responders.

Should you require additional clarification, please call me at 244-2015 or by email: planning@mhplanning.com.

Very truly yours,

Colleen Suyama, Project Manager

CS:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Milton Arakawa, Director, Department of Public Works
F:\DATA\WCPT\Intersection\MPDRespLtr.DEA.doc

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

planning environment government

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CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

November 30, 2009

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

Dear Ms. Suyama:

**SUBJECT: DRAFT ENVIRONMENTAL ASSESMENT (EA) COMMENTS FOR THE PROPOSED WAILEA IKE DRIVE AND WAILEA ALANUI DRIVE INTERSECTION IMPROVEMENTS, LOCATED AT WAILEA, ISLAND OF MAUI, HAWAII; TMK(S): (2) 2-1-008:131, 118 (POR.), AND 134 (POR.) (EAC 2009/0043)**

The Department of Planning (Department) is in receipt of the Draft EA for the above-referenced project. The Department understands the proposed action includes the following:

1. Modify the Wailea Ike Drive and Wailea Alanui Drive Intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two (2) left-turn lanes for southbound traffic from Wailea Ike Drive; and

2. The improvements are required under Condition No. 2 of Ordinance No. 3554 for the Kihei-Makena Project District 9 (Honua'ula) and must be completed prior to the occupancy of the first unit.

Based on the foregoing, the Department provides the following comments:

1. Provide a map of the existing and proposed landscaping and sidewalks along the roadways. Provide additional information on vegetation and trees that are anticipated to be removed and information on the replacement of vegetation and irrigation once the project is completed. Specifically address if the Monkey Pod trees along the Wailea Blue Course will be removed or relocated to accommodate for the new lanes; and

2. Provide information on bus traffic patterns and the effects of the new road configuration on the existing bus stop.

250 SOUTH HIGH STREET, 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

The Department provided early consultation comments on July 23, 2009. A copy of this letter is not included in the Draft EA. A copy is attached along with this letter for your convenience.

The Department is also in receipt of the Special Management Area Use Permit received along with the Draft EA. The application has been reviewed and transmitted to other agencies for review. A hearing before the Maui Planning Commission will be scheduled once the application is deemed complete and ready for processing. A Finding of No Significant Impact (FONSI) is required for the application to be processed. Please provide a copy of the Final EA and FONSI letter from the Department of Public Works when completed.

Thank you for the opportunity to comment on the Draft EA. Should you require further clarification, please contact Staff Planner Gina Flammer at gina.flammer@mauicounty.gov or at (808) 270-5780.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

*for* JEFFREY S. HUNT, AICP
Planning Director

Attachment
xc: Gina M. Flammer, Staff Planner
Charles Jenks, Honua'ula Partners, LLC
Project File
General File
JSH:CIY:GMF:vb
K:\WP_DOCS\PLANNING\EAC\2009\0043_WAILEA IKE WAILEA ALANUI INTERSECTION\COMMENTS.DOC

CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

COUNTY OF MAUI
**DEPARTMENT OF PLANNING**

July 23, 2009

Ms. Gwen Ohashi Hiraga, Vice President
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Hiraga:

**SUBJECT: EARLY CONSULTATION ON WAILEA ALANUI AND WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS, AT WAILEA, MAUI, HAWAII; (EAC 2009/0016)**

The Department of Planning (Department) is in receipt of the above-referenced letter, dated March 20, 2009, requesting comment on the above-proposed action. Only a project location map and a site map were included to comment on. No project details were provided. The Department understands the proposed action includes the following:

- Honua'ula Partners, LLC, as the Applicant, is responsible for the improvement of the Wailea Alanui Drive and Wailea Ike Drive intersection, to include signalized double turn lanes.

Based on the foregoing, the Department provides the following comments in preparation of the Draft Environmental Assessment (EA):

1. The proposed action is in the Special Management Area (SMA) and thus, the action will require compliance with the SMA Rules and Regulations;

2. The Applicant must determine who the Accepting Agency will be for the EA;

3. Address social and physical impacts to surrounding neighborhoods, including noise and air pollution. Provide mitigation alternatives to any potential environmental impacts; and

4. Provide mitigation alternatives to ensure that Best Management Practices shall be implemented to insure that water quality and marine resources are protected.

Thank you for the opportunity to comment. Please include the Department on the distribution list for the Draft EA. Should you require further clarification, please contact Staff Planner James Buika by email at james.buika@mauicounty.gov or by phone at (808) 270-6271.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

*for* JEFFREY S. HUNT, AICP
Planning Director

xc: James A. Buika, Staff Planner
ZAED
Project File
General File

JSH:CIY:JAB:vb
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

December 7, 2009

Jeffrey S. Hunt, AICP, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment (EA) for the Wailea Ike Drive and Wailea Alanui Drive Intersection at TMK (2)2-1-008:118, 131, and 134, Wailea, Kihei, Maui, Hawaii

Dear Mr. Hunt:

Thank you for your letter dated November 24, 2009. Please be advised as follows:

1. The existing monkey pod trees on Wailea Alanui Drive are located outside of the area of the proposed improvements and will not be removed. Landscaping will be re-grassing of the exposed areas with similar grass as the existing golf course. Sidewalk improvements are limited to the re-construction of the sidewalk to the crosswalk on the south-east corner of the intersection.

2. Bus traffic patterns will not be affected by the re-configured intersection. The existing bus stop on Wailea Alanui Drive fronting the Shops at Wailea and on Wailea Ike Drive are located outside of the area of the proposed improvements.

Relative to the Planning Department's July 23, 2009 response to the early consultation letter please be advised, as follows:

1. A Special Management Area (SMA) Application has been filed with the Maui Planning Department.

2. The Accepting Authority is the Department of Public Works.

3. Chapter II of the Draft EA addresses the social and physical impacts of the Project, including noise and air pollution as well as mitigation measures.

4. Best Management Practices (BMPs) will be observed during the construction phase of the project to insure that water quality and marine resources are protected.

Should you require additional clarification, please call me at 244-2015.

Very truly yours,

Colleen Suyama, Project Manager

CS:lh
cc: Charles Jencks, Honua`ula Partners, LLC
Milton Arakawa, Director, Department of Public Works
F:\DATA\WCPT\Intersection\PlanningRespLtr.DEA.doc

**Maui Electric Company, Ltd.** • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

October 22, 2009

Ms. Colleen Suyama, Project Manager
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Maui, Hawaii, 96793

Subject: Application for Special Management Area Use and Draft Environmental Assement - Wailea Ike/Wailea Alanui Intersection Improvements
(SM1 2009/0012)
Wailea Alanui Drive and Wailea Ike Drive
Tax Map Key: (2) 2-1-008, (2) 2-1-008:131, (2) 2-1-008:118, (2) 2-1-008:134
Wailea, Maui, Hawaii

Dear Ms. Suyama,

Thank you for allowing us to comment on the Application for Special Management Area Use and Draft Environmental Assement for the subject project.

In reviewing our records and the information received, Maui Electric Company (MECO) has no additional comments to the subject project at this time.

Should you have any questions or concerns, please call me at 871-2340.

Sincerely,

Ray Okazaki
Staff Engineer

c: COM - Dept. of Planning – Gina M. Flammer

# REFERENCES

## REFERENCES


County of Maui, Kihei-Makena Community Plan, March 6, 1998

County of Maui, Office of Economic Development, Maui County Data Book 2008

County of Maui, Socio-Economical Forecast, The Economic Projections for the Maui County General Plan 2030, June 2006

County of Maui, The General Plan of the County of Maui, September 1990 Update

Federal Emergency Management Agency, Flood Insurance Rate Map, 2009

Hana Pono, LLC, Cultural Impact Assessment for the Proposed Piilani Highway Widening Project, prepared for Honua`ula Partners, LLC, April 2009.

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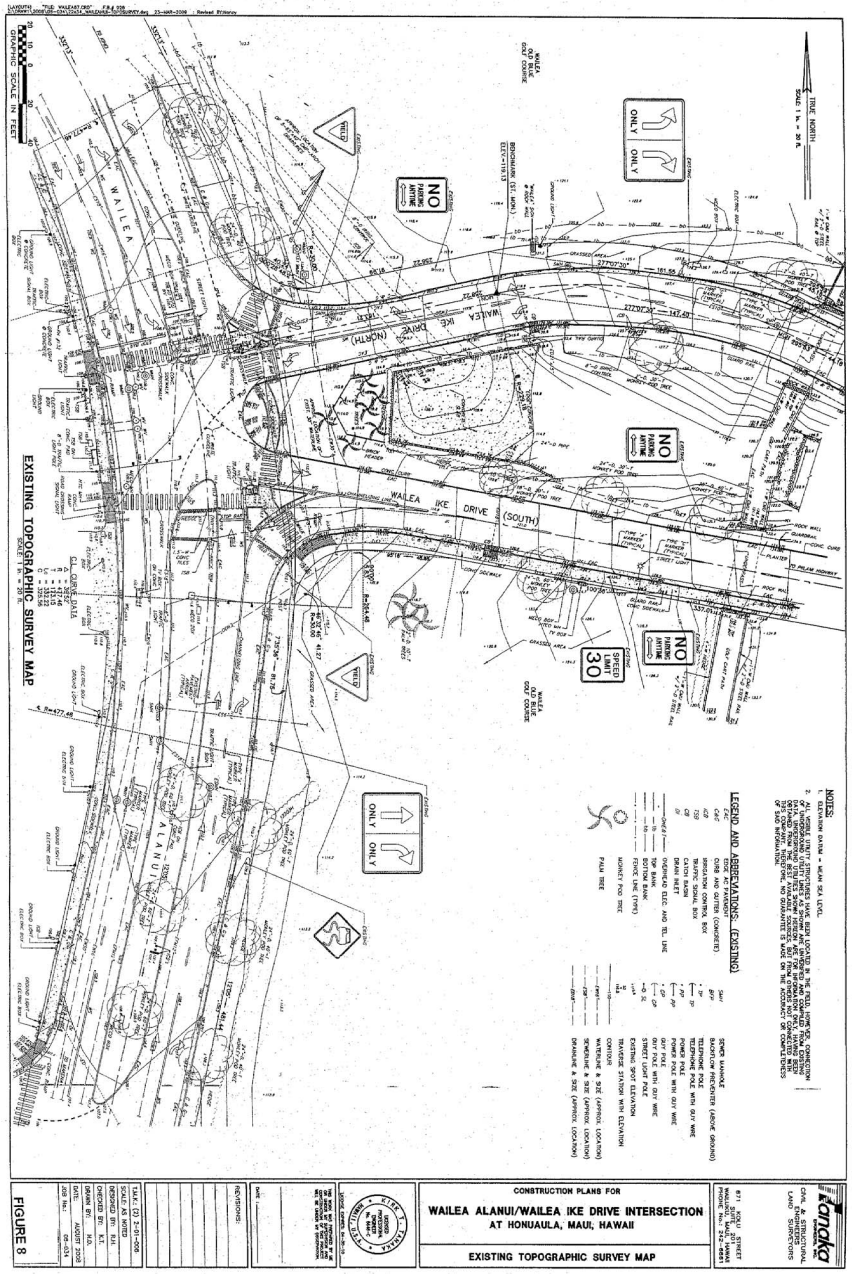
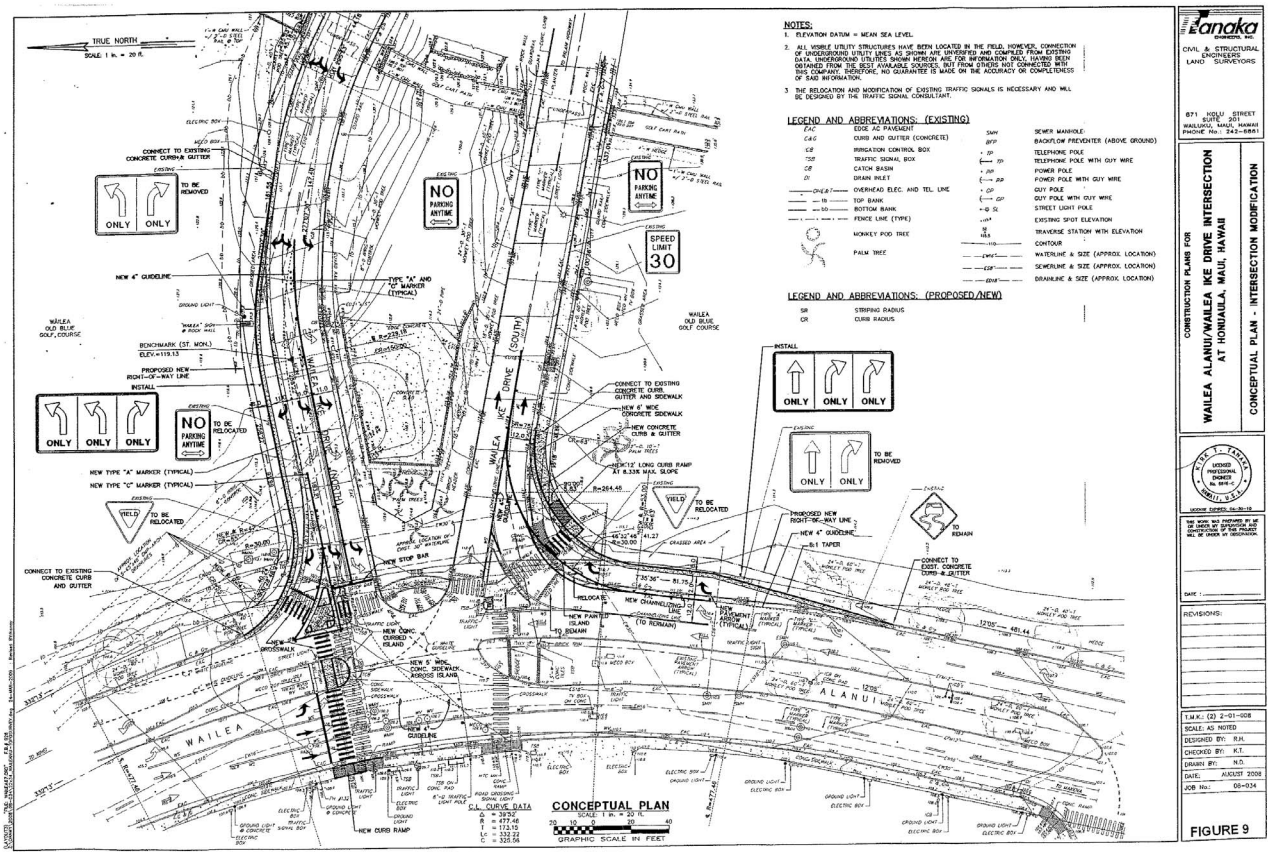
# APPENDIX A.

# Preliminary Plans



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CONSTRUCTION PLANS FOR
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
CONCEPTUAL PLAN - INTERSECTION MODIFICATION

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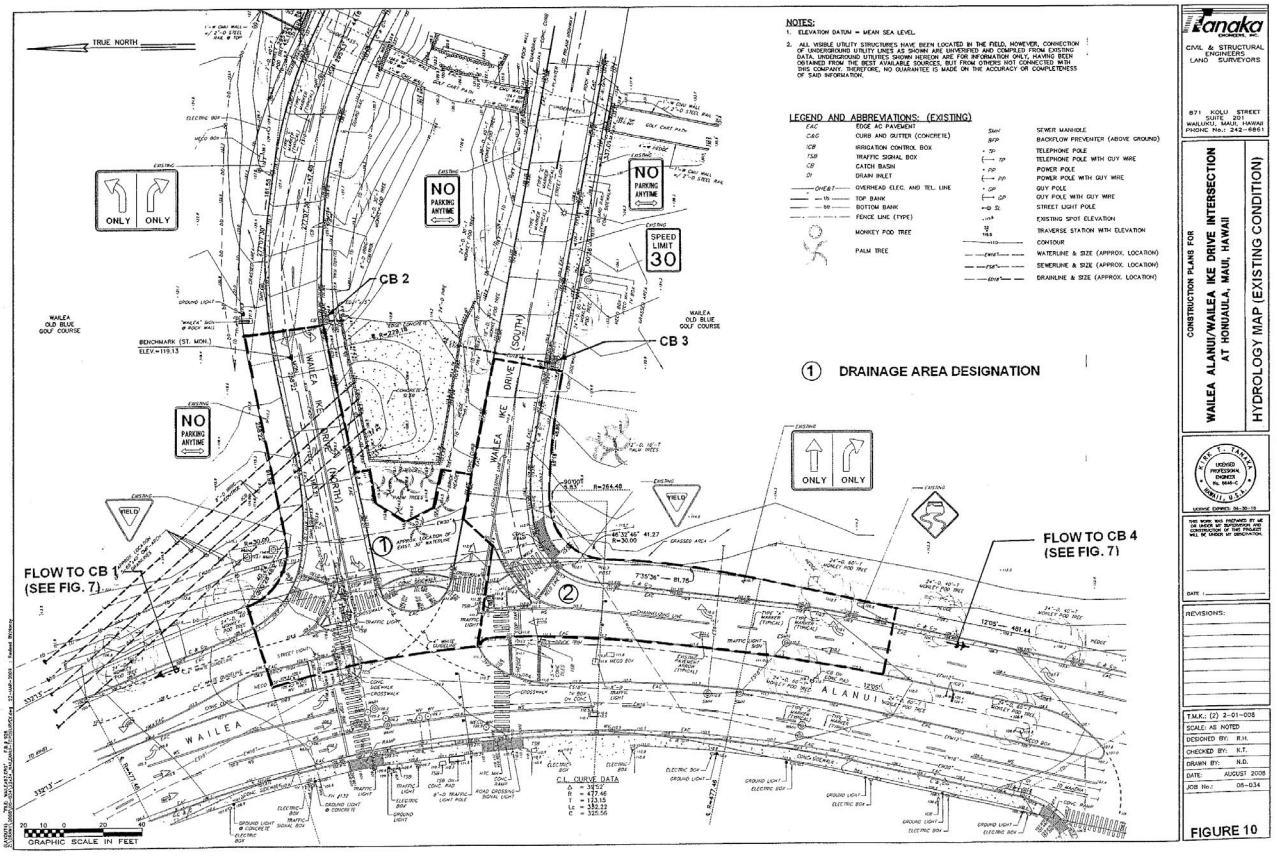
DATE:

REVISIONS:

T.M.K.: (2) 2-01-008
SCALE: AS NOTED
DESIGNED BY: R.H.
CHECKED BY: K.T.
DRAWN BY: N.D.
DATE: AUGUST 2008
JOB No.: 08-034

FIGURE 9

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CONSTRUCTION PLANS FOR
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
HYDROLOGY MAP (EXISTING CONDITION)

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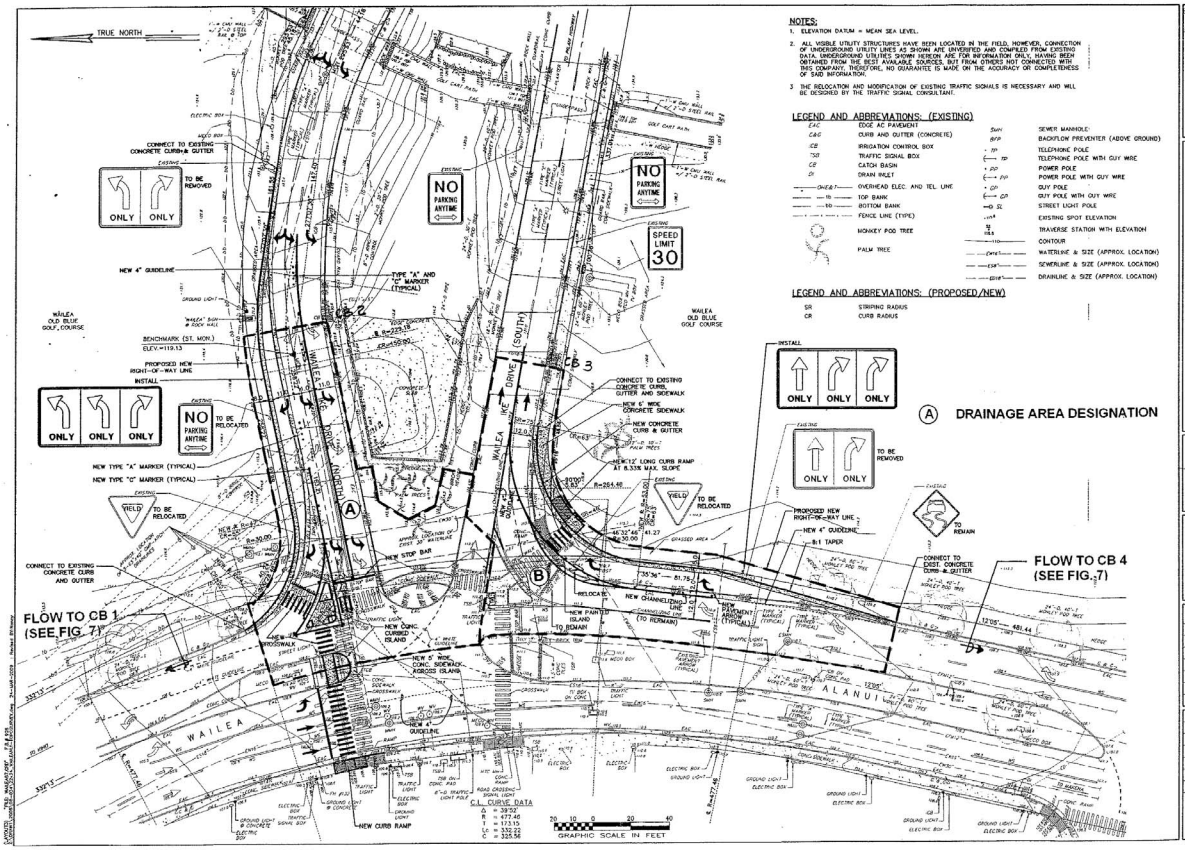
CHECKED BY: K.T.
DRAWN BY: N.D.
DATE: AUGUST 2008
JOB No.: 08-034

FIGURE 10




NOTES:

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.
3. THE RELOCATION AND MODIFICATION OF EXISTING TRAFFIC SIGNALS IS NECESSARY AND WILL BE DESIGNED BY THE TRAFFIC SIGNAL CONSULTANT.

LEGEND AND ABBREVIATIONS: (EXISTING)

| | | | |
|---|---|---|---|
| EAC | EDGE AC PAVEMENT | SMH | SEWER MANHOLE |
| C&G | CURB AND GUTTER (CONCRETE) | BFP | BACKFLOW PREVENTER (ABOVE GROUND) |
| IC | IRRIGATION CONTROL BOX | TP | TELEPHONE POLE |
| TSB | TRAFFIC SIGNAL BOX | TP | TELEPHONE POLE WITH GUY WIRE |
| CB | CATCH BASIN | PP | POWER POLE |
| DI | DRAIN INLET | PP | POWER POLE WITH GUY WIRE |
| OHE&T | OVERHEAD ELEC. AND TEL. LINE | GP | GUY POLE |
| tb | TOP BANK | GP | GUY POLE WITH GUY WIRE |
| bb | BOTTOM BANK | SL | STREET LIGHT POLE |
| | FENCE LINE (TYPE) | | EXISTING SPOT ELEVATION |
| | MONKEY POD TREE | | TRAVERSE STATION WITH ELEVATION |
| | PALM TREE | 110 | CONTOUR |
| | | EWL | WATERLINE & SIZE (APPROX. LOCATION) |
| | | ESW | SEWERLINE & SIZE (APPROX. LOCATION) |
| | | EDW | DRAINLINE & SIZE (APPROX. LOCATION) |

LEGEND AND ABBREVIATIONS: (PROPOSED/NEW)

| | |
|---|---|
| SR | STRIPING RADIUS |
| CR | CURB RADIUS |

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CONSTRUCTION PLANS FOR
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
HYDROLOGY MAP (FUTURE CONDITION)

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THIS WORK WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

DATE :

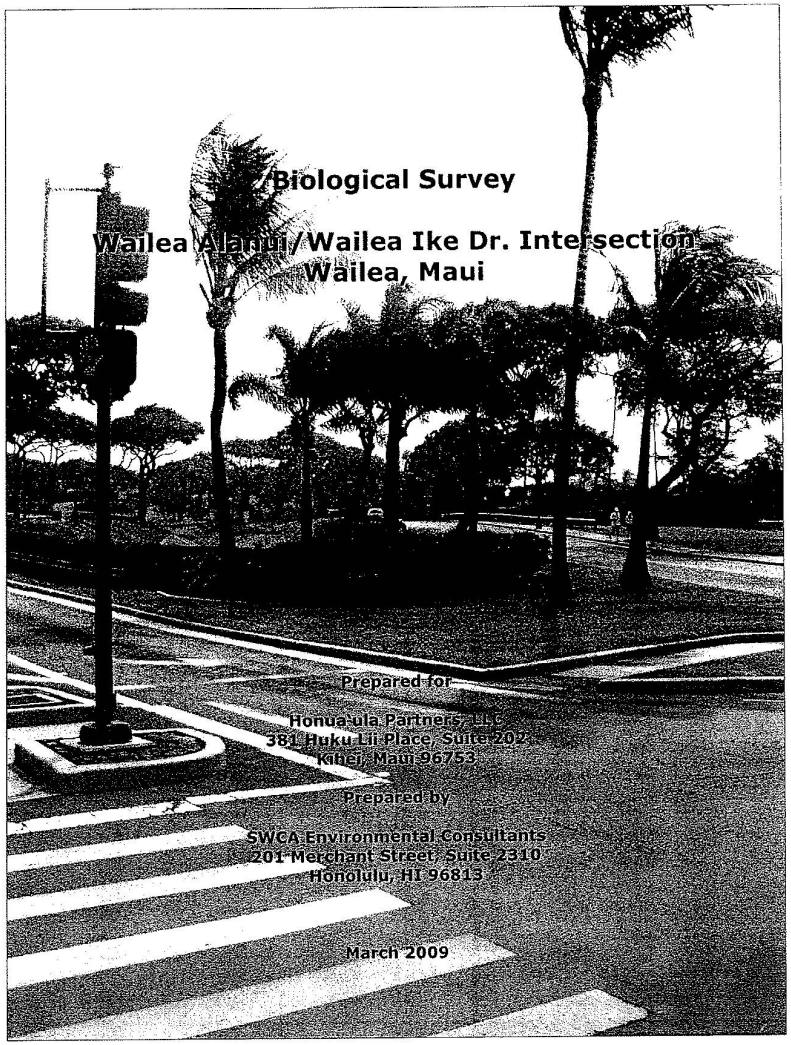
REVISIONS:

T.M.K.: (2) 2-01-008
SCALE: AS NOTED
DESIGNED BY: R.H.
CHECKED BY: K.T.
DRAWN BY: N.D.
DATE: AUGUST 2008
JOB No.: 08-034

FIGURE 11

# APPENDIX B.

# Biological Survey



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## 1.0 INTRODUCTION

In February 2009, SWCA Environmental Consultants (SWCA) was tasked by Honua'ula Partners, LLC to conduct a flora and fauna survey at the intersection of Wailea Alanui and Wailea Ike Drive in Wailea, Maui (Figure 1). The survey was prepared in support of an environmental assessment (EA) for a proposed project at the Wailea Alanui/Wailea Ike Drive intersection. The project involves adding a signalized double right-turn movement from northbound to eastbound turning traffic on Wailea Alanui and providing two left-turn lanes for southbound traffic from Wailea Ike Drive (PBR Hawaii 2009). Modification of the Wailea Alanui/Wailea Ike Drive intersection is required as a condition of the County of Maui Ordinance No. 3554 for Honua'ula, a master-planned community located in the Kihei-Makena area.

This report summarizes the findings of the floral and fauna survey conducted by SWCA biologists John Ford, M.S. and Tiffany Thair (M.S. candidate) on March 12, 2009 at the Wailea Alanui/Wailea Ike Drive intersection. The area surveyed (referred to as the "survey area") is shown in Figure 2. The objectives of the survey were:

1. To identify and document the presence and relative abundance of all plant species which occur within the survey area;
2. To provide a general description of the vegetation on the survey area;
3. To identify and document the presence and relative abundance of bird, mammal, amphibian, reptile, and invertebrate macrofauna which occur within the survey area;
4. To map any state or federally listed candidate, threatened, or endangered species, species of concern and/ or rare (either locally or State-wide) species within the survey area.

## 2.0 DESCRIPTION OF THE SURVEY AREA

The property is landscaped as a golf course and public right-of-way. The site is immediately bordered by the Wailea Blue Golf Course fairway and adjacent to a commercial shopping center, The Shops at Wailea. The topography of the survey area is relatively flat to gently sloping seaward toward Wailea Alanui (see Figures 2 and 3).

## 3.0 METHODS

SWCA biologists initially conducted a literature review of natural resources within the region that encompasses the project site, and considered the concerns expressed by resource agencies in prior correspondence.

### 3.1 Ecosystems

We evaluated the project location in light of the known occurrences of rare, threatened and endangered ecosystems in southeastern Maui.

### 3.2 Flora

SWCA staff conducted a walk-through survey method of the survey area on the morning of March 12, 2009. All plant species were documented and notes were made on plant communities, relative abundances, disturbances, and substrate types. Plant identifications were made in the field; however, plants which could not be positively identified were collected for later determination in the herbarium, and for comparison with the most recent taxonomic literature. A Garmin GPS unit was employed together with the preliminary design map to determine the survey area.

### 3.3 Fauna

3.3.1 Avifauna

Point count surveys were conducted by SWCA biologists on March 12, 2009. Two point count stations were placed on each side of the intersection. The location of the observers at each point count site

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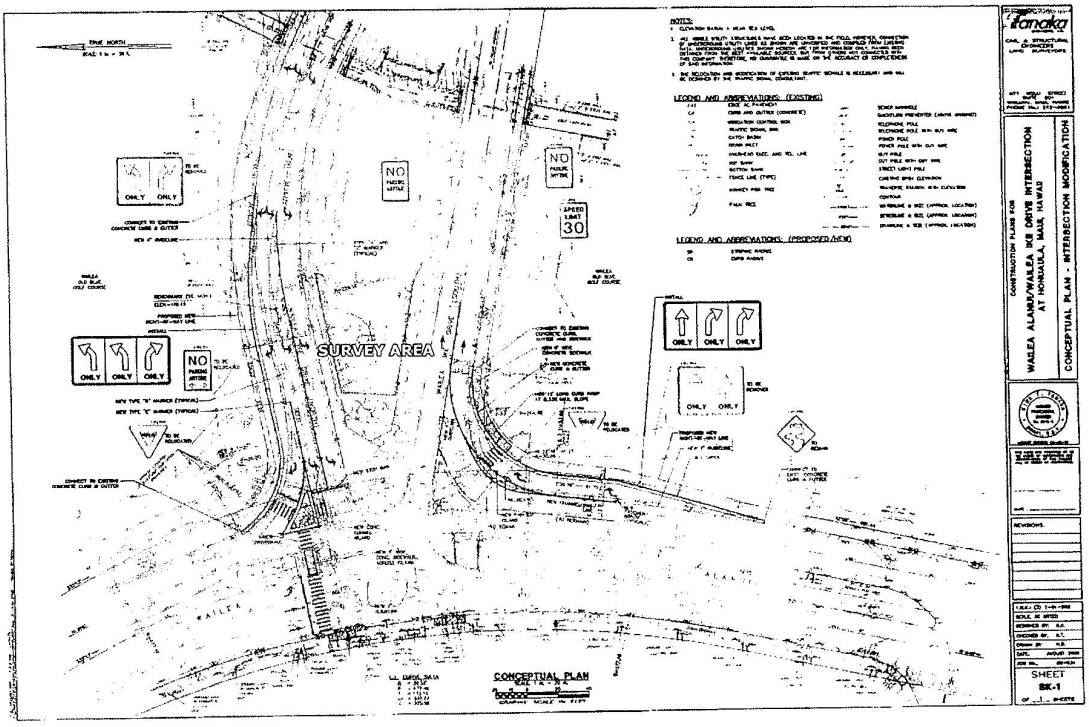
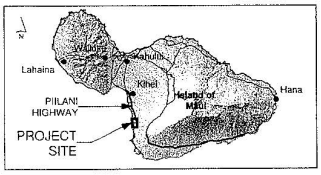



Figure 2
Survey Area

SWCA Inc.

Honua'ula




Legend

Survey Intersection

Honua'ula Project Boundary

TMK Parcels

Source: State of Hawaii GIS, PBR Hawaii

Figure 1
Location Map

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was established in the field with a Garmin GPS receiver. Field observations of birds were recorded using 10 x 50 binoculars with a 6.5 degree field of vision. The observers also listened for vocalizations. The relative densities of species were estimated using eight-minute 50 m (164 ft) radius point counts (Lynch 1995) during peak bird activity periods (0800 - 1100) to maximize the likelihood of detecting birds during the survey. Observations were confined to the same side of the road that the point count was on since the terrain did not permit a clear field off vision for all areas across the road. Birds observed between count stations were also noted.

3.3.2 Other Fauna

Mammals, reptiles, amphibians, insects, and other invertebrates seen or heard during the point count surveys or between count stations were also documented.

## 4.0 FINDINGS

The weather during our survey was overcast and rainy with strong trade winds gusting at 15-20 kts, which are not the best conditions for observing avifauna. It is unlikely that the plants found within the project area change appreciably between 'wet' and 'dry' seasons since this area is manicured year-round as a golf course and public right of way. The birds observed were indicative of the season ("rainy" vs. "dry") and the environmental conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would likely result variations in the number and species of birds observed. Given that this site has been highly altered by human activity and is located immediately adjacent to a busy intersection, and given what is already known about wildlife in the area, additional surveys were deemed to be unnecessary.

### 4.1 Ecosystems

No ecosystems or elements considered as 'rare' by The Nature Conservancy of Hawai'i, the Hawai'i Biodiversity Database, or Hawaii Ecosystems At Risk (www.hear.org) are located within or immediately adjacent to the proposed project area. The intersection is in the center of a landscaped resort destination, mixed residential and commercial, and golf course development. There are no known lava tube caves within the boundaries of the project.

### 4.2 Flora

No state or federally listed threatened, endangered, or candidate endangered plant species (USFWS 2009a, 2009b), or rare native Hawaiian plant species were observed within the survey area during the survey. A total of 49 plant species were recorded within the survey area. Of this total, only glossy nightshade (*Solanum americanum*) is native to the Hawaiian Islands. This indigenous species is widely distributed in Hawai'i and is generally associated with disturbed areas (Wagner et al. 1999).

The vegetation within the project site is dominated by Bermuda grass (*Cynodon dactylon*), and by monkeypod trees (*Samanea saman*) approximately 10 to 12 m (33 to 40 ft) tall (Figures 3 and 4). Along Wailea Alanui on the south side of Wailea Ike Drive, the shrub natal plum (*Carissa microcarpa*) is dominant, forming a landscaped hedge approximately 2 m (7 ft) high. Low-growing wedelia (*Sphagneticola trilobata*) is abundant along Wailea Alanui on the north side of Wailea Ike Drive. The vegetation within the median between South Wailea Ike Drive and North Wailea Ike Drive is dominated by Japanese honeysuckle (*Lonicera japonica*), bougainvillea (*Bougainvillea* sp.), and Bermuda grass. Coconut trees (*Cocus nucifera*) are widely scattered throughout the survey area. All of these species were landscaped for the golf course and adjacent rights-of-way. An inventory of all the plants observed within the survey area is included in Appendix 1 of this report.

### 4.3 Fauna

No state or federally listed threatened, endangered, or candidate bird, mammal, or insect species were observed during our survey. The only native fauna recorded was the Pacific golden plover (*Pluvialis fulva*), an indigenous migratory bird species that occurs in Hawai'i as well as elsewhere in the world. This species is a common visitor to the Hawaiian Islands and is often seen in urban areas, such as lawns, fields, and mudflats (HAS 2005).

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Although not seen during the survey, native pueo (*Asio flammeus sandwichensis*) may hunt along the fairways and greens at night. Pueo have been observed at Honua'ula upland from the survey area (SWCA 2009). Also not seen during our survey, the threatened Newell's shearwater (*Puffinus auricularis newelli*) and the endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), are known to traverse the area.

The endangered Blackburn sphinx moth (Manduca blackburni) and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), which are also know to occur in lands adjacent to the survey area, were not observed by SWCA biologists during their survey. No host plants for the endangered Blackburn sphinx moth (*Manduca blackburni*), such as the non-native tree tobacco (*Nicotiana glauca*), were observed within the survey area. No signs of caterpillars or other life stages of the Blackburn sphinx moth were documented. Blackburn sphinx moth caterpillars have been observed at Honua'ula inland of the survey area (SWCA 2009).

The endangered ae'o (*Himantopus himantopus knudseni*), the endangered 'alae ke'oke'o (*Fulica americana alai*), and the endangered 'alae 'ula (*Gallinula chloropus sandvicensis*), and the endangered Hawaiian duck (*Anas wyvilliana*), and the endangered nene or Hawaiian goose (*Branta sandvicensis*) are known to frequent water hazards and manicured fairways and greens adjacent to water hazards on landscaped golf courses in Wailea. None were observed by SWCA biologists during this study.

4.3.1 Avifauna

Ten bird species were recorded during the survey, of which nine are introduced. The common myna (*Acridotheres tristis*) was the most abundant during the survey. Zebra doves (*Geopelia striata*) and spotted doves (*Streptopelia chinensis*) were also common (Table X). Migratory bird species observed during the survey include two Pacific golden plovers, three mallard ducks (*Anas platyrhynchos*), and a cattle egret (*Bulbulcus ibis*). Mallards are not native to the Hawaiian Islands and pose a threat to endangered *koloa* (*Anas wyvilliana*) due to hybridization (USFWS 2005a). Cattle egrets are common visitors to all the main Hawaiian Islands, particularly in disturbed areas (HAS 2005).

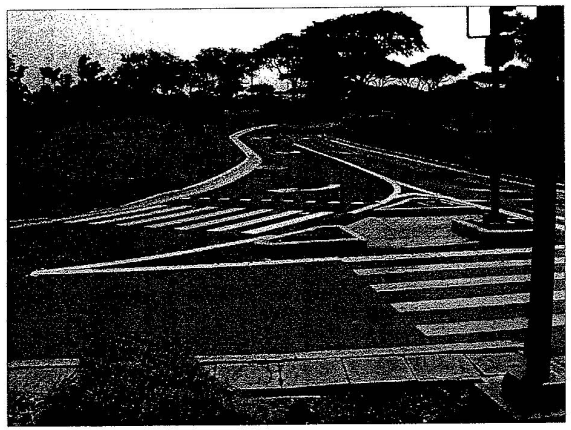

**Figure 3. Typical vegetation and habitat along North Wailea Ike Drive near the Wailea Alanui intersection.**

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**Figure 4. Typical vegetation and habitat along South Wailea Ike Drive near the Wailea Alanui intersection.**

4.3.2 Mammals

No mammals were observed during the survey, although it is likely that non-native feral cats (*Felis catus*), mongoose (*Herpestes javanicus*), and rats (*Rattus* spp.) occur in the area.

4.3.3 Reptiles and Amphibians

There are no native reptiles or amphibians in Hawai'i (McKeown 1996). Mourning geckos (*Lepidodactylus lugubris)* were observed in tree bark on a large monkeypod tree. A gravid house gecko (*Hemidactylus frenatus*) was seen under electrical conduits on the walls of the golf cart path which pass under Wailea Ike Drive.

4.3.4 Insects and Other Invertebrates

Insects and other invertebrates observed in the survey area include: monarch butterflies (*Danaus plexippus*), garden spiders (*Argiope appensa*), Asian spiny-backed spiders (*Gasteracantha mammosa*), big-headed ants (*Pheidole megacephala*), and houseflies (*Musca domestica*). Pacific beetle cockroaches (*Diploptera punctata*) were also seen scattered throughout the site under rocks and paving stones. Two non-native snail species, the giant African snail (*Achatina fulica*) and the rosy wolf snail (*Euglandina rosea*), were seen in the survey area.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Construction of the proposed modifications to the Wailea Alanui/Wailea Ike Drive intersection would not have a significant negative impact on the flora and fauna within the survey area, which are all found commonly throughout Maui and the main Hawaiian Islands, provided that best management practices are employed. Any outdoor lighting could result in seabird disorientation, fallout, injury and/or mortality particularly during the peak fledgling period from September 15 to December 15. Potential impacts to seabirds can be minimized by shielding outdoor lights associated with the project,

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avoiding night-time construction, and providing all project staff with information regarding seabird fallout. All project lights should be shielded so the bulb can only be seen from below. This is a common and successful mitigation measure employed throughout the Hawaiian Islands. To minimize impacts to the endangered Hawaiian hoary bat, woody plants suitable for bat roosting should not be removed or trimmed during the bat birthing and pup rearing season (April to August). A qualified wildlife biologist should conduct a survey of the site for bats and other endangered species immediately before construction is scheduled to begin. Should any endangered species be found on site at that time, construction should be postponed and assistance requested from the US Fish and Wildlife Service office in Honolulu.

To the maximum extent practicable, native plants should be employed for landscaping the newly constructed intersection. If native plants do not meet landscaping objectives, plants with a low risk of becoming invasive may be substituted. Additional information can be gleaned from the following sites for use in selecting appropriate native species for landscaping: http://www.hear.org/Pier; http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp; and http://www.hear.org/gcw.

The use of plants within the Solenaceae (nightshade family) must be avoided so as not to attract endangered Blackburn sphinx moths to the roadside where they are at higher risk for injury or death.

**Table 1. Relative abundance of birds observed during point counts.**

| **FAMILY** ***Genus and species*** | **Common Names** | **Status** | **Birds per point count** | **Abundance Rank** |
|---|---|---|---|---|
| ANATIDAE | | | | |
| *Anas platyrhynchos* | Mallard | X | * | -- |
| | | | | |
| CHARADRIIDAE | | | | |
| *Pluvialis fulva* | Pacific golden-plover, kolea | MI | 1 | 4 |
| | | | | |
| ARDEIDAE | | | | |
| *Bubulcus ibis* | Cattle egret | X | 0.5 | 6 |
| | | | | |
| COLUMBIDAE | | | | |
| *Streptopelia chinensis* | Spotted dove | X | 1.5 | 3 |
| *Geopelia striata* | Zebra dove | X | 2.5 | 2 |
| | | | | |
| ZOSTEROPIDAE | | | | |
| *Zosterops japonicus* | Japanese white-eye | X | 0.5 | 6 |
| | | | | |
| STURNIDAE | | | | |
| *Acridotheres tristis* | Common myna | X | 7 | 1 |
| | | | | |
| EMBERIZIDAE | | | | |
| *Cardiinalis cardinalis* | Northern cardinal | X | 1 | 4 |
| | | | | |
| FRINGILLIDAE | | | | |
| *Carpodacus mexicanus* | House finch | X | 0.5 | 6 |
| | | | | |
| PASSERIDAE | | | | |
| *Passer domesticus* | House sparrow | X | * | -- |
| | | | | |
| ESTRILDIDAE | | | | |
| *Lonchura cantans* | African silverbill | X | 0.5 | 6 |

* = observed outside of point count stations, X = non-native/introduced, MI = migratory indigenous (migratory bird species that occur in Hawaii naturally, as well as elsewhere in the world)

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## APPENDIX 1
## List of Plant Species Observed

The following checklist is an inventory of all the plant species observed by SWCA biologists on March 12, 2009 at the intersection of Wailea Alanui and Wailea Iki Drive in Wailea, Maui. The plant names are arranged alphabetically by family and then by species into each of two groups: Monocots and Dicots. The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1990, 1999), Wagner and Herbst (1999), and Staples and Herbst (2005). Recent name changes are those recorded in the Hawaii Biological Survey series (Evenhuis and Eldredge, eds., 1999-2002).

**Status:**
E= endemic= native only to the Hawaiian Islands.
I= indigenous= native to the Hawaiian Islands and elsewhere.
P = introduced by Polynesians
X=introduced or alien = all those plants brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's arrival in the islands in 1778).

**Location:**
S = South Wailea Ike Dr.
N = North Wailea Ike Dr.
M = Median between North and South Wailea Ike Dr.

**Relative Site Abundance:**
Abundant = forming a major part of the vegetation within the survey area.
Common = widely scattered throughout the area or locally abundant within a portion of it.
Uncommon = scattered sparsely throughout the area or occurring in a few small patches.
Rare = only a few isolated individuals within the survey area.

| Scientific Name and Author | Common Names | Status | Location | Relative Site Abundance |
|---|---|---|---|---|
| **MONOCOTS** | | | | |
| **Arecaceae** | | | | |
| *Cocus nucifera* L. | coconut, *ololani, niu* | X | S | Common |
| *Roystonea regia* (Kunth) O. F. Cook | Cuban royal palm | X | M | Uncommon |
| **Commelinaceae** | | | | |
| *Commelina diffusa* Burm.f. | *honohono*, blue day flower | X | S | Rare |
| **Cyperaceae** | | | | |
| *Cyperus rotundus* L. | purple nut sedge, nut grass, *kili'o'opu* | X | N | Rare |
| **Liliaceae** | | | | |
| *Asparagus densiflorus* (Kunth) Jessop | asparagus fern | X | S, N | Uncommon |

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| Scientific Name and Author | Common Names | Status | Location | Relative Site Abundance |
|---|---|---|---|---|
| *Liriope muscari* (Decaisne) L. H. Bailey | lilyturf | X | M | Uncommon |
| *Ophiopogon japonicus* (Linnaeus filius) Ker Gawler | dwarf lilyturf, mondo grass | X | M | Uncommon |
| | | | | |
| **Poaceae** | | | | |
| *Axonopus compressus* (Sw.) Beauv. | broadleaf carpetgrass | X | N | Rare |
| *Cenchrus ciliaris* L. | buffelgrass | X | M, N | Rare |
| *Chloris barbata* (L.) Sw. | swollen fingergrass | X | N | Rare |
| *Cynodon dactylon* (L.) Pers. | Bermuda grass, manienie | X | S, N | Abundant |
| *Eleusine indica* (l.) Gaertn. | wiregrass, mānienie ali'i | X | S | Rare |
| *Panicum maximum* Jacq. | guinea grass | X | M | Uncommon |
| *Paspalum conjugatum* Bergius | Hilo grass, mau'u | X | S, N | Rare |
| *Setaria gracilis* Kunth | yellow foxtail | X | S | Rare |
| *Sporobolus indicus* (L.) R. Br. | west Indian dropseed, smutgrass | X | N | Rare |
| | | | | |
| **DICOTS** | | | | |
| | | | | |
| **Apocynaceae** | | | | |
| *Carissa microcarpa* (Ecklon) A. DC. | natal plum | X | S | Abundant |
| | | | | |
| **Araliaceae** | | | | |
| *Centella asiatica* (L.) Urb. | Asiatic pennywort, *pohe kula* | X | N | Uncommon |
| *Hydrocotyle bowlesioides* Mathias & Constance | | X | S, N | Uncommon |
| *Schefflera actinophylla* (Endl.) Harms | octopus tree | X | S, N | Rare |
| | | | | |
| **Asteraceae** | | | | |
| *Ageratum conyzoides* L. | *maile hohono, maile honohono, maile kula* | X | M | Rare |
| *Bidens pilosa* L. | Spanish needle, beggartick, *kī, kī nehe, kī pi* | X | M | Rare |
| *Pluchea indica* (L.) Less | Indian fleabane, Indian pluchea | X | S | Rare |
| *Sonchus asper* (L.) J. Hill | prickly sow thistle | X | N | Rare |
| *Sonchus oleraceus* L. | sow thistle, *pualele* | X | S, N | Uncommon |
| *Sphagneticola trilobata* (L.) Pruski | wedelia | X | N | Abundant |
| | | | | |
| **Bignoneaceae** | | | | |
| *Spathodea campanulata* P. Beauv. | African tulip tree, fountain tree | X | N | Rare |
| | | | | |
| **Boraginaceae** | | | | |
| *Tournefortia argentea* L. fil. | tree heliotrope | X | S | Rare |

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| Scientific Name and Author | Common Names | Status | Location | Relative Site Abundance |
|---|---|---|---|---|
| | | | | |
| **Brassicaceae** | | | | |
| *Lepidium virginicum* L. | pepperwort, peppergrass | X | N | Rare |
| | | | | |
| **Caprifoliaceae** | | | | |
| *Lonicera japonica* Thunb. | Japanese honeysuckle, *honekakala* | X | M | Abundant |
| | | | | |
| **Convolvulaceae** | | | | |
| *Ipomoea obscura* (L.) Ker-Gawl. | morning glory | X | M | Common |
| *Ipomoea triloba* L. | little bell | X | M | Common |
| | | | | |
| **Euphorbiaceae** | | | | |
| *Chamaesyce hypericifolia* (L.) Millsp. | graceful spurge | X | N | Uncommon |
| *Chamaesyce prostrate* (Aiton) Small | prostrate spurge | X | N | Uncommon |
| *Codiaeum variegatum* (Linnaeus) Blume | croton | X | M | Uncommon |
| | | | | |
| **Fabaceae** | | | | |
| *Desmanthus pernambucanus* (L.) Thell. | slender mimosa, virgate mimosa | X | M | Rare |
| *Leucaena leucocephala* (Lam.) de Wit | koa haole | X | S | Rare |
| *Prosopis pallida* (Humb. & Bonpl. Ex Willd.) Kunth | kiawe, algarroba, mesquite | X | N | Uncommon |
| *Samanea saman* (Jacq.) Merr. | monkeypod, rain tree, *'ohai, pū 'ohai* | X | S, M, N | Abundant |
| *Senna surattensis* (N.L. Burm.) H Irwin & Barneby | *kolomona, kalamona* | X | S | Rare |
| | | | | |
| **Malvaceae** | | | | |
| *Hibiscus rosa-sinensis* L. | red hibiscus, Chinese hibiscus, *aloalo* | X | S | Uncommon |
| *Malva parviflora* L. | cheese weed | X | N | Rare |
| | | | | |
| **Moraceae** | | | | |
| *Ficus* sp. L. | fig | X | N | Rare |
| | | | | |
| **Nyctaginaceae** | | | | |
| *Boerhavia coccinea* Mill. | | X | N | Uncommon |
| *Bougainvillea* sp. | bougainvillea | X | M, N | Abundant |
| | | | | |
| **Oxalidaceae** | | | | |
| *Oxalis corniculata* L. | yellow wood sorrel, *'ihi 'ai, 'ihi 'awa* | P? | S, N | Uncommon |
| | | | | |

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| Scientific Name and Author | Common Names | Status | Location | Relative Site Abundance |
|---|---|---|---|---|
| | | | | |
| **Plumbaginaceae** | | | | |
| *Plumbago auriculata* Lam. | | X | N | Uncommon |
| | | | | |
| **Portulacaceae** | | | | |
| *Portulaca oleracea* L. | pigweed, *'ākulikuli kula, 'ākulikuli lau li'i, 'ihi* | X | S, N | Uncommon |
| | | | | |
| **Solanaceae** | | | | |
| *Solanum americanum* Mill. | glossy nightshade, *pōpolo* | I | N | Uncommon |

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# APPENDIX C.

# Traffic Impact Analysis Report

## TRAFFIC IMPACT ANALYSIS REPORT
## WAILEA ALANUI DRIVE/WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS
WAILEA, MAUI, HAWAII

**FINAL**

June 5, 2009

Prepared for:

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# TRAFFIC IMPACT ANALYSIS REPORT
# WAILEA ALANUI DRIVE/WAILEA IKE DRIVE
# INTERSECTION IMPROVEMENTS

Wailea, Maui, Hawaii

**FINAL**

Prepared for

**Honua'ula Partners LLC**

Prepared by
**Austin, Tsutsumi & Associates, Inc.**
Civil Engineers • Surveyors
Honolulu • Wailuku, Hawaii

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AUSTIN, TSUTSUMI & ASSOCIATES, INC
CIVIL ENGINEERS • SURVEYORS

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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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# TRAFFIC IMPACT ASSESSMENT REPORT

## WAILEA ALANUI DRIVE/WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS

### Wailea, Maui, Hawaii

## I. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the traffic impacts at the Wailea Alanui Drive/Wailea Ike Drive intersection. This assessment is based upon the traffic impacts resulting from the buildout of three proposed developments; Honua'ula (formally known as Wailea 670), Wailea Resort, and Makena Resort.

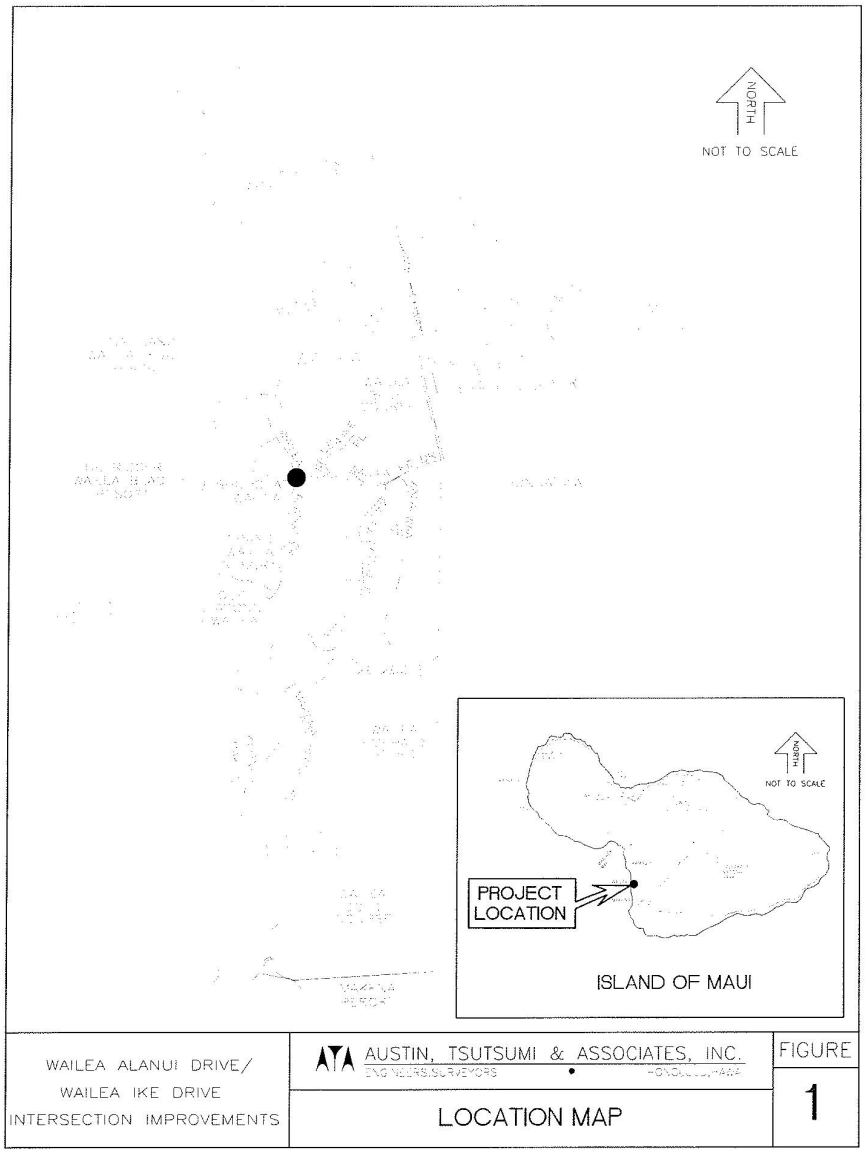
### A. Background

As a Zoning Condition of Honua'ula, improvements to the Wailea Alanui Drive/Wailea Ike Drive intersection are required. Hereinafter, the intersection improvements at Wailea Alanui Drive/Wailea Ike Drive, as required by the Zoning Condition, shall be referred to as Project.

### B. Location

The Wailea Alanui Drive/Wailea Ike Drive intersection is bounded by the Shops at Wailea to the west and Wailea Blue Golf Course to the east. Figure 1 shows the location of the intersection of Wailea Alanui Drive/Wailea Ike Drive.





### C. Study Methodology

This study will address the following:

1. Existing traffic operating conditions at the Wailea Alanui Drive/Wailea Ike Drive intersection.

2. Traffic Projections for Year 2022 includes traffic generated by an annual defacto growth rate consistent with the Maui Travel Demand Forecasting Model and known developments in the vicinity of the Project. These known developments in consideration are projects within Honua'ula, Wailea Resort, and Makena Resort that are currently under construction or are known new/future developments that are expected to affect traffic demand and operations within the study area.

3. Identify potential traffic conditions for Year 2022 projected traffic without the improvements to Wailea Alanui Drive/Wailea Ike Drive intersection, and Year 2022 projected traffic with the improvements to Wailea Alanui Drive/Wailea Ike Drive intersection.

4. Recommendations for improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by the surrounding developments.

## II. EXISTING CONDITIONS

### A. Roadway System and Intersection Configuration.

The following are brief descriptions of the existing roadway network in the vicinity of the Project:

Wailea Ike Drive - is a four-lane, divided, east/west County collector roadway that is striped as a two-lane roadway just before its connection to Pi'ilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Pi'ilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph. Wailea Ike Drive, from its intersection with Wailea Ekolu Place to Wailea Alanui Drive, has a major drainage channel in its median area.





Wailea Alanui Drive - is a four-lane, divided, north/south County collector roadway between Kaukahi Street to the south and Okolani Drive to the north. North of Okolani Drive, Wailea Alanui Drive narrows to a two-lane, undivided, north/south County collector road to its intersection with Kilohana Drive. Wailea Alanui Drive becomes Makena Alanui Road at its intersection with Kaukahi Street. The segment of Wailea Alanui Drive between Wailea Ike Drive and Kaukahi Street has a rolling profile and meandering alignment. The segment of Wailea Alanui Drive north of Wailea Ike Drive has a less pronounced rolling profile and meandering alignment. The posted speed limit on Wailea Alanui Drive is 30 mph.

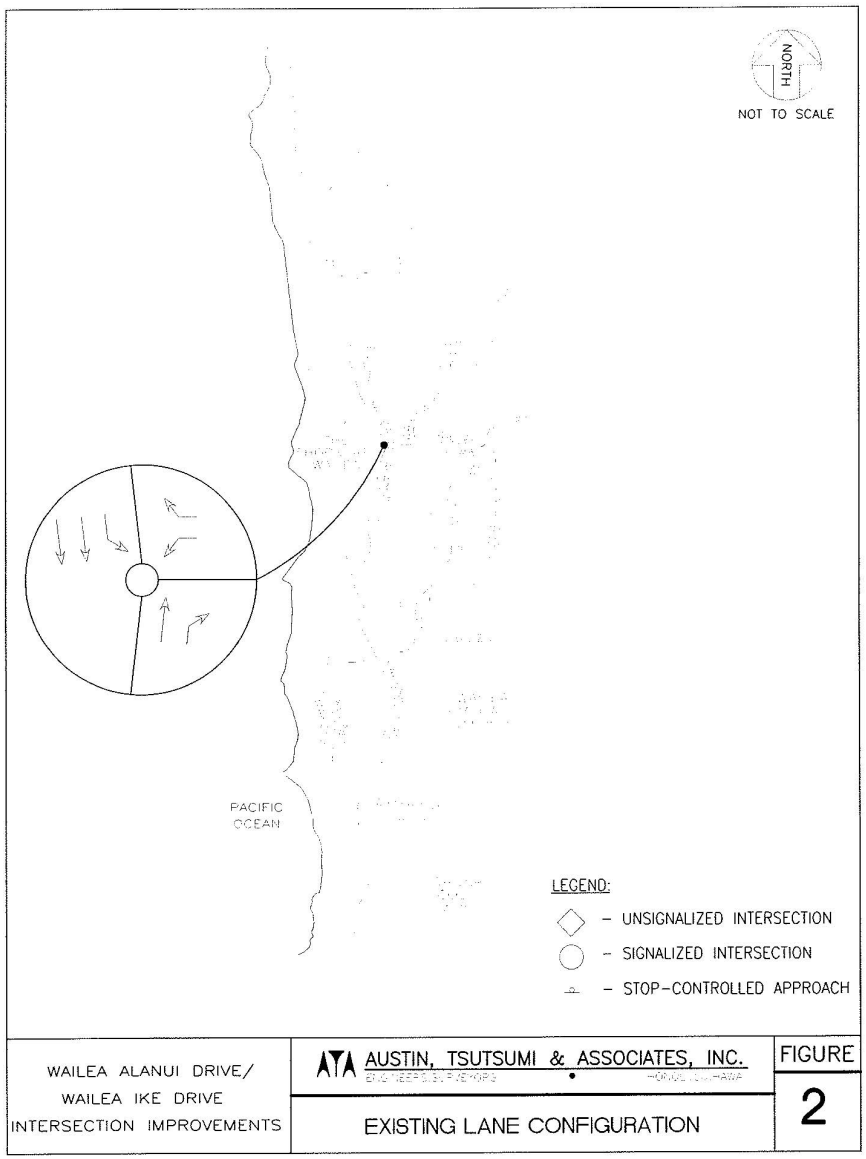
Wailea Alanui Drive/Wailea Ike Drive - forms a signalized tee-intersection with Wailea Ike Drive as the stem of the "tee." The lane configuration at each approach is as follows:

- Northbound approach: Accommodated by a through lane, and an exclusive right-turn lane. The right-turn lane is controlled by a yield sign.
- Southbound approach: Accommodated by two through lanes and an exclusive left-turn lane.
- Westbound approach: Accommodated by an exclusive left-turn lane and an exclusive right-turn lane controlled by a stop sign.

Figure 2 shows the existing lane configuration at the study intersections.

### B. Existing Traffic Volumes

The AM and PM Peak hour turning movement data utilized in this report were collected on Tuesday June 24, 2008 and Wednesday June 25, 2008 at the Wailea Alanui Drive/Wailea Ike Drive signalized intersection. Based on traffic count data, the peak hours of traffic were determined to be from 7:00 AM to 8:00 AM and 4:00 PM to 5:00 PM on the weekdays. The traffic count data is provided in Appendix A.




| | | |
|---|---|---|
| WAILEA ALANUI DRIVE/ WAILEA IKE DRIVE INTERSECTION IMPROVEMENTS | AUSTIN, TSUTSUMI & ASSOCIATES, INC. | FIGURE |
| | EXISTING LANE CONFIGURATION | 2 |



## C. Existing Traffic Conditions Analysis and Observations

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, delays and corresponding Levels of Service were utilized in this study. LOS definitions for signalized intersections are provided in Appendix B.

### Methodology

Analysis for the Wailea Alanui Drive/Wailea Ike Drive intersection were performed using the traffic analysis software Synchro, which is able to prepare Highway Capacity Manual (HCM) reports. The reports contain quantitative delay results, as based on intersection lane geometry, signal timing, and hourly traffic volume.

Based on the vehicular delay at the intersection, a LOS is assigned (see Appendix B) as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.

### Field Observations

The general path vehicles utilize when traveling between areas north of Wailea and south in Makena are Pi'ilani Highway, Wailea Ike Drive, and Wailea Alanui Drive. Therefore, at the Wailea Alanui Drive/Wailea Ike Drive intersection, the turning movement volumes are the higher volumes.

In its present configuration, Wailea Alanui Drive/Wailea Ike Drive intersection operates well. The westbound left-turn movement varied from 3 to 8 cars per cycle, but all vehicles were able to clear the intersection during one cycle length.

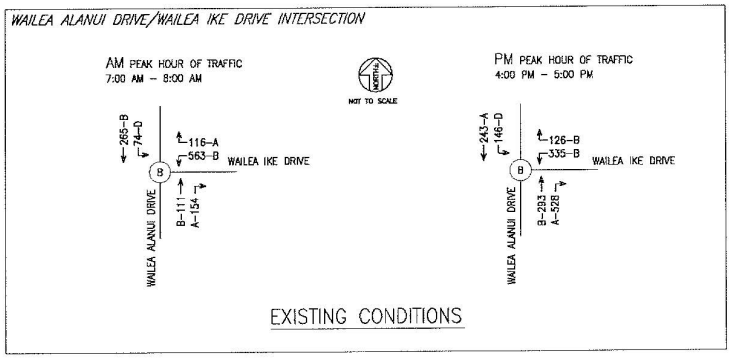
### Results of Intersection Analysis

The analysis and observations described below are based on prevailing conditions during the time at which the data was collected. Hereinafter,

observations that are expressed as ongoing and current shall represent the conditions that prevailed at the time at which the data was collected.

During the AM and PM peak hour of traffic all movements operate at LOS D or better. Figure 3 shows the existing traffic volumes and LOS at the Wailea Alanui Drive/Wailea Ike Drive intersection.

Figure 3: Existing Conditions Traffic Volumes and LOS




## III. FUTURE TRAFFIC FORECAST

Year 2022 was selected to reflect the full build-out of Honua'ula, Wailea Resort and Makena Resort. Traffic projections were formulated by applying a defacto growth rate and trips generated by known developments in the vicinity of the Project.

### A. Defacto Growth Rate

The growth rate of an area is the natural percentage by which an area will grow over a period of time. The Maui Travel Demand Forecasting Model was utilized to determine a defacto growth rate in the vicinity of the Project. Since Honua'ula, Wailea Resort, and Makena Resort are the main projects proposed in the Wailea/Makena area, data from the Maui Travel Demand Forecasting Model was adjusted to project growth excluding these three projects. The results from the Maui Travel Demand Forecasting Model show a defacto growth rate of





approximately 0.5 percent per year. Therefore, a defacto growth rate 7.2 percent for Year 2022 was applied to existing traffic volumes.

### B. Traffic Forecasts for Known Developments

Known developments to be constructed or completed by Year 2022 are Honua'ula, Wailea Resort and Makena Resort, and the Grand Wailea Resort Renovations which are further described below. Peak hour vehicular trips were estimated by applying appropriate trip generation rates from the Trip Generation, 8th Edition, published by the Institute of Transportation Engineers (ITE) and the Resort Residential Trip Generation Rate Development prepared by Parsons Brinkerhoff Quade & Douglas, Inc. dated October 2, 2006 as accepted by the SDOT, (herein after referred to as PB resort rate). Vehicular trips generated from the known developments were distributed to the roadway network based on distribution obtained from the Maui Travel Demand Forecasting Model.

Honua'ula is comprised of the area east of Pi'ilani Highway and Wailea Ike Drive, south of Maui Meadows Subdivision and east of Wailea Road. Honua'ula proposes to construct approximately 26,000 square feet of Office Space, 74,000 square feet of Commercial space, 450 Multi-Family Affordable Units, 300 Multi-Family Market Rate Units, and 400 Single-Family Units. An estimation of the percentage of internal trip capture was obtained from the ITE Trip Generation Handbook, Second Edition, which was determined to be approximately 15 percent. The internal trip capture was only applied to the PM peak hour of traffic since commercial areas are typically closed during the AM peak hour of traffic. The 15 percent internal trip capture rate was applied to the number of residential trips and the result was applied to the commercial trips, in order to match the number of internal trips traveling between the residential areas and commercial areas. Internal trips are assumed within Honua'ula.

Wailea Resort is comprised of the area west of Pi'ilani Highway, north of Makena Road, east of Makena Alanui and the Pacific Ocean, and south of Kilohana Drive. Currently, Wailea Resort has constructed most of its parcels. Wailea Resort proposes to construct 12,000 square feet of Grocery space, 30,850 square feet of Retail space, 12,200 square feet of Office space, 8,340

square feet of Restaurant space, 164 Multi-Family Units, and 234 Single-Family Units.

Within the Wailea Resort, Wailea Gateway and Kai Malu (MF-8) was under construction at the time of data collection. Since traffic studies for these Wailea Resort developments were completed, trip generation volumes and distribution were obtained from the Traffic Impact Analysis Report for Wailea MF-8, dated May 13, 2004 and the Traffic Impact Analysis Report for Wailea Gateway, dated March 6, 2006, both prepared by Phillip Rowell and Associates. Kai Malu (MF-8) is located south of Okolani Drive, east of Wailea Alanui Drive, and north of Pi'ilani Highway, with access from Okolani Drive. Kai Malu (MF-8) proposes to construct 153 multi-family units by Year 2016. Wailea Gateway is located on the northwest corner of the Pi'ilani Highway/Wailea Ike Drive intersection with access from Wailea Ike Drive. Wailea Gateway proposes to construct 32,000 square feet of commercial space to be utilized by small businesses, small restaurants, and small retail shops.

Also within the Wailea Resort, Grand Wailea Resort proposes to renovate two existing restaurants, construct 310 additional hotel rooms, an additional bar, a new cultural center and garden, and additional parking spaces by Year 2016. The Grand Wailea Resort is located south of the Shops at Wailea, east of the Pacific Ocean and west of Wailea Alanui Drive. Trip generation volumes and distribution were obtained from the Traffic Impact Report for the Grand Wailea Resort Renovation, dated January 2009, prepared by Wilson Okamoto Corporation.

Makena Resort is comprised of the area east of the Pacific Ocean and south of Makena Road. Makena Resort proposes to construct 179 Multi-Family Luxury Units and 370 Single-Family Luxury Units.

Table 1 shows the Known Developments Land Uses and Trip Generation and Table 2 shows the Known Developments Trip Generation Rates for the known developments which utilized the ITE Trip Generation, 8th Edition.



**Table 1**
**Known Development's Land Uses and Trip Generation**

| | AM PEAK HOUR | | | PM PEAK HOUR | | |
|---|---|---|---|---|---|---|
| | IN | OUT | TOTAL | IN | OUT | TOTAL |
| WAILEA RESORT * | | | | | | |
| SF-8 | 20 | 57 | 77 | 64 | 37 | 101 |
| MF-6 | 13 | 37 | 50 | 41 | 23 | 64 |
| MF-10 | 118 | 98 | 216 | 207 | 242 | 449 |
| MF-16 | 6 | 17 | 23 | 15 | 8 | 23 |
| MF-7 | 8 | 34 | 42 | 33 | 15 | 48 |
| SF-S | 10 | 27 | 37 | 28 | 16 | 44 |
| SF-11 | 6 | 15 | 21 | 14 | 7 | 21 |
| MF-15 | 7 | 33 | 40 | 31 | 15 | 46 |
| MF-12/13/SF-7A | 49 | 118 | 167 | 227 | 174 | 401 |
| MF-9 | 11 | 49 | 60 | 47 | 23 | 70 |
| Business I | 9 | 43 | 52 | 41 | 20 | 61 |
| **SUBTOTAL** | **257** | **528** | **785** | **748** | **580** | **1328** |
| | | | | | | |
| MAKENA RESORT ** | | | | | | |
| Single-Family Resort Units | 108 | 67 | 175 | 91 | 84 | 175 |
| Multi-Family Resort Units | 50 | 62 | 112 | 74 | 96 | 170 |
| **SUBTOTAL** | **158** | **129** | **287** | **165** | **180** | **345** |
| | | | | | | |
| HONUA'ULA *** | | | | | | |
| VMX (General Office Building) | 57 | 7 | 64 | 19 | 89 | 108 |
| VMX (Commercial) | 100 | 62 | 162 | 303 | 313 | 616 |
| MF Affordable Housing | 8 | 34 | 42 | 33 | 15 | 48 |
| MF Townhouse | 5 | 20 | 25 | 20 | 9 | 29 |
| SF Detached Housing | 35 | 24 | 59 | 30 | 29 | 59 |
| MF Luxury Villas | 15 | 21 | 36 | 28 | 26 | 54 |
| **SUBTOTAL** | **220** | **168** | **388** | **433** | **481** | **914** |
| **YEAR 2016 TOTAL** | **635** | **825** | **1460** | **1346** | **1241** | **2587** |

DU = Dwelling Units
SF = Single-Family
MF = Multi-Family
VMX = Village Mixed Use
* Trips generated by these developments were estimated by applying appropriate rates contained in the Institute of Transportation Engineers, Trip Generation, 8th Edition.
** Makena Resort Trips generated by these developments were estimated by applying Parsons Brinckerhoff's (PB) 2006 single-family and multi-family resort residential trip rates.
*** Both ITE Trip Generation Rates and PB rates were used to generate trips

*Note: Does not include trips generated by Kai Malu Project (MF-8), Wailea Gateway, and Wailea Resort Renovations. Volumes obtained by Traffic Studies.*

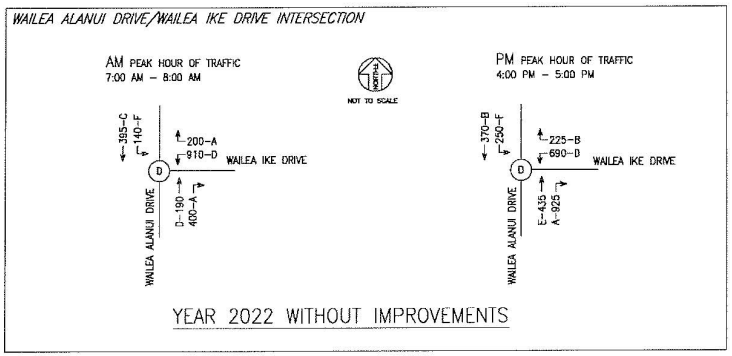
## III. TRAFFIC CONDITIONS AND ANALYSIS

### A. Year 2022 WITHOUT Project Traffic and Analysis

With projected traffic volumes, due to a defacto growth rate of 0.5 percent and the generated trips from the known developments, analyses show for the Wailea Alanui Drive/Wailea Ike Drive intersection the southbound left-turn will operate at LOS F during the AM and PM peak hour of traffic, without the Project. Additionally, during the PM peak hour of traffic, the northbound through movement will operate at LOS E.

Figure 4 shows the Year 2022 Without Project Traffic Volumes and LOS at the Wailea Alanui Drive/Wailea Ike Drive intersection.

Figure 4: Year 2022 WITHOUT Project Traffic Volumes and LOS




### B. Year 2022 WITH Project Traffic and Analysis

Per Honua'ula's Zoning Condition No. 2e, the Wailea Alanui Drive/Wailea Ike Drive intersection will be improved to the following lane configuration:

- Northbound Approach: Provide an exclusive through lane and two exclusive right-turn lanes. Signalize the two exclusive right-turn lanes.
- Southbound Approach: Provide an exclusive left-turn lane and two exclusive through lanes.



**Table 2**
**Known Developments's Trip Generation Rates**

| Land Use | Independent Variable (X) | Average Daily Weekday Rate | AM Peak Hour of Traffic | | PM Peak Hour of Traffic | |
|---|---|---|---|---|---|---|
| | | | Rate | % Entering | Rate | % Entering |
| Single-Family Detached Housing (ITE Land Use 210) | DU | Ln(T) = 0.92Ln(X) + 2.71 | T = 0.70(X) + 9.74 | 25% | Ln(T) = 0.90Ln(X) + 0.51 | 63% |
| Residential Condominium/Townhouse (ITE Land Use 230) | DU | Ln(T) = 0.87Ln(X) + 2.46 | Ln(T) = 0.80Ln(X) + 0.26 | 61% | Ln(T) = 0.82Ln(X) + 0.32 | 67% |
| Supermarket (ITE Land Use 850) | 1000 SF GFA | Ln(T) = 66.95Ln(X) + 1391.56 | 3.59 | 63% | 10.5 | 51% |
| Retail (ITE Land Use 814) | 1000 SF GFA | Ln(T) = 42.78Ln(X) + 37.66 | Ln(T) = 4.91Ln(X) + 115.59 | 48% | Ln(T) = 2.40Ln(X) + 21.48 | 44% |
| General Office Building (ITE Land Use 710) | 1000 SF GFA | Ln(T) = 0.77Ln(X) + 3.65 | Ln(T) = 0.80Ln(X) + 1.55 | 88% | Ln(T) = 1.12Ln(X) + 78.81 | 17% |
| Restaurant (ITE Land Use 932) | 1000 SF GFA | 127.15 | 11.52 | 52% | 11.15 | 59% |
| Shopping Center (ITE Land Use 820) | 1000 SF GFA | Ln(T) = 0.65Ln(X) + 5.83 | 1.00 | 61% | Ln(T) = 0.67Ln(X) + 3.37 | 49% |
| Multi-Family Resort Residential * (PB Trip Generated Rate) | DU | N/A | 0.22 | 40% | 0.34 | 49% |
| Single-Family Resort Residential * (PB Trip Generated Rate) | DU | N/A | 0.46 | 58% | 0.46 | 50% |

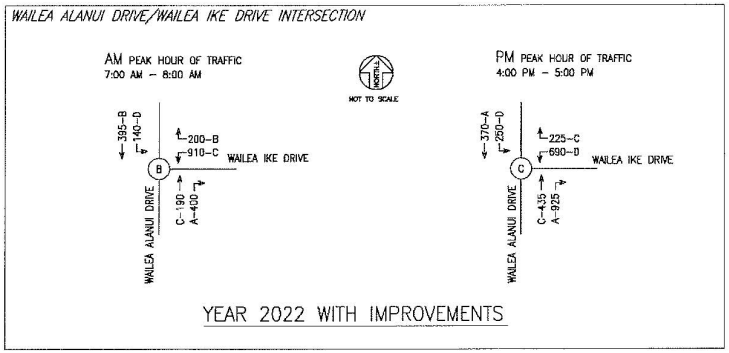
DU = Dwelling Units
SF GFA = Square Feet of Gross Floor Area
T = Number of Trip Ends
X = Independent Variable

Source: Institute of Transportation Engineers, Trip Generation, 8th Edition.
Source: * Parsons Brinckerhoff's 2006 single-family and multi-family resort residential trip rates.

- Westbound Approach: Provide two exclusive left-turn lanes and an exclusive right-turn lane.

With the Project, the Wailea Alanui Drive/Wailea Ike Drive intersection will operate at LOS D or better during both the AM and PM peak hours of traffic. Figure 5 shows the Year 2022 With Project Traffic Volumes and LOS at the Wailea Alanui Drive/Wailea Ike Drive intersection.

Figure 5: Year 2022 WITH Project Traffic Volumes and LOS




Appendix D shows the level-of-service summary table at the Wailea Alanui Drive/Wailea Ike Drive intersection.

## IV. Summary and Recommendations

As a Zoning Condition, Honua'ula is required to improve the Wailea Alanui Drive/Wailea Ike Drive intersection. Improvements to the intersection are as follows:

- Northbound Approach: Provide an exclusive through lane and two exclusive right-turn lanes. Signalize the two exclusive right-turn lanes.
- Westbound Approach: Provide two exclusive left-turn lanes and an exclusive right-turn lane.

The existing conditions show that the intersection operates well at LOS D during both the AM and PM peak hours of traffic. Field observations show that vehicles would





queue on the westbound left-turn movement however, clear within one signal cycle.

It is anticipated that full-build out of Honua'ula, Wailea Resort, and Makena Resort will be completed by Year 2022. Additionally, it is assumed, based on the Maui Travel Demand Forecasting Model, a defacto growth rate of 0.5 percent will occur annually.

With Year 2022 projected traffic volumes, the Wailea Alanui Drive/Wailea Ike Drive intersection southbound left-turn will operate at LOS F during the AM and PM peak hours of traffic without the Project. Additionally the northbound through movement will operate at LOS E during the PM peak hour of traffic.

With Year 2022 projected traffic volumes and the Project, all movements will operate at LOS D or better during the AM and PM peak hours of traffic. Therefore, with the Project, the Wailea Alanui Drive/Wailea Ike Drive will operate sufficiently and no further improvements are recommended.

## REFERENCES

1. Institute of Transportation Engineers, Trip Generation, 8th Edition
2. Institute of Transportation Engineers, Trip Generation Handbook, and ITE Recommended Practice, 2001
3. Phillip Rowell and Associates, Traffic Impact Analysis Report for Wailea Gateway, March 6, 2006.
4. Phillip Rowell and Associates, Traffic Impact Analysis Report for Wailea MF-8, May 13, 2004.
5. Transportation Research Board, Highway Capacity Manual, 2000.
6. Wilson Okamoto Corporation, Traffic Impact Report for the Grand Wailea Resort Renovation, January 2009.



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# APPENDICES

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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# APPENDIX A

## TRAFFIC COUNT DATA

Austin, Tsutsumi and Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817
Ph: 533-3646 Fax: 526-1267

File Name : Wailea Alanui - Wailea Ike AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 1

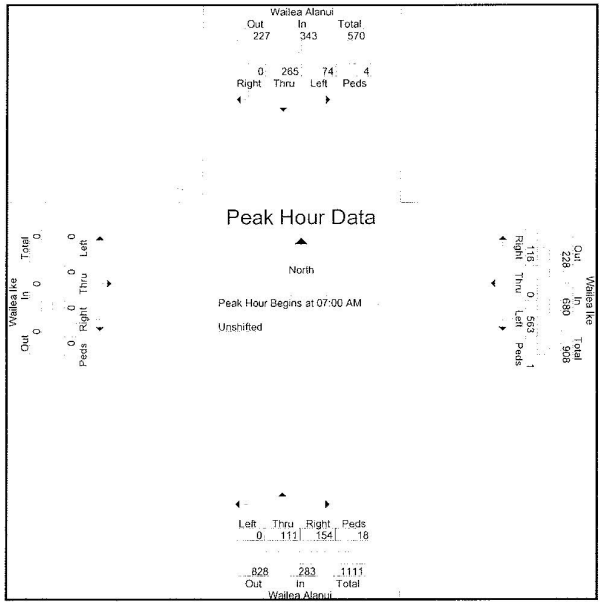
Groups Printed- Unshifted

| | Wailea Alanui From North | | | | Wailea Ike From East | | | | Wailea Alanui From South | | | | Wailea Ike From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 06:30 AM | 0 | 49 | 11 | 1 | 22 | 0 | 95 | 1 | 36 | 18 | 0 | 4 | 0 | 0 | 0 | 0 | 237 |
| 06:45 AM | 0 | 60 | 10 | 0 | 16 | 0 | 147 | 0 | 25 | 10 | 0 | 8 | 0 | 0 | 0 | 0 | 276 |
| Total | 0 | 109 | 21 | 1 | 38 | 0 | 242 | 1 | 61 | 28 | 0 | 12 | 0 | 0 | 0 | 0 | 513 |
| 07:00 AM | 0 | 57 | 20 | 2 | 13 | 0 | 140 | 0 | 43 | 23 | 0 | 1 | 0 | 0 | 0 | 0 | 299 |
| 07:15 AM | 0 | 65 | 20 | 1 | 22 | 0 | 129 | 0 | 37 | 19 | 0 | 4 | 0 | 0 | 0 | 0 | 297 |
| 07:30 AM | 0 | 76 | 21 | 1 | 45 | 0 | 144 | 1 | 27 | 39 | 0 | 10 | 0 | 0 | 0 | 0 | 364 |
| 07:45 AM | 0 | 67 | 13 | 0 | 36 | 0 | 150 | 0 | 47 | 30 | 0 | 3 | 0 | 0 | 0 | 0 | 346 |
| Total | 0 | 265 | 74 | 4 | 116 | 0 | 563 | 1 | 154 | 111 | 0 | 18 | 0 | 0 | 0 | 0 | 1306 |
| 08:00 AM | 0 | 45 | 16 | 0 | 20 | 2 | 110 | 0 | 32 | 26 | 0 | 3 | 0 | 0 | 0 | 0 | 254 |
| 08:15 AM | 0 | 50 | 20 | 0 | 37 | 0 | 75 | 0 | 37 | 31 | 0 | 4 | 0 | 0 | 0 | 0 | 254 |
| Grand Total | 0 | 469 | 131 | 5 | 211 | 2 | 990 | 2 | 284 | 196 | 0 | 37 | 0 | 0 | 0 | 0 | 2327 |
| Apprch % | 0 | 77.5 | 21.7 | 0.8 | 17.5 | 0.2 | 82.2 | 0.2 | 54.9 | 37.9 | 0 | 7.2 | 0 | 0 | 0 | 0 | |
| Total % | 0 | 20.2 | 5.6 | 0.2 | 9.1 | 0.1 | 42.5 | 0.1 | 12.2 | 8.4 | 0 | 1.6 | 0 | 0 | 0 | 0 | |

Austin, Tsutsumi and Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817
*Ph: 533-3646 Fax: 526-1267*

File Name : Wailea Alanui - Wailea Ike AM
Site Code : 00000000
Start Date : 6/25/2008
Page No : 2

| | Wailea Alanui From North | | | | | Wailea Ike From East | | | | | Wailea Alanui From South | | | | | Wailea Ike 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 07:00 AM to 07:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | 0 | 57 | 20 | 2 | 79 | 13 | 0 | 140 | 0 | 153 | 43 | 23 | 0 | 1 | 67 | 0 | 0 | 0 | 0 | 0 | 299 |
| 07:15 AM | 0 | 65 | 20 | 1 | 86 | 22 | 0 | 129 | 0 | 151 | 37 | 19 | 0 | 4 | 60 | 0 | 0 | 0 | 0 | 0 | 297 |
| 07:30 AM | 0 | 76 | 21 | 1 | 98 | 45 | 0 | 144 | 1 | 190 | 27 | 39 | 0 | 10 | 76 | 0 | 0 | 0 | 0 | 0 | 364 |
| 07:45 AM | 0 | 67 | 13 | 0 | 80 | 36 | 0 | 150 | 0 | 186 | 47 | 30 | 0 | 3 | 80 | 0 | 0 | 0 | 0 | 0 | 346 |
| Total Volume | 0 | 265 | 74 | 4 | 343 | 116 | 0 | 563 | 1 | 680 | 154 | 111 | 0 | 18 | 283 | 0 | 0 | 0 | 0 | 0 | 1306 |
| % App. Total | 0 | 77.3 | 21.6 | 1.2 | | 17.1 | 0 | 82.8 | 0.1 | | 54.4 | 39.2 | 0 | 6.4 | | 0 | 0 | 0 | 0 | | |
| PHF | .000 | .872 | .881 | .500 | .875 | .644 | .000 | .938 | .250 | .895 | .819 | .712 | .000 | .450 | .884 | .000 | .000 | .000 | .000 | .000 | .897 |




Austin, Tsutsumi and Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817
*Ph: 533-3646 Fax: 526-1267*

File Name : Wailea Alanui - Wailea Ike PM
Site Code : 00000000
Start Date : 6/24/2008
Page No : 1

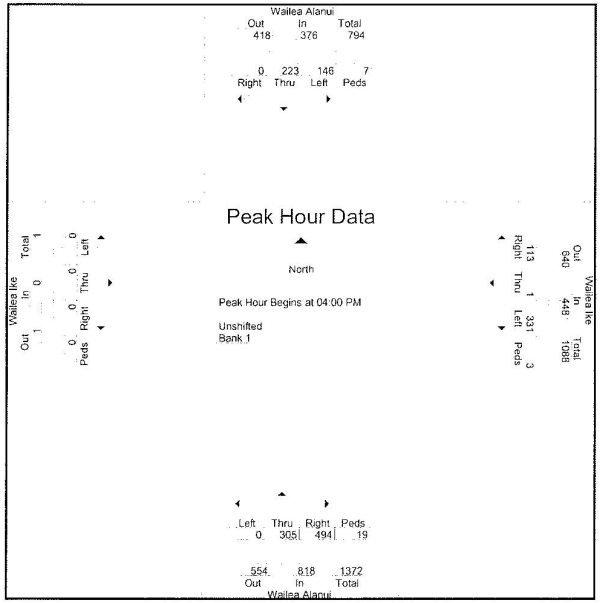
Groups Printed- Unshifted - Bank 1

| | Wailea Alanui From North | | | | Wailea Ike From East | | | | Wailea Alanui From South | | | | Wailea Ike From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 03:15 PM | 0 | 53 | 29 | 1 | 31 | 0 | 79 | 1 | 110 | 72 | 0 | 5 | 0 | 0 | 0 | 0 | 381 |
| 03:30 PM | 0 | 58 | 29 | 3 | 37 | 0 | 75 | 0 | 121 | 73 | 1 | 5 | 0 | 0 | 0 | 0 | 402 |
| 03:45 PM | 0 | 60 | 23 | 0 | 34 | 0 | 86 | 0 | 116 | 56 | 0 | 1 | 0 | 0 | 0 | 0 | 376 |
| Total | 0 | 171 | 81 | 4 | 102 | 0 | 240 | 1 | 347 | 201 | 1 | 11 | 0 | 0 | 0 | 0 | 1159 |
| 04:00 PM | 0 | 56 | 46 | 2 | 32 | 0 | 99 | 0 | 162 | 89 | 0 | 1 | 0 | 0 | 0 | 0 | 487 |
| 04:15 PM | 0 | 76 | 35 | 2 | 31 | 1 | 73 | 3 | 128 | 71 | 0 | 6 | 0 | 0 | 0 | 0 | 426 |
| 04:30 PM | 0 | 51 | 42 | 3 | 29 | 0 | 77 | 0 | 122 | 77 | 0 | 9 | 0 | 0 | 0 | 0 | 410 |
| 04:45 PM | 0 | 40 | 23 | 0 | 21 | 0 | 82 | 0 | 82 | 68 | 0 | 3 | 0 | 0 | 0 | 0 | 319 |
| Total | 0 | 223 | 146 | 7 | 113 | 1 | 331 | 3 | 494 | 305 | 0 | 19 | 0 | 0 | 0 | 0 | 1642 |
| 05:00 PM | 0 | 42 | 37 | 0 | 24 | 0 | 54 | 0 | 122 | 82 | 0 | 3 | 0 | 0 | 0 | 0 | 364 |
| 05:15 PM | 0 | 37 | 26 | 0 | 24 | 0 | 47 | 0 | 96 | 69 | 0 | 1 | 0 | 0 | 0 | 0 | 300 |
| Grand Total | 0 | 473 | 290 | 11 | 263 | 1 | 672 | 4 | 1059 | 657 | 1 | 34 | 0 | 0 | 0 | 0 | 3465 |
| Apprch % | 0 | 61.1 | 37.5 | 1.4 | 28 | 0.1 | 71.5 | 0.4 | 60.5 | 37.5 | 0.1 | 1.9 | 0 | 0 | 0 | 0 | |
| Total % | 0 | 13.7 | 8.4 | 0.3 | 7.6 | 0 | 19.4 | 0.1 | 30.6 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | |
| Unshifted | 0 | 473 | 290 | 11 | 263 | 1 | 672 | 4 | 1059 | 657 | 1 | 34 | 0 | 0 | 0 | 0 | 3465 |
| % Unshifted | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 0 | 0 | 100 |
| Bank 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bank 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Austin, Tsutsumi and Associates
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817
*Ph: 533-3646 Fax: 526-1267*

File Name : Wailea Alanui - Wailea Ike PM
Site Code : 00000000
Start Date : 6/24/2008
Page No : 2

| | Wailea Alanui From North | | | | | Wailea Ike From East | | | | | Wailea Alanui From South | | | | | Wailea Ike 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 04:00 PM to 04:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 56 | 46 | 2 | 104 | 32 | 0 | 99 | 0 | 131 | 162 | 89 | 0 | 1 | 252 | 0 | 0 | 0 | 0 | 0 | 487 |
| 04:15 PM | 0 | 76 | 35 | 2 | 113 | 31 | 1 | 73 | 3 | 108 | 128 | 71 | 0 | 6 | 205 | 0 | 0 | 0 | 0 | 0 | 426 |
| 04:30 PM | 0 | 51 | 42 | 3 | 96 | 29 | 0 | 77 | 0 | 106 | 122 | 77 | 0 | 9 | 208 | 0 | 0 | 0 | 0 | 0 | 410 |
| 04:45 PM | 0 | 40 | 23 | 0 | 63 | 21 | 0 | 82 | 0 | 103 | 82 | 68 | 0 | 3 | 153 | 0 | 0 | 0 | 0 | 0 | 319 |
| Total Volume | 0 | 223 | 146 | 7 | 376 | 113 | 1 | 331 | 3 | 448 | 494 | 305 | 0 | 19 | 818 | 0 | 0 | 0 | 0 | 0 | 1642 |
| % App. Total | 0 | 59.3 | 38.8 | 1.9 | | 25.2 | 0.2 | 73.9 | 0.7 | | 60.4 | 37.3 | 0 | 2.3 | | 0 | 0 | 0 | 0 | | |
| PHF | .000 | .734 | .793 | .583 | .832 | .883 | .250 | .836 | .250 | .855 | .762 | .857 | .000 | .528 | .812 | .000 | .000 | .000 | .000 | .000 | .843 |

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# 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.



# APPENDIX C

LEVEL OF SERVICE CALCULATIONS

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# APPENDIX C

## LEVEL OF SERVICE CALCULATIONS

- Existing Conditions

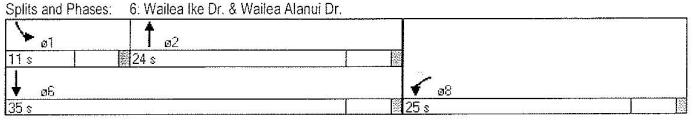


| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 563 | 116 | 111 | 154 | 74 | 265 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Detector Phase | 8 | 8 | 2 | | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 25.0 | 25.0 | 24.0 | 0.0 | 11.0 | 35.0 |
| Total Split (%) | 41.7% | 41.7% | 40.0% | 0.0% | 18.3% | 58.3% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | None | | None | None |
| Act Effct Green (s) | 20.5 | 20.5 | 8.8 | 45.4 | 5.9 | 14.7 |
| Actuated g/C Ratio | 0.45 | 0.45 | 0.19 | 1.00 | 0.12 | 0.32 |
| v/c Ratio | 0.77 | 0.16 | 0.34 | 0.11 | 0.38 | 0.25 |
| Control Delay | 22.7 | 3.3 | 20.1 | 0.1 | 26.6 | 11.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.7 | 3.3 | 20.1 | 0.1 | 26.6 | 11.0 |
| LOS | C | A | C | A | C | B |
| Approach Delay | 19.4 | | 8.5 | | | 14.4 |
| Approach LOS | B | | A | | | B |

**Intersection Summary**

Cycle Length: 60
Actuated Cycle Length: 45.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 15.8 — Intersection LOS: B
Intersection Capacity Utilization 50.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Wailea Ike Dr. & Wailea Alanui Dr.



## HCM Signalized Intersection Capacity Analysis
## 6: Wailea Ike Dr. & Wailea Alanui Dr.

5/30/2009

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 563 | 116 | 111 | 154 | 74 | 265 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 612 | 126 | 121 | 167 | 80 | 288 |
| RTOR Reduction (vph) | 0 | 72 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 612 | 54 | 121 | 167 | 80 | 288 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Actuated Green, G (s) | 20.5 | 20.5 | 8.8 | 47.5 | 3.2 | 17.0 |
| Effective Green, g (s) | 20.5 | 20.5 | 8.8 | 47.5 | 3.2 | 17.0 |
| Actuated g/C Ratio | 0.43 | 0.43 | 0.19 | 1.00 | 0.07 | 0.36 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 764 | 683 | 345 | 1583 | 119 | 1267 |
| v/s Ratio Prot | c0.35 | | c0.06 | | c0.05 | 0.08 |
| v/s Ratio Perm | | 0.03 | | 0.11 | | |
| v/c Ratio | 0.80 | 0.08 | 0.35 | 0.11 | 0.67 | 0.23 |
| Uniform Delay, d1 | 11.7 | 7.9 | 16.9 | 0.0 | 21.6 | 10.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.0 | 0.1 | 0.6 | 0.1 | 13.9 | 0.1 |
| Delay (s) | 17.8 | 8.0 | 17.5 | 0.1 | 35.6 | 10.8 |
| Level of Service | B | A | B | A | D | B |
| Approach Delay (s) | 16.1 | | 7.4 | | | 16.1 |
| Approach LOS | B | | A | | | B |

### Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 14.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 47.5 | Sum of lost time (s) | 15.0 |
| Intersection Capacity Utilization | 50.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



## Timings
## 6: Wailea Ike Dr. & Wailea Alanui Dr.

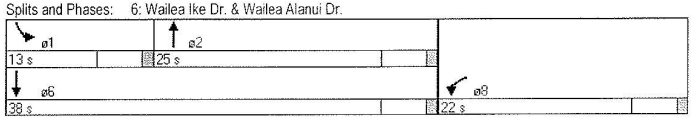
5/30/2009

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 335 | 126 | 293 | 528 | 146 | 243 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Detector Phase | 8 | 8 | 2 | | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 22.0 | 22.0 | 25.0 | 0.0 | 13.0 | 38.0 |
| Total Split (%) | 36.7% | 36.7% | 41.7% | 0.0% | 21.7% | 63.3% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | None | | None | None |
| Act Effct Green (s) | 14.8 | 14.8 | 14.1 | 49.2 | 7.8 | 23.6 |
| Actuated g/C Ratio | 0.30 | 0.30 | 0.29 | 1.00 | 0.15 | 0.48 |
| v/c Ratio | 0.68 | 0.24 | 0.60 | 0.36 | 0.59 | 0.16 |
| Control Delay | 25.5 | 5.0 | 21.7 | 0.6 | 34.5 | 7.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 25.5 | 5.0 | 21.7 | 0.6 | 34.5 | 7.0 |
| LOS | C | A | C | A | C | A |
| Approach Delay | 19.9 | | 8.1 | | | 17.4 |
| Approach LOS | B | | A | | | B |

### Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 49.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 13.5 — Intersection LOS: B
Intersection Capacity Utilization 54.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Wailea Ike Dr. & Wailea Alanui Dr.



HCM Signalized Intersection Capacity Analysis
6: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 335 | 126 | 293 | 528 | 146 | 243 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 364 | 137 | 318 | 574 | 159 | 264 |
| RTOR Reduction (vph) | 0 | 96 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 364 | 41 | 318 | 574 | 159 | 264 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Actuated Green, G (s) | 14.8 | 14.8 | 14.1 | 49.7 | 5.8 | 24.9 |
| Effective Green, g (s) | 14.8 | 14.8 | 14.1 | 49.7 | 5.8 | 24.9 |
| Actuated g/C Ratio | 0.30 | 0.30 | 0.28 | 1.00 | 0.12 | 0.50 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 527 | 471 | 529 | 1583 | 207 | 1773 |
| v/s Ratio Prot | c0.21 | | c0.17 | | c0.09 | 0.07 |
| v/s Ratio Perm | | 0.03 | | 0.36 | | |
| v/c Ratio | 0.69 | 0.09 | 0.60 | 0.36 | 0.77 | 0.15 |
| Uniform Delay, d1 | 15.4 | 12.6 | 15.4 | 0.0 | 21.3 | 6.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.9 | 0.1 | 1.9 | 0.6 | 15.6 | 0.0 |
| Delay (s) | 19.3 | 12.7 | 17.3 | 0.6 | 36.9 | 6.7 |
| Level of Service | B | B | B | A | D | A |
| Approach Delay (s) | 17.5 | | 6.6 | | | 18.1 |
| Approach LOS | B | | A | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| HCM Average Control Delay | 12.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 49.7 | 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



AUSTIN TSUTSUMI & ASSOCIATES, INC
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# APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Year 2022 Traffic Operations WITHOUT Project

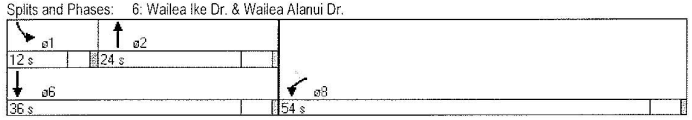
Timings
6: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 910 | 200 | 190 | 400 | 140 | 395 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Detector Phase | 8 | 8 | 2 | | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 54.0 | 54.0 | 24.0 | 0.0 | 12.0 | 36.0 |
| Total Split (%) | 60.0% | 60.0% | 26.7% | 0.0% | 13.3% | 40.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | None | | None | None |
| Act Effct Green (s) | 49.1 | 49.1 | 14.3 | 85.4 | 8.0 | 26.3 |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.17 | 1.00 | 0.09 | 0.31 |
| v/c Ratio | 0.97 | 0.22 | 0.66 | 0.27 | 0.92 | 0.39 |
| Control Delay | 42.6 | 2.2 | 43.9 | 0.4 | 92.8 | 24.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 42.6 | 2.2 | 43.9 | 0.4 | 92.8 | 24.2 |
| LOS | D | A | D | A | F | C |
| Approach Delay | 35.3 | | 14.4 | | | 42.2 |
| Approach LOS | D | | B | | | D |

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 85.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 31.5 Intersection LOS: C
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Wailea Ike Dr. & Wailea Alanui Dr.






HCM Signalized Intersection Capacity Analysis
6: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 910 | 200 | 190 | 400 | 140 | 395 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 989 | 217 | 207 | 435 | 152 | 429 |
| RTOR Reduction (vph) | 0 | 90 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 989 | 127 | 207 | 435 | 152 | 429 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Actuated Green, G (s) | 49.1 | 49.1 | 14.3 | 85.4 | 8.0 | 26.3 |
| Effective Green, g (s) | 49.1 | 49.1 | 14.3 | 85.4 | 8.0 | 26.3 |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.17 | 1.00 | 0.09 | 0.31 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 4.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1018 | 910 | 312 | 1583 | 166 | 1090 |
| v/s Ratio Prot | c0.56 | | c0.11 | | c0.09 | 0.12 |
| v/s Ratio Perm | | 0.08 | | 0.27 | | |
| v/c Ratio | 0.97 | 0.14 | 0.66 | 0.27 | 0.92 | 0.39 |
| Uniform Delay, d1 | 17.5 | 8.4 | 33.3 | 0.0 | 38.4 | 23.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 21.5 | 0.1 | 5.2 | 0.4 | 45.7 | 0.2 |
| Delay (s) | 38.9 | 8.5 | 38.5 | 0.4 | 84.1 | 23.5 |
| Level of Service | D | A | D | A | F | C |
| Approach Delay (s) | 33.5 | | 12.7 | | | 39.4 |
| Approach LOS | C | | B | | | D |

Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 29.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 85.4 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 79.8% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

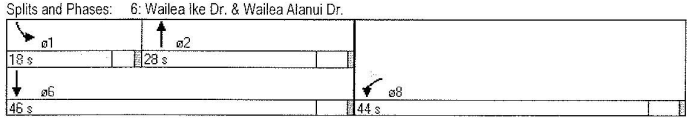
c Critical Lane Group

Timings
6: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 690 | 225 | 435 | 925 | 250 | 370 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Detector Phase | 8 | 8 | 2 | | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 44.0 | 44.0 | 28.0 | 0.0 | 18.0 | 46.0 |
| Total Split (%) | 48.9% | 48.9% | 31.1% | 0.0% | 20.0% | 51.1% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | None | | None | None |
| Act Effct Green (s) | 39.0 | 39.0 | 23.0 | 90.0 | 14.0 | 41.0 |
| Actuated g/C Ratio | 0.43 | 0.43 | 0.26 | 1.00 | 0.16 | 0.46 |
| v/c Ratio | 0.98 | 0.30 | 0.99 | 0.63 | 0.99 | 0.25 |
| Control Delay | 54.4 | 3.2 | 75.1 | 2.0 | 91.9 | 15.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 54.4 | 3.2 | 75.1 | 2.0 | 91.9 | 15.6 |
| LOS | D | A | E | A | F | B |
| Approach Delay | 41.8 | | 25.4 | | | 46.4 |
| Approach LOS | D | | C | | | D |

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 35.1 Intersection LOS: D
Intersection Capacity Utilization 86.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 6: Wailea Ike Dr. & Wailea Alanui Dr.






HCM Signalized Intersection Capacity Analysis
6: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 690 | 225 | 435 | 925 | 250 | 370 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 4.0 | 4.0 | 5.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1770 | 1583 | 1863 | 1583 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 750 | 245 | 473 | 1005 | 272 | 402 |
| RTOR Reduction (vph) | 0 | 139 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 750 | 106 | 473 | 1005 | 272 | 402 |
| Turn Type | | Perm | | Free | Prot | |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | Free | | |
| Actuated Green, G (s) | 39.0 | 39.0 | 23.0 | 90.0 | 14.0 | 41.0 |
| Effective Green, g (s) | 39.0 | 39.0 | 23.0 | 90.0 | 14.0 | 41.0 |
| Actuated g/C Ratio | 0.43 | 0.43 | 0.26 | 1.00 | 0.16 | 0.46 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 4.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 767 | 686 | 476 | 1583 | 275 | 1612 |
| v/s Ratio Prot | c0.42 | | c0.25 | | c0.15 | 0.11 |
| v/s Ratio Perm | | 0.07 | | 0.63 | | |
| v/c Ratio | 0.98 | 0.15 | 0.99 | 0.63 | 0.99 | 0.25 |
| Uniform Delay, d1 | 25.1 | 15.5 | 33.4 | 0.0 | 37.9 | 15.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 26.8 | 0.1 | 39.4 | 2.0 | 50.7 | 0.1 |
| Delay (s) | 51.8 | 15.6 | 72.8 | 2.0 | 88.6 | 15.1 |
| Level of Service | D | B | E | A | F | B |
| Approach Delay (s) | 42.9 | | 24.6 | | | 44.8 |
| Approach LOS | D | | C | | | D |

Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 34.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.98 | | |
| Actuated Cycle Length (s) | 90.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 86.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

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# APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Year 2022 Traffic Operations WITH Project

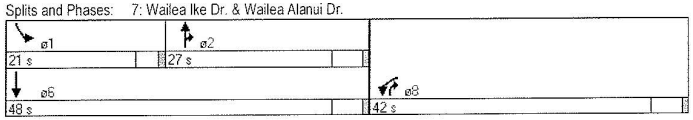
Timings
7: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 910 | 200 | 190 | 400 | 140 | 395 |
| Turn Type | | Perm | | pt+ov | Prot | |
| Protected Phases | 8 | | 2 | 2 8 | 1 | 6 |
| Permitted Phases | | 8 | | | | |
| Detector Phase | 8 | 8 | 2 | 2 8 | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 42.0 | 42.0 | 27.0 | 69.0 | 21.0 | 48.0 |
| Total Split (%) | 46.7% | 46.7% | 30.0% | 76.7% | 23.3% | 53.3% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | Max | | None | Max |
| Act Effct Green (s) | 31.0 | 31.0 | 26.9 | 62.8 | 12.3 | 43.2 |
| Actuated g/C Ratio | 0.37 | 0.37 | 0.32 | 0.75 | 0.15 | 0.51 |
| v/c Ratio | 0.78 | 0.30 | 0.35 | 0.20 | 0.59 | 0.24 |
| Control Delay | 28.4 | 3.7 | 26.9 | 0.6 | 43.5 | 12.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 28.4 | 3.7 | 26.9 | 0.6 | 43.5 | 12.7 |
| LOS | C | A | C | A | D | B |
| Approach Delay | 24.0 | | 9.1 | | | 20.7 |
| Approach LOS | C | | A | | | C |

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 84.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 19.3 Intersection LOS: B
Intersection Capacity Utilization 55.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 7: Wailea Ike Dr. & Wailea Alanui Dr.



HCM Signalized Intersection Capacity Analysis
7: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 910 | 200 | 190 | 400 | 140 | 395 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.88 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 3433 | 1583 | 1863 | 2787 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 3433 | 1583 | 1863 | 2787 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 989 | 217 | 207 | 435 | 152 | 429 |
| RTOR Reduction (vph) | 0 | 137 | 0 | 110 | 0 | 0 |
| Lane Group Flow (vph) | 989 | 80 | 207 | 325 | 152 | 429 |
| Turn Type | | Perm | | pt+ov | Prot | |
| Protected Phases | 8 | | 2 | 2 8 | 1 | 6 |
| Permitted Phases | | 8 | | | | |
| Actuated Green, G (s) | 31.0 | 31.0 | 26.9 | 62.9 | 12.3 | 43.2 |
| Effective Green, g (s) | 31.0 | 31.0 | 26.9 | 62.9 | 12.3 | 43.2 |
| Actuated g/C Ratio | 0.37 | 0.37 | 0.32 | 0.75 | 0.15 | 0.51 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 4.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1264 | 583 | 595 | 2082 | 259 | 1816 |
| v/s Ratio Prot | c0.29 | | c0.11 | 0.12 | c0.09 | 0.12 |
| v/s Ratio Perm | | 0.05 | | | | |
| v/c Ratio | 0.78 | 0.14 | 0.35 | 0.16 | 0.59 | 0.24 |
| Uniform Delay, d1 | 23.6 | 17.7 | 21.9 | 3.0 | 33.6 | 11.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.2 | 0.1 | 1.6 | 0.0 | 3.4 | 0.3 |
| Delay (s) | 26.8 | 17.8 | 23.5 | 3.1 | 37.0 | 11.7 |
| Level of Service | C | B | C | A | D | B |
| Approach Delay (s) | 25.2 | | 9.7 | | | 18.3 |
| Approach LOS | C | | A | | | B |

Intersection Summary

| | | | |
|---|---|---|---|
| HCM Average Control Delay | 19.5 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.58 | | |
| Actuated Cycle Length (s) | 84.2 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 55.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



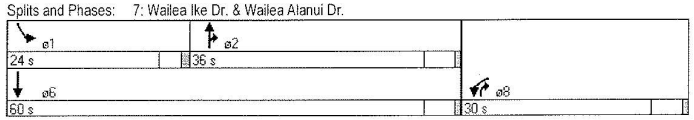
Timings
7: Wailea Ike Dr. & Wailea Alanui Dr. 5/30/2009

| Lane Group | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 690 | 225 | 435 | 925 | 250 | 370 |
| Turn Type | | Perm | | pt+ov | Prot | |
| Protected Phases | 8 | | 2 | 2 8 | 1 | 6 |
| Permitted Phases | | 8 | | | | |
| Detector Phase | 8 | 8 | 2 | 2 8 | 1 | 6 |
| Switch Phase | | | | | | |
| Minimum Initial (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Minimum Split (s) | 22.0 | 22.0 | 24.0 | | 10.0 | 24.0 |
| Total Split (s) | 30.0 | 30.0 | 36.0 | 66.0 | 24.0 | 60.0 |
| Total Split (%) | 33.3% | 33.3% | 40.0% | 73.3% | 26.7% | 66.7% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | | 3.0 | 4.0 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 |
| Lead/Lag | | | Lag | | Lead | |
| Lead-Lag Optimize? | | | Yes | | Yes | |
| Recall Mode | None | None | Max | | None | Max |
| Act Effct Green (s) | 24.2 | 24.2 | 33.6 | 62.7 | 17.5 | 55.0 |
| Actuated g/C Ratio | 0.27 | 0.27 | 0.38 | 0.70 | 0.20 | 0.62 |
| v/c Ratio | 0.81 | 0.40 | 0.67 | 0.48 | 0.79 | 0.18 |
| Control Delay | 38.1 | 5.7 | 30.2 | 4.4 | 50.5 | 7.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 38.1 | 5.7 | 30.2 | 4.4 | 50.5 | 7.8 |
| LOS | D | A | C | A | D | A |
| Approach Delay | 30.1 | | 12.7 | | | 25.0 |
| Approach LOS | C | | B | | | C |

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 89.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 20.9 Intersection LOS: C
Intersection Capacity Utilization 68.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 7: Wailea Ike Dr. & Wailea Alanui Dr.



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 690 | 225 | 435 | 925 | 250 | 370 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 | 5.0 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.88 | 1.00 | 0.95 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 3433 | 1583 | 1863 | 2787 | 1770 | 3539 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 3433 | 1583 | 1863 | 2787 | 1770 | 3539 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 750 | 245 | 473 | 1005 | 272 | 402 |
| RTOR Reduction (vph) | 0 | 179 | 0 | 115 | 0 | 0 |
| Lane Group Flow (vph) | 750 | 66 | 473 | 890 | 272 | 402 |
| Turn Type | | Perm | | pt+ov | Prot | |
| Protected Phases | 8 | | 2 | 2 8 | 1 | 6 |
| Permitted Phases | | 8 | | | | |
| Actuated Green, G (s) | 24.2 | 24.2 | 33.6 | 62.8 | 17.5 | 55.1 |
| Effective Green, g (s) | 24.2 | 24.2 | 33.6 | 62.8 | 17.5 | 55.1 |
| Actuated g/C Ratio | 0.27 | 0.27 | 0.38 | 0.70 | 0.20 | 0.62 |
| Clearance Time (s) | 5.0 | 5.0 | 5.0 | | 4.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 930 | 429 | 701 | 1960 | 347 | 2184 |
| v/s Ratio Prot | c0.22 | | c0.25 | 0.32 | c0.15 | 0.11 |
| v/s Ratio Perm | | 0.04 | | | | |
| v/c Ratio | 0.81 | 0.15 | 0.67 | 0.45 | 0.78 | 0.18 |
| Uniform Delay, d1 | 30.4 | 24.8 | 23.3 | 5.8 | 34.1 | 7.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.2 | 0.2 | 5.1 | 0.2 | 11.0 | 0.2 |
| Delay (s) | 35.5 | 24.9 | 28.4 | 5.9 | 45.1 | 7.6 |
| Level of Service | D | C | C | A | D | A |
| Approach Delay (s) | 32.9 | | 13.1 | | | 22.7 |
| Approach LOS | C | | B | | | C |

| Intersection Summary | | | |
|---|---|---|---|
| HCM Average Control Delay | 21.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 89.3 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 68.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



AUSTIN, TSUTSUMI & ASSOCIATES, INC
CIVIL ENGINEERS • SURVEYORS

# APPENDIX D

## LEVEL-OF-SERVICE SUMMARY TABLE

Table D-1

LOS INTERSECTION ANALYSIS

| Intersection | Existing 2008 | | | | | | Future Year 2022 WITHOUT Project | | | | | | Future Year 2022 WITH Project | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | | | PM | | | 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 | HCM Delay | v/c Ratio | LOS | HCM Delay | v/c Ratio | LOS |
| Wailea Ike Drive & Wailea Alanui Drive | | | | | | | | | | | | | | | | | | |
| WB LT | 17.8 | 0.8 | B | 19.3 | 0.69 | B | 38.9 | 0.97 | D | 51.8 | 0.98 | D | 26.8 | 0.78 | C | 35.5 | 0.81 | D |
| WB RT | 8 | 0.08 | A | 12.7 | 0.09 | B | 8.5 | 0.14 | A | 15.6 | 0.15 | B | 17.8 | 0.14 | B | 24.9 | 0.15 | C |
| NB TH | 17.5 | 0.35 | B | 17.3 | 0.6 | B | 38.5 | 0.66 | D | 72.8 | 0.99 | E | 23.5 | 0.35 | C | 28.4 | 0.67 | C |
| NB RT | 0.1 | 0.11 | A | 0.6 | 0.36 | A | 0.4 | 0.27 | A | 2 | 0.63 | A | 3.1 | 0.16 | A | 5.9 | 0.45 | A |
| SB LT | 35.6 | 0.67 | d | 36.9 | 0.77 | D | 84.1 | 0.92 | F | 88.6 | 0.99 | F | 37 | 0.59 | D | 45.1 | 0.78 | D |
| SB TH | 10.8 | 0.23 | B | 6.7 | 0.15 | A | 23.5 | 0.39 | C | 15.1 | 0.25 | B | 11.7 | 0.24 | B | 7.6 | 0.18 | A |
| *Overall* | *14.3* | *0.67* | *B* | *12.3* | *0.67* | *B* | *29.4* | *0.9* | *C* | *34.7* | *0.98* | *C* | *19.5* | *0.58* | *B* | *21.5* | *0.74* | *C* |

# APPENDIX D.

# Preliminary Civil Engineering and Drainage Report

PRELIMINARY

CIVIL ENGINEERING AND DRAINAGE REPORT

FOR

PROPOSED MODIFICATIONS

OF THE

WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION

WAILEA, MAUI, HAWAII

TAX MAP KEY: (2) 2-1-08

PREPARED FOR:

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1300 NORTH HOLOPONO STREET, SUITE 201
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JOB 08-034

MARCH 30, 2009

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FIGURE 11 - HYDROLOGY MAP (FUTURE CONDITION)

## I. INTRODUCTION:

This Preliminary Engineering and Drainage Report was prepared in support of the project's EA and SMA Permit Application.

The proposed modification of the intersection of Wailea Ike Drive and Wailea Alanui was brought about in compliance with Condition 2e, Conditional Zoning for Honua'ula/Wailea 670 Project District 9. The proposed modifications will include widening the north and south portion of the intersection to accommodate a double right-turn movement from Wailea Alanui northbound traffic to eastbound turns on Wailea Ike Drive and two left-turn lanes for southbound traffic on Wailea Alanui from Wailea Ike Drive. Appurtenant to the proposed project are acquisition of lands on both sides of the intersection; construction of concrete curb and gutter, sidewalk and curb ramps; installation of asphalt concrete pavement; relocation and/or modification of traffic signal system; roadway pavement marking and signing; and grassing and/or landscaping. The conceptual plan of the proposed project is shown on Figure 9.

## II. PURPOSE:

The purpose of this preliminary report is to investigate the impact of the proposed project on existing utilities and drainage conditions. This report will present a brief description of the existing conditions and provide anticipated improvements required for the proposed intersection improvements by appropriate governmental agencies. It will also include probable grading requirements and proposed measures to control soil erosion during construction.



## III. LOCATION:

The proposed project is located in the Wailea area on the leeward side of the Island of Maui. Refer to Figures 1 and 2.

## IV. FLOODING HAZARD:

The project area is located within Panel 15003-0330B (June 1, 1981), of the Flood Insurance Rate Map for the County of Maui. The site is within Zone C. Refer to Figure 3. Zone C are areas of minimal flooding; hence, the proposed project is not required to conform to the development standards set forth by Chapter 19.62, Flood Hazard Areas, of the Maui County Code.

## V. EXISTING SOILS:

The U.S. Department of Agriculture Soil Conservation Service's Soils Survey of the Island of Kauai, Oahu, Maui, Molokai and Lanai [3 ], classifies the soils within the project site as Makena Loam, Stony Complex (MXC) as shown on Figure 4. MXC belongs to Makena Soil Series which consist of well-drained soils on uplands on the Island of Maui. These soils developed in volcanic ash.

MXC is particularly found on the leeward slopes of Haleakala between Makena and Kamaole. The stony part of the complex occurs on low ridges and is characterized by very rapid permeability and no erosion hazard. Meanwhile, the Makena part of the complex which occurs as gently sloping areas between the low ridges of the stony land is characterized by moderately rapid permeability, slow to medium runoff and slight to moderate erosion hazard.

## VI. UTILITIES:

### A. WATER:

There are existing waterlines at the project site as shown on Figures 5 and 8. The water system consist of 16-inch, 20-inch and 30-inch pipelines that are part of the Central Maui Water Transmission System serving the Wailea/Makena region.

The proposed project will not increase water demand from the County system as there are no associated improvements that will require additional water usage. Impact of the proposed project to the existing water facilities at the intersection is not anticipated, however, it should be verified during the design stage of the project. Adjustment of water facilities such as manholes and water valves, if any, will be done in compliance with the requirements of the Department of Water Supply.

### B. SEWER:

The existing sewer system at the project site and vicinity is shown on Figures 6 and 8. The system mainly consists of 6-inch, 8-inch, 10-inch and 18-inch gravity sewer pipes and 12-inch force mains. This system generally serve the existing developments within the Wailea Resort area.

The proposed project will not generate wastewater flows; hence, there will be no impact on the existing sewer system except possibly the adjustment of frames and covers of existing sewer manholes to finished grade.



Modification to the existing traffic signal system and street lighting facilities is not expected to increase the present power consumption. However, should there be an addition of pedestrian traffic control system, the power consumption increase will be minimal.

## VII. DRAINAGE:

Storm waters generated by the project and surrounding areas are collected and disposed of by the existing roadway drainage facilities which are shown on Figure 7. Runoff from the north portion of the intersection (Area 1, Fig. 10) flows northward to an existing catch basin (CB 1, Fig. 7) about 300 feet away; while the runoff from the south portion of the intersection (Area 2, Fig. 10) flows southward to a catch basin (CB 4, Fig. 7) about 400 feet away.

Roadway runoff above (East) of the intersection are collected by the existing catch basins (CB 2 and CB 3, Fig. 10) and conveyed to the channel by underground culverts.

The existing CRM-lined channel and 5 - 65" x 40" CMP culverts across Wailea Alanui (Figure 7), convey offsite runoff from tributary areas above the intersection. The tributary areas extend to lands east (mauka) of Piilani Highway.

Based on the preliminary Hydrologic Calculations (Exhibit A), below is a summary of storm runoff discharges that are anticipated to be generated by the project area at existing and future (developed) conditions:

North Portion:

| | |
|---|---|
| 10-year storm: | 0.9 cfs (Existing, Area 1, Fig. 10) |
| | 1.0 cfs (Future, Area A, Fig. 11) |
| Increase: | 0.1 cfs |
| 50-year storm: | 1.2 cfs (Existing, Area 1) |
| | 1.4 cfs (Future, Area A) |
| Increase: | 0.2 cfs |

South Portion:

| | |
|---|---|
| 10-year storm: | 1.0 cfs (Existing, Area 2, Fig. 10) |
| | 1.2 cfs (Future, Area B, Fig. 11) |
| Increase: | 0.2 cfs |
| 50-year storm: | 1.3 cfs (Existing, Area 2) |
| | 1.6 cfs (Future, Area B) |
| Increase: | 0.3 cfs |

The anticipated runoff increases due to the proposed project are minimal; hence, there are no drainage improvements proposed for this project and completion of the proposed project will not have adverse drainage effects on the existing drainage facilities and downstream properties. Existing drainage flow pattern will not be significantly altered.

## VIII. GRADING AND SOIL EROSION CONTROL:

### A. GRADING REQUIREMENTS:

Grading for the proposed development area will be performed in compliance with the applicable requirements of the Maui County Grading



Ordinance No. 2884 or Chapter 20.08 of the Maui County Code. Grading will be done only for the proper reception of the proposed roadway widening which will consist mainly of excavation and embankment.

Prior to commencing land disturbance activities, a grubbing and grading permit must be obtained from the Development Services Administration (DSA) of the Maui County 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.

### B. BEST MANAGEMENT PRACTICES (BMPs):

Requirements for the temporary control of soil erosion and dust during construction will be outlined and shown on the construction plans during the design development of the project. The BMPs will include but not limited to the following:

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 weekends and holidays.
3. All exposed areas shall be paved, grassed, or permanently landscaped as soon as finished grading is completed.
4. Storm runoff will be diverted away from graded areas to natural drainageways during construction by means of gravel bag berms or lined temporary swales.

5. Time of construction will be minimized.

6. Only areas that are needed for new improvements will be cleared.

7. Installation of dust control fence surrounding the project site.

8. Installation of silt fence, gravel bag berms or other approved sediment trapping devices at the downstream side of the grading area.

9. Temporary 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.

The Contractor will also be required to submit a satisfactory soil erosion control plan to minimize soil erosion prior to an issuance of a grubbing and grading permit. 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.

## IX. CONSTRUCTION PLAN APPROVALS:

Approval of the civil construction plans for the proposed project will be obtained from the Department of Public Works; Department of Environmental Management; and Department of Water Supply. The various improvements will be designed in compliance with the applicable requirements of these governmental agencies.



## X. 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.

# EXHIBIT A

# PRELIMINARY HYROLOGIC CALCULATIONS

## EXHIBIT A

### PRELIMINARY HYDROLOGIC CALCULATIONS

I. Reference: Rules for the Design of Storm Drainage Facilities in the County of Maui, 1995 referred to as "Maui County Drainage Standards".

II. Purpose: To determine existing and future (developed) storm runoff discharges.

III. Hydrologic Criteria:

A. 10-Year, 1-Hour: for surface flow runoff rate

1-Hr. Rainfall Value = 1.8" (Plate 3)

B. 50-Year, 1-Hour: for design of culverts

1-Hr. Rainfall Value = 2.4" (Plate 4)

IV. Runoff Quantity:

A. Runoff Discharge Rate & Volume:

1. Methodology:

Rational Method, Q = CIA

Where Q = Flow rate in cubic feet per second (cfs)

C = Runoff Coefficient

I = Rainfall intensity in inches per hour for a duration equal to the time of concentration

A = Drainage Area in Acres
Figure 10 - Existing Conditions
Figure 11 - Future Conditions

Calculations employing this method were performed on computer using hydrologic software "Hydraflow Hydrographs 2004" by Intelisolve.

2. Runoff Coefficient, C:

C = 0.22 (Lawn) (Table 2)

= 0.95 (Development) (Table 3)

Weighted C:

$$\text{Weighted } C = \frac{A_1 \times C_1 + A_2 \times C_2 + \ldots}{A_1 + A_2 + \ldots}$$

TABLE A: DRAINAGE AREAS & WEIGHTED C

| Area Designation | Area (Acs.) | | | Weighted C |
|---|---|---|---|---|
| | Pavement | Lawn | Total | |
| Area 1 | 0.18 | 0.11 | 0.29 | 0.67 |
| Area 2 | 0.22 | 0.05 | 0.27 | 0.81 |
| Area A | 0.21 | 0.09 | 0.30 | 0.73 |
| Area B | 0.26 | 0.03 | 0.29 | 0.88 |

3. Time of Concentration, Tc:
(Plate 1)

Use Tc = 5 min.

4. Runoff Discharge Rate:
(Refer to Attached Hydrograph Reports)

TABLE B: RUNOFF DISCHARGE RATES

| Drainage Area Designation | 10-Yr. (cfs) | 50-Yr. (cfs) |
|---|---|---|
| Area 1 (Existing) | 0.9 | 1.2 |
| Area A (Future) | 1.0 | 1.4 |
| Increase | 0.1 | 0.2 |
| Area 2 (Existing) | 1.0 | 1.3 |
| Area B (Future) | 1.2 | 1.6 |
| Increase | 0.2 | 0.3 |



# Hydraflow IDF Report



| Return Period (Yrs) | Equation Coefficients (FHA) | | | |
|---|---|---|---|---|
| | B | D | E | (N/A) |
| 1 | 0.0000 | 0.0000 | 0.0000 | ------ |
| 2 | 0.0000 | 0.0000 | 0.0000 | ------ |
| 3 | 0.0000 | 0.0000 | 0.0000 | ------ |
| 5 | 0.0000 | 0.0000 | 0.0000 | ------ |
| 10 | 21.2457 | 8.5000 | 0.5840 | ------ |
| 25 | 0.0000 | 0.0000 | 0.0000 | ------ |
| 50 | 32.7922 | 10.0000 | 0.6184 | ------ |
| 100 | 0.0000 | 0.0000 | 0.0000 | ------ |

C:\Program Files\Hydraflow\Hydrographs 2004\Wales SF 11 06057.IDF

Intensity = B / (Tc + D)^E

| Return Period (Yrs) | Intensity Values (in/hr) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 min | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | 4.65 | 3.87 | 3.36 | 3.00 | 2.73 | 2.52 | 2.35 | 2.20 | 2.08 | 1.97 | 1.88 | 1.80 |
| 25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50 | 6.14 | 5.14 | 4.48 | 4.00 | 3.64 | 3.35 | 3.11 | 2.92 | 2.75 | 2.61 | 2.48 | 2.37 |
| 100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

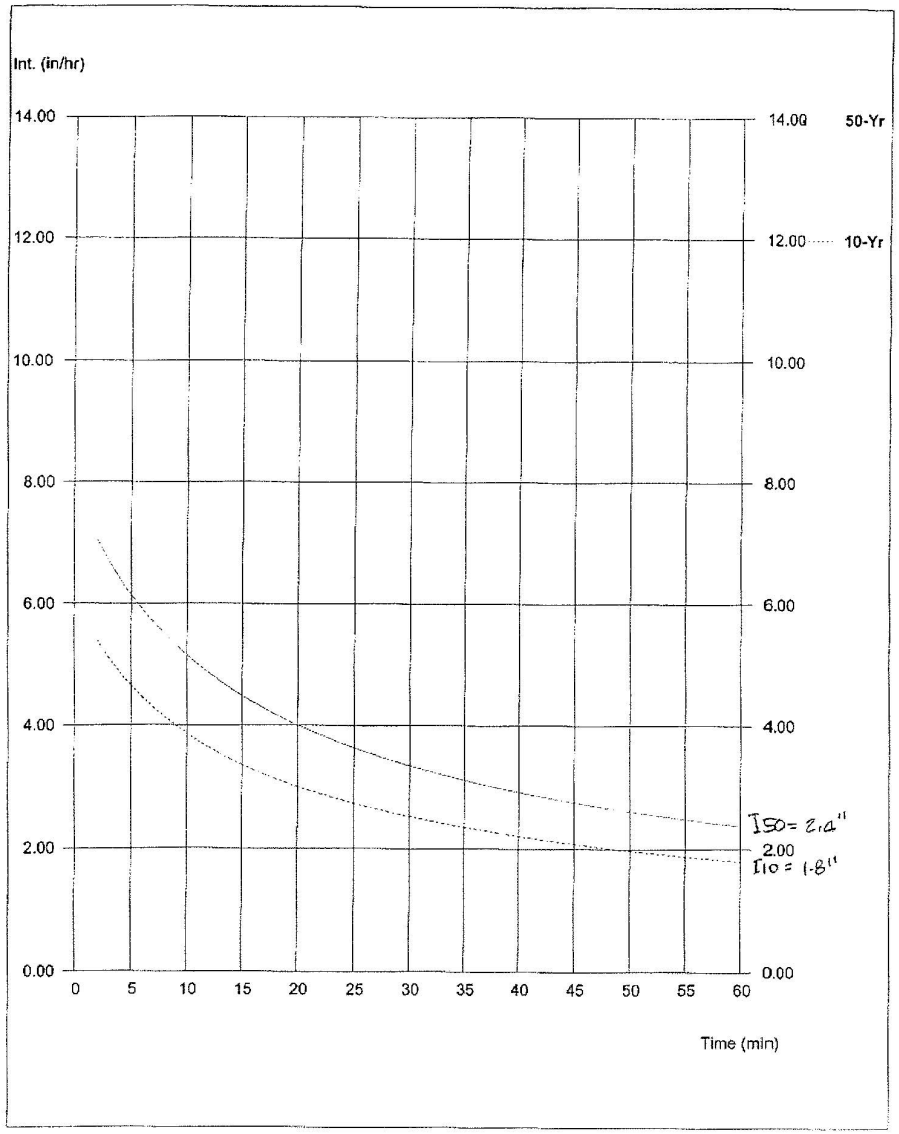
Tc = time in minutes

$I_{10} = 1.8''$

$I_{50} = 2.4''$

# Hydrograph IDF Curves

IDF file: Wailea SF 11 06057.IDF




Hydraflow Hydrographs 2004



# Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

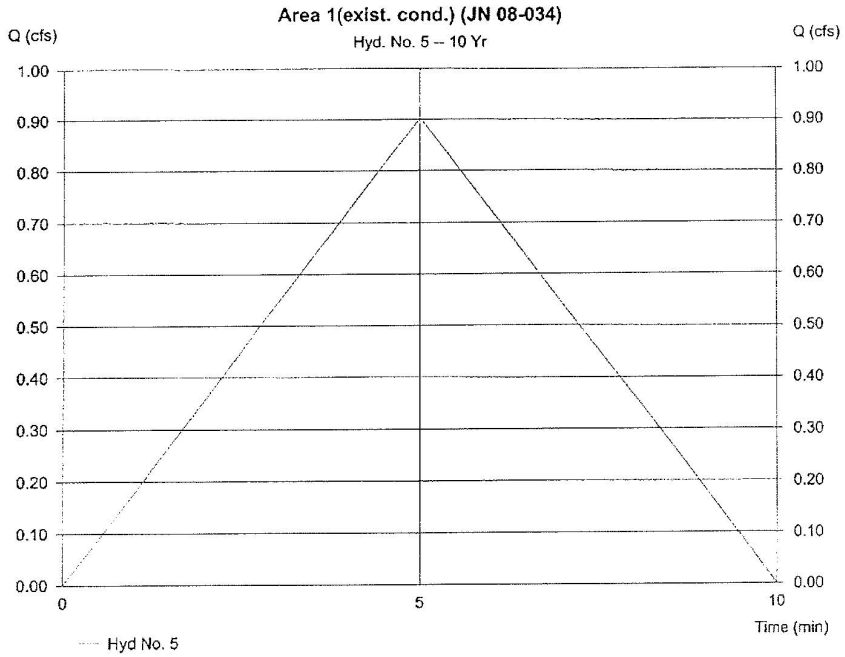
Wednesday, Mar 25 2009, 10:13 AM

## Hyd. No. 5

Area 1(exist. cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 0.90 cfs |
| Storm frequency | = 10 yrs | Time interval | = 1 min |
| Drainage area | = 0.290 ac | Runoff coeff. | = 0.67 |
| Intensity | = 4.647 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 271 cuft



# Hydrograph Plot

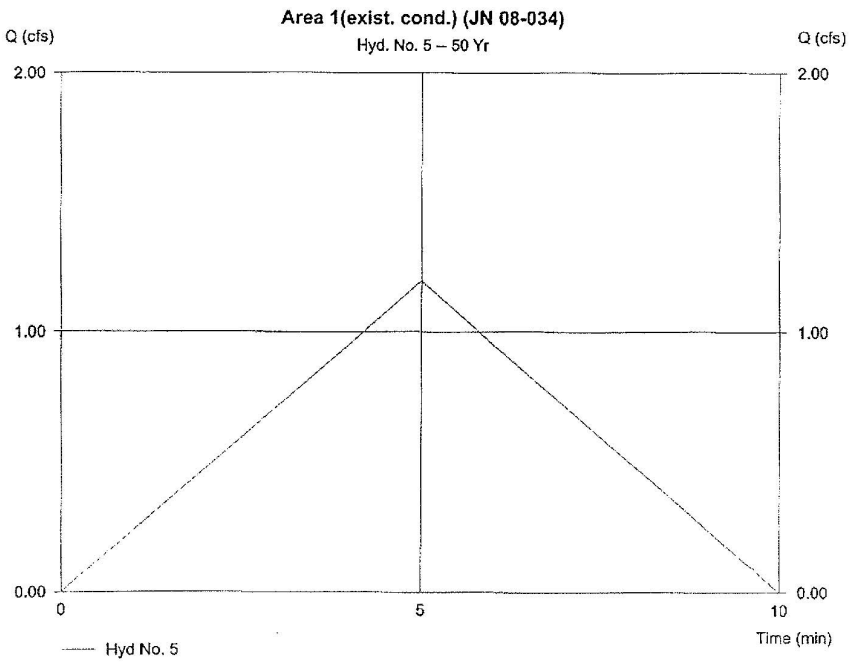
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:13 AM

## Hyd. No. 5

Area 1(exist. cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.19 cfs |
| Storm frequency | = 50 yrs | Time interval | = 1 min |
| Drainage area | = 0.290 ac | Runoff coeff. | = 0.67 |
| Intensity | = 6.144 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 358 cuft






# Hydrograph Plot

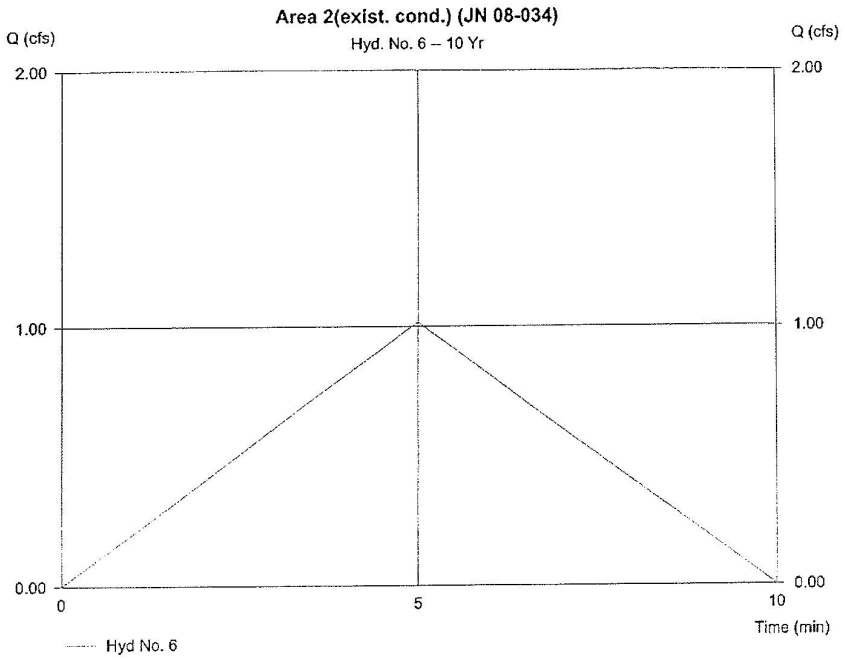
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 6

Area 2(exist. cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.02 cfs |
| Storm frequency | = 10 yrs | Time interval | = 1 min |
| Drainage area | = 0.270 ac | Runoff coeff. | = 0.81 |
| Intensity | = 4.647 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 305 cuft



# Hydrograph Plot

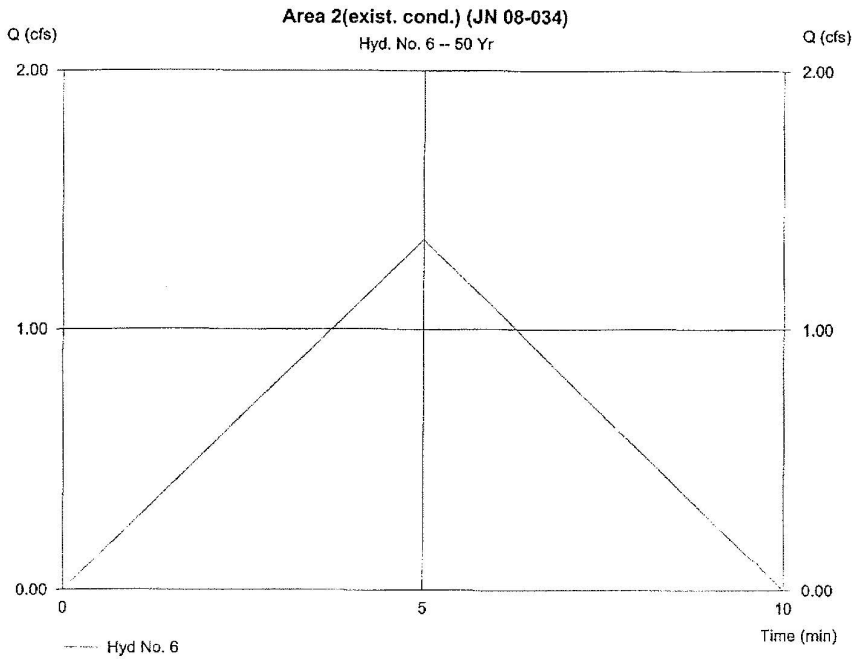
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 6

Area 2(exist. cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.34 cfs |
| Storm frequency | = 50 yrs | Time interval | = 1 min |
| Drainage area | = 0.270 ac | Runoff coeff. | = 0.81 |
| Intensity | = 6.144 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 403 cuft






# Hydrograph Plot

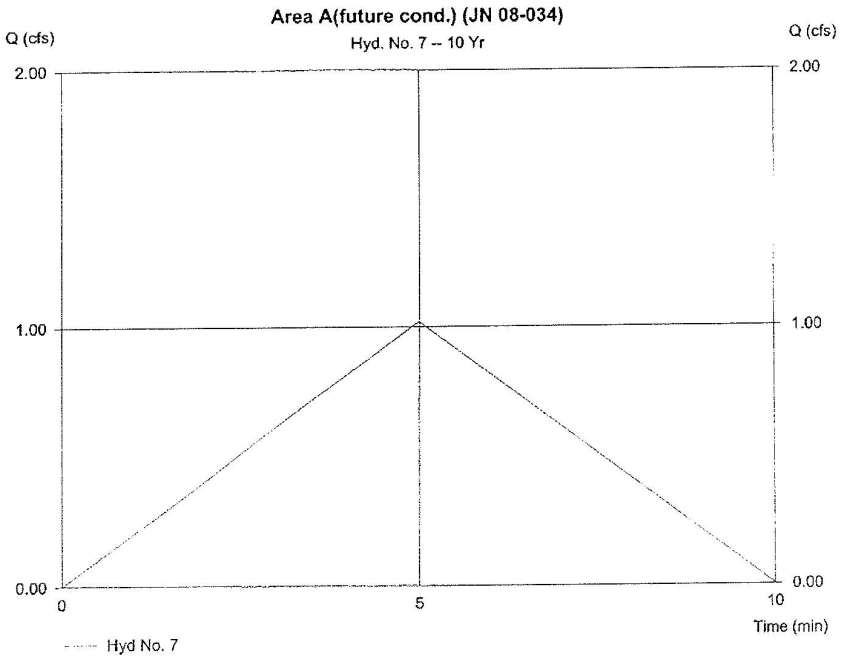
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 7

Area A(future cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.02 cfs |
| Storm frequency | = 10 yrs | Time interval | = 1 min |
| Drainage area | = 0.300 ac | Runoff coeff. | = 0.73 |
| Intensity | = 4.647 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 305 cuft



# Hydrograph Plot

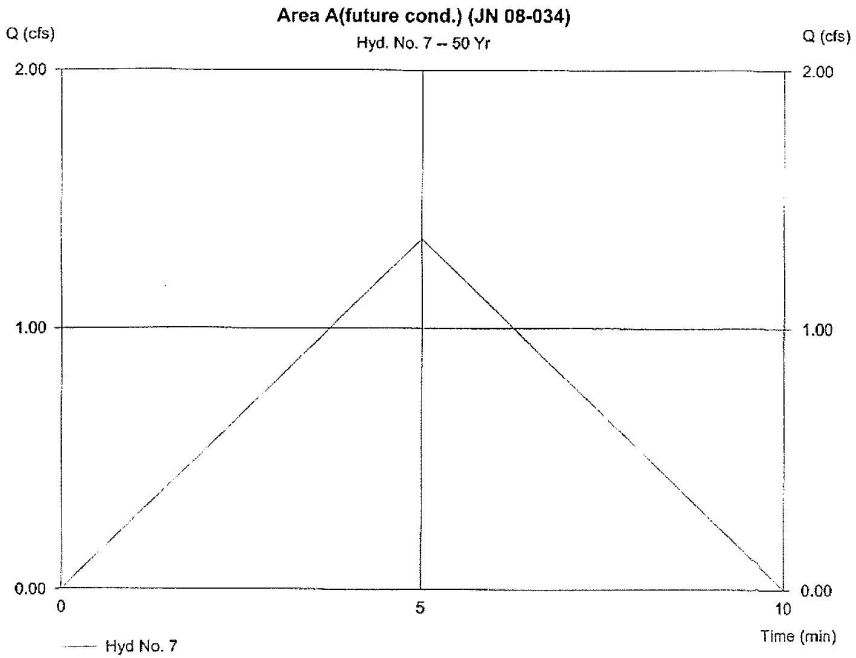
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 7

Area A(future cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.35 cfs |
| Storm frequency | = 50 yrs | Time interval | = 1 min |
| Drainage area | = 0.300 ac | Runoff coeff. | = 0.73 |
| Intensity | = 6.144 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 404 cuft






# Hydrograph Plot

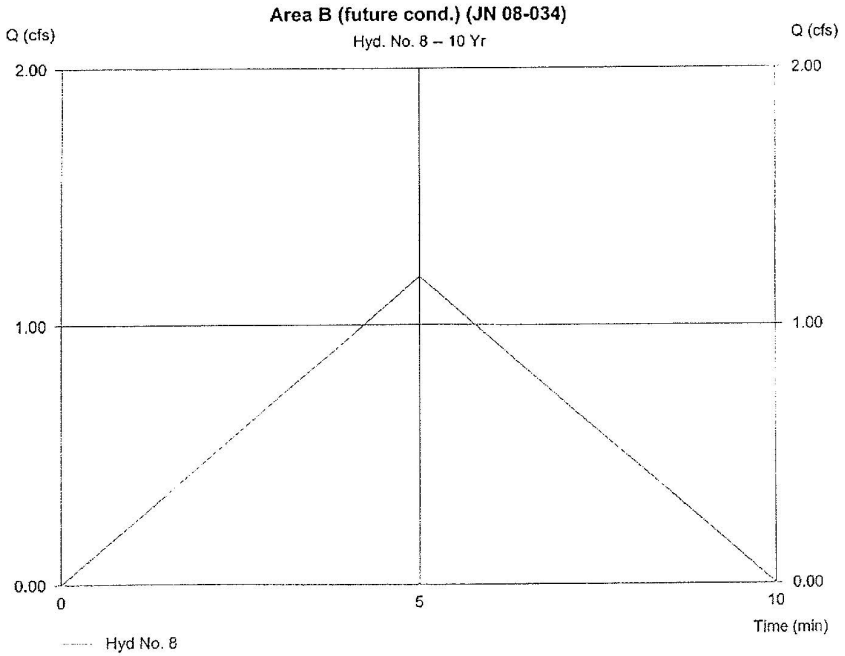
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 8

Area B (future cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.19 cfs |
| Storm frequency | = 10 yrs | Time interval | = 1 min |
| Drainage area | = 0.290 ac | Runoff coeff. | = 0.88 |
| Intensity | = 4.647 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 356 cuft



# Hydrograph Plot

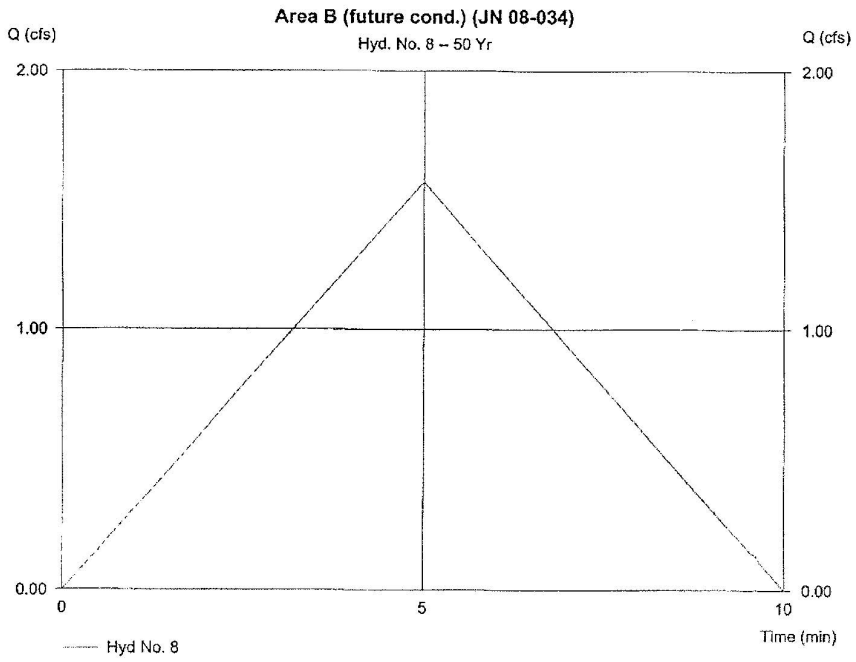
Hydraflow Hydrographs by Intelisolve — Wednesday, Mar 25 2009, 10:14 AM

## Hyd. No. 8

Area B (future cond.) (JN 08-034)

| | | | |
|---|---|---|---|
| Hydrograph type | = Rational | Peak discharge | = 1.57 cfs |
| Storm frequency | = 50 yrs | Time interval | = 1 min |
| Drainage area | = 0.290 ac | Runoff coeff. | = 0.88 |
| Intensity | = 6.144 in/hr | Tc by User | = 5.00 min |
| IDF Curve | = Wailea SF 11 06057.IDF | Asc/Rec limb fact | = 1/1 |

Hydrograph Volume = 470 cuft




# 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

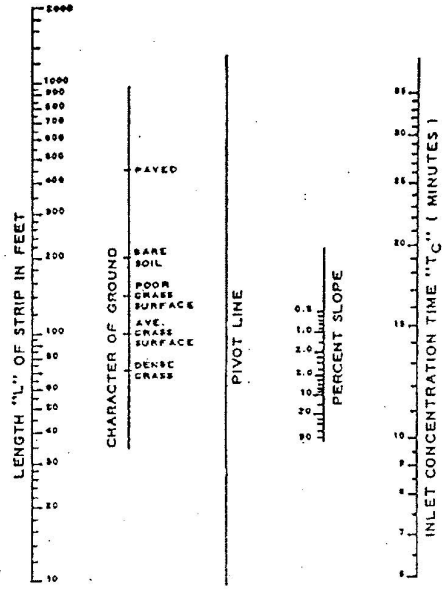
| Type of Drainage Area | Runoff Coefficient C |
|---|---|
| Parks, cemeteries | 0.25 |
| Playgrounds | 0.35 |
| Railroad yard areas | 0.40 |
| Unimproved areas | 0.30 |
| Streets: | |
| Asphaltic | 0.95 |
| Concrete | 0.95 |
| Brick | 0.85 |
| Driveway and walks | 0.85 |
| Roofs | 0.95 |
| Lawns: | |
| 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.




## Plate 1

## Overland Flow Chart

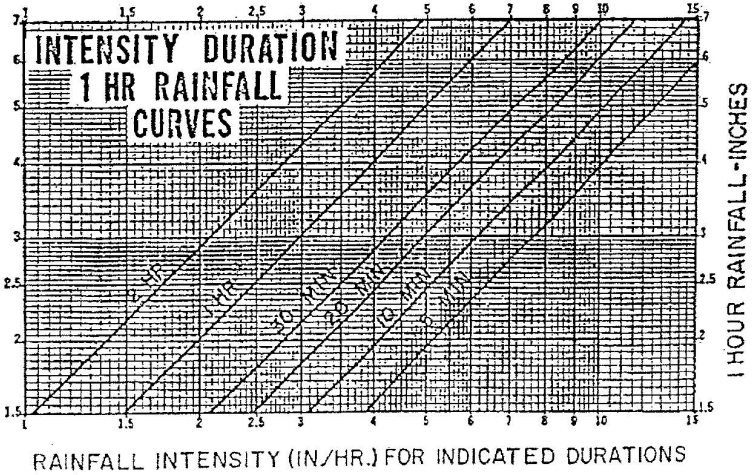
## Table 4

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 2



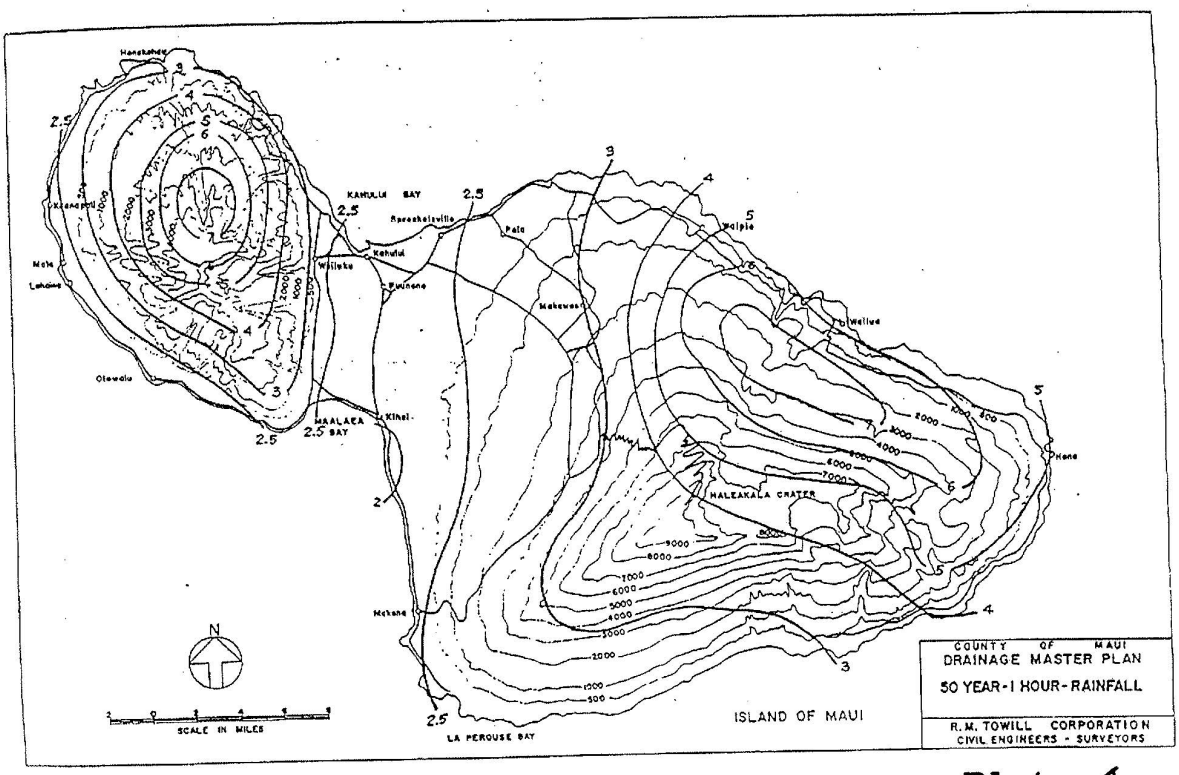



Plate 4

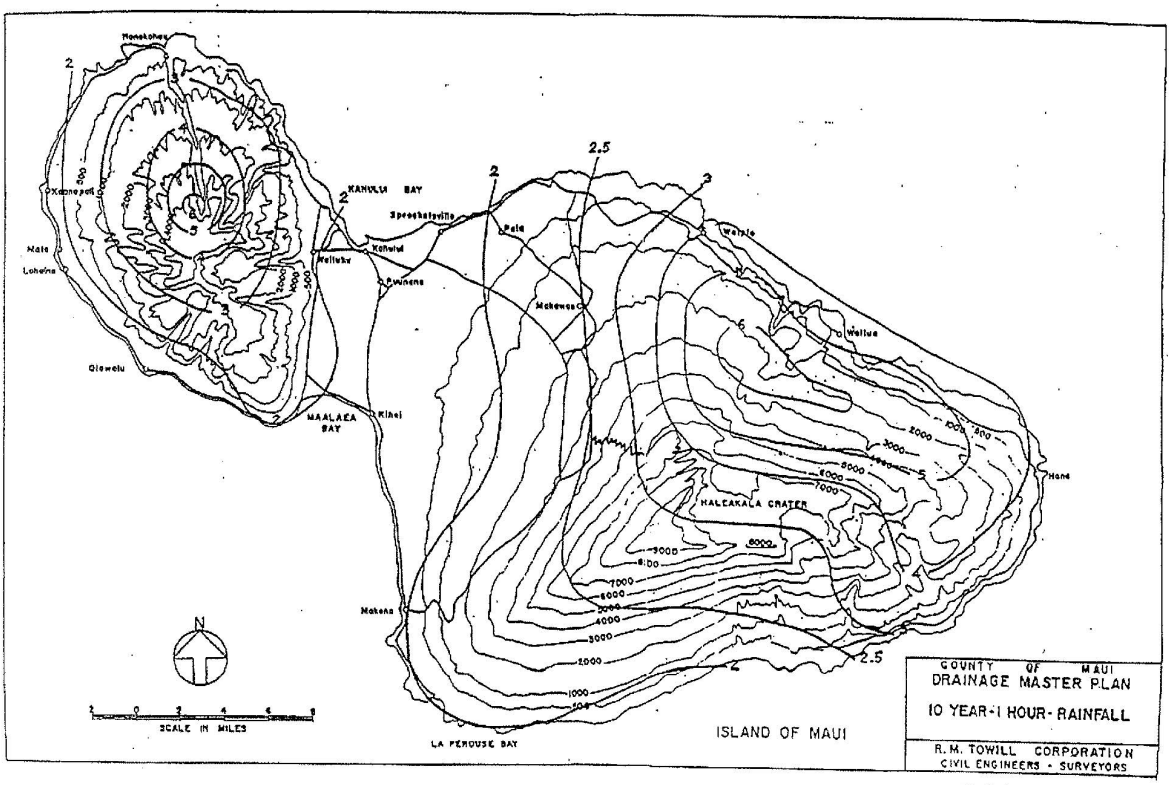



Plate 3

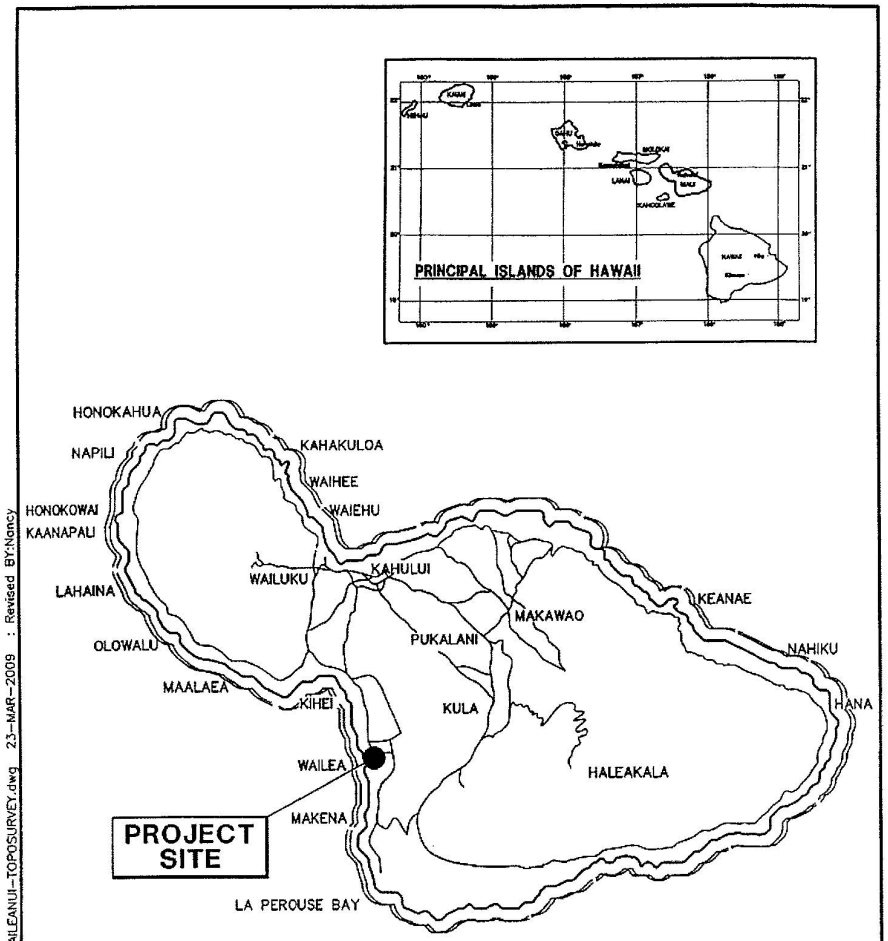


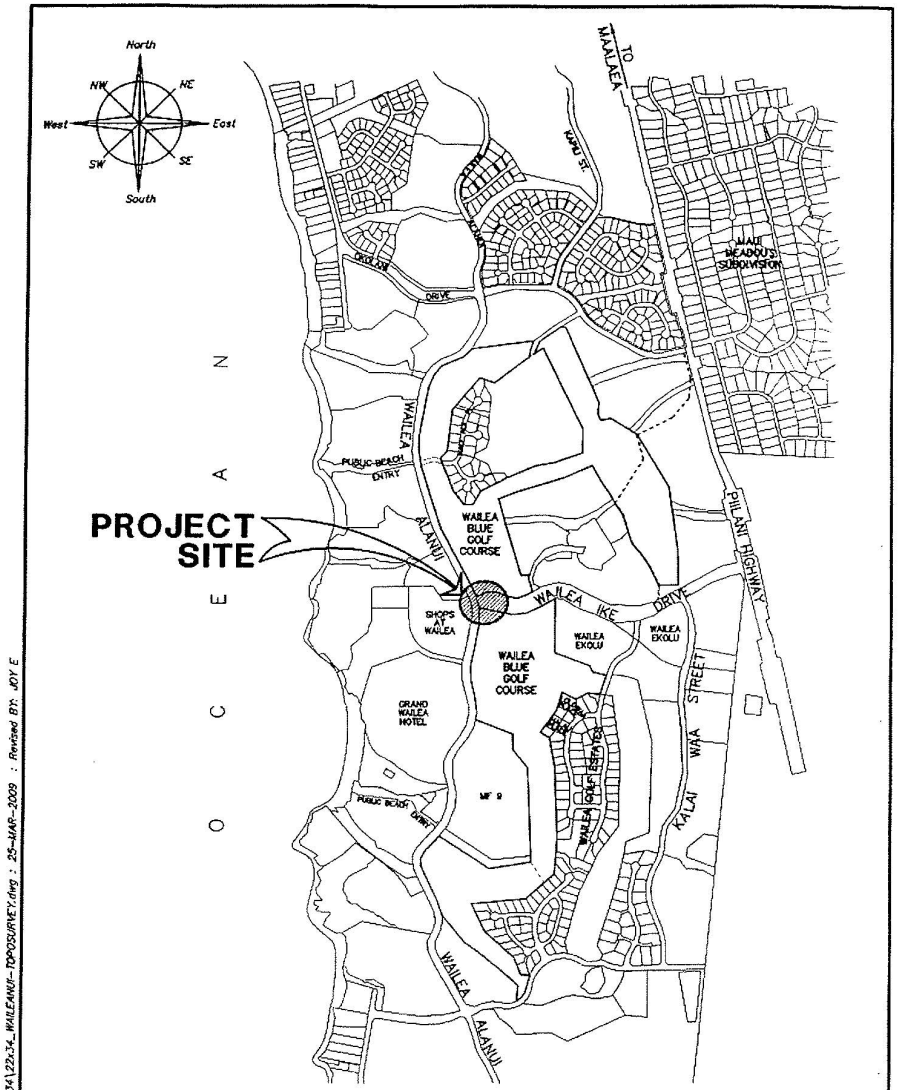

FIGURE 1

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 08-034

(Layout2) Z:\DRAW1\2008\08-034\22x34_WAILEANUI-TOPOSURVEY.dwg 23-MAR-2009 : Revised BY:Nancy




VICINITY MAP
NOT TO SCALE

FIGURE 2

871 KOLU STREET, SUITE 201
WAILUKU, MAUI, HAWAII 96793

R. T. TANAKA ENGINEERS, INC.
LAND SURVEYORS – CIVIL & STRUCTURAL ENGINEERS

JOB NO. 08-034

(Layout1) Z:\2008\08-034\22x34_WAILEANUI-TOPOSURVEY.dwg : 25-MAR-2009 : Revised BY: JOY E




FIGURE 4

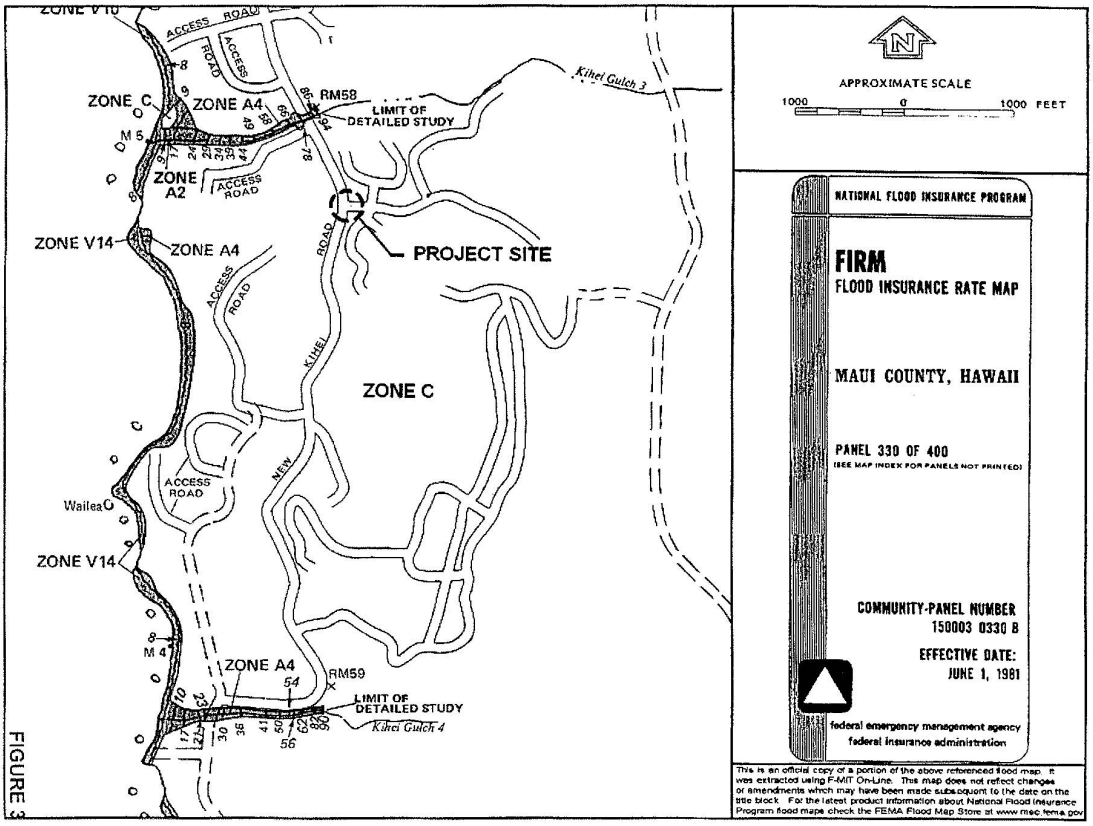
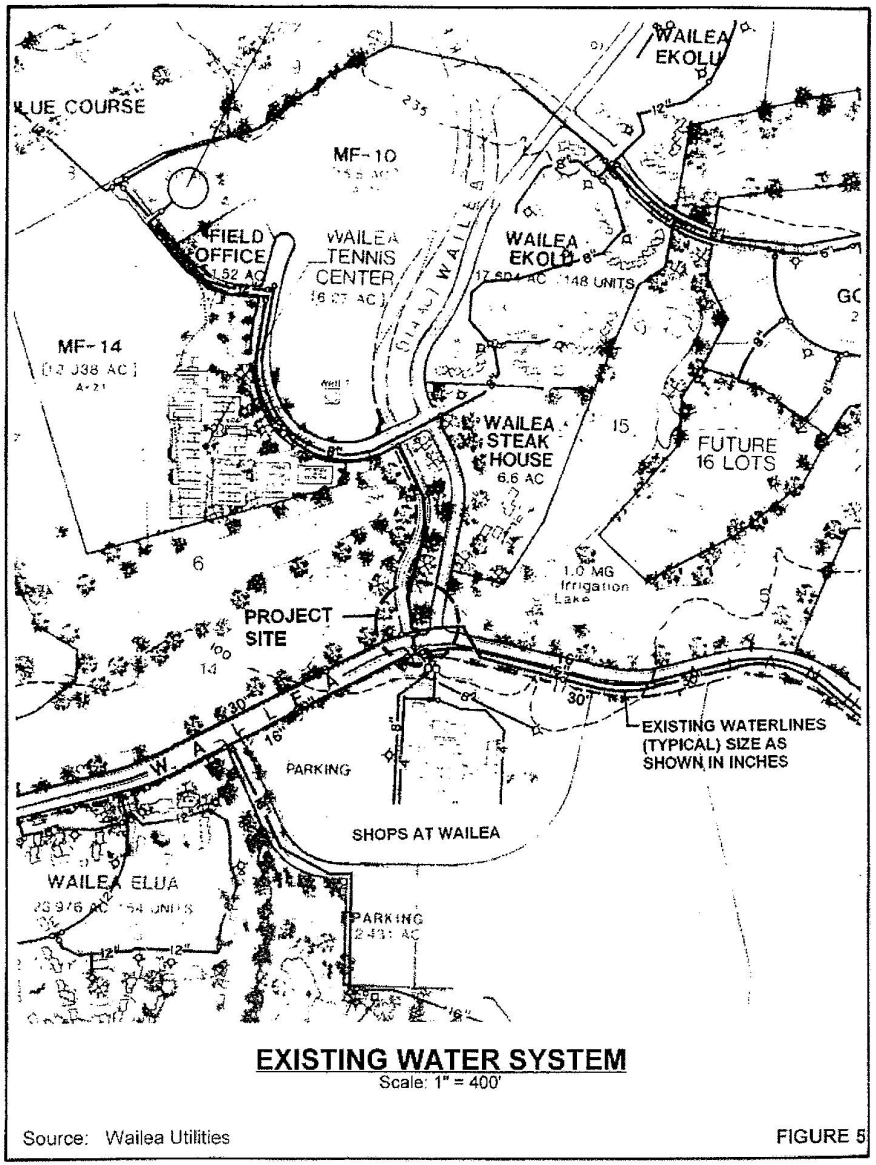


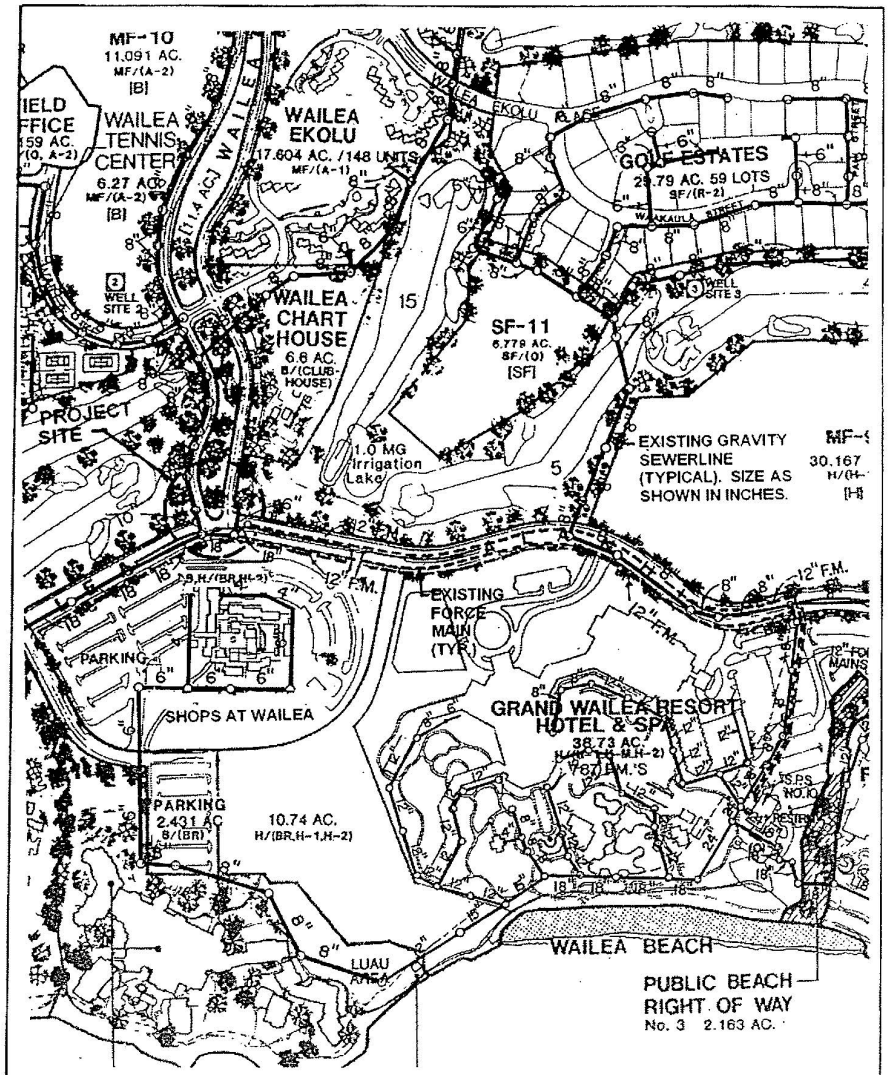

FIGURE 3




**EXISTING WATER SYSTEM**
Scale: 1" = 400'

Source: Wailea Utilities

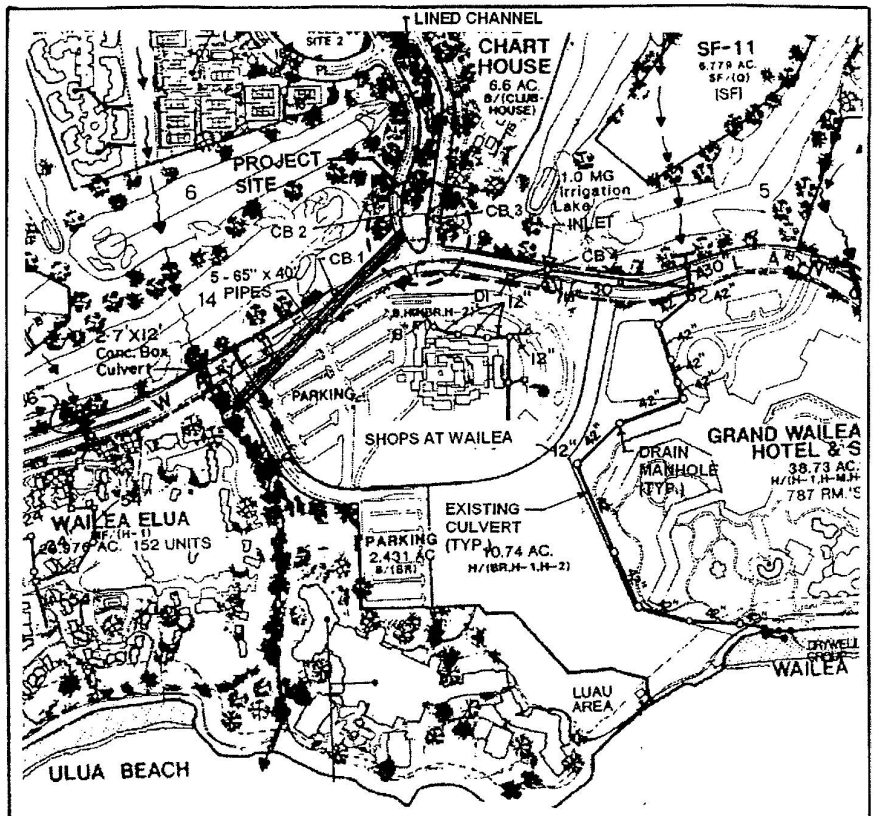
FIGURE 5




**EXISTING SEWER SYSTEM**
Scale: 1" = 400'

Source: Wailea Utilities

FIGURE 6



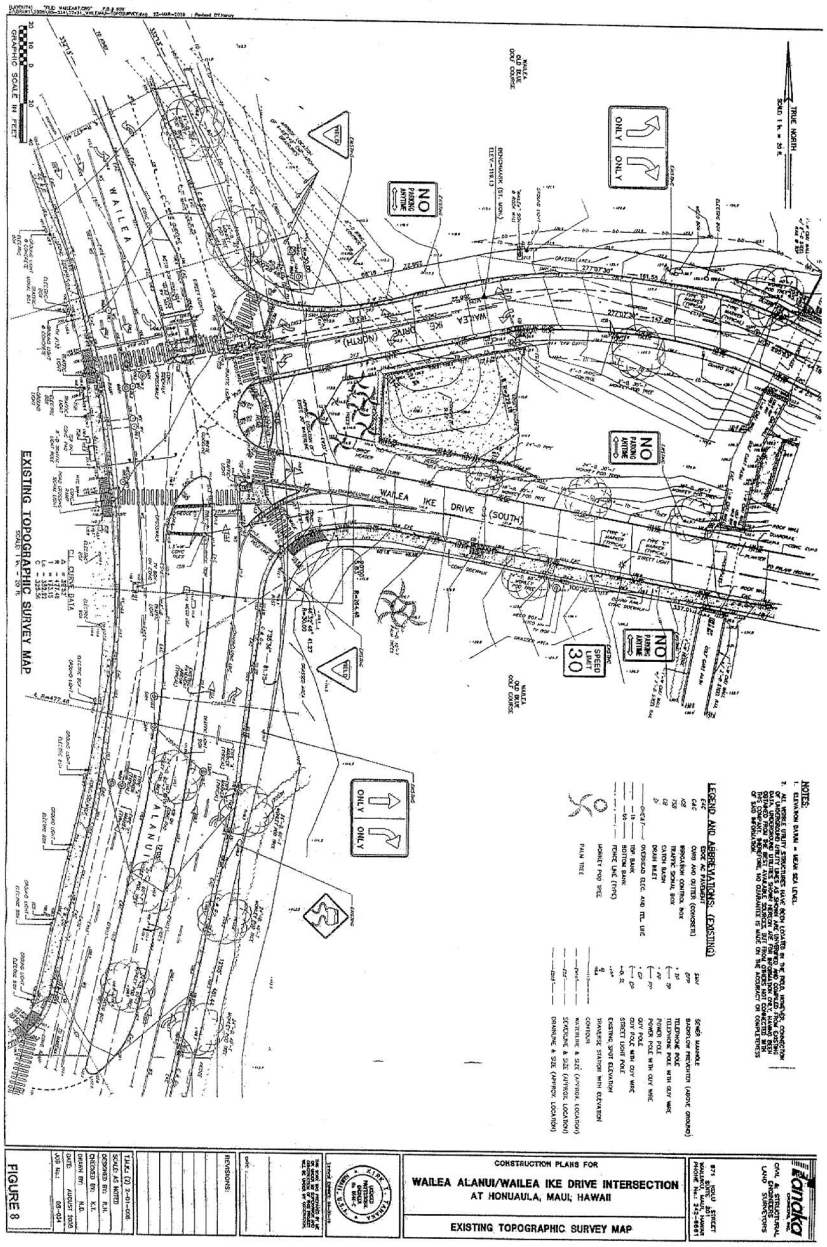

CB: CATCH BASIN
DI: DRAIN INLET (GRATED)

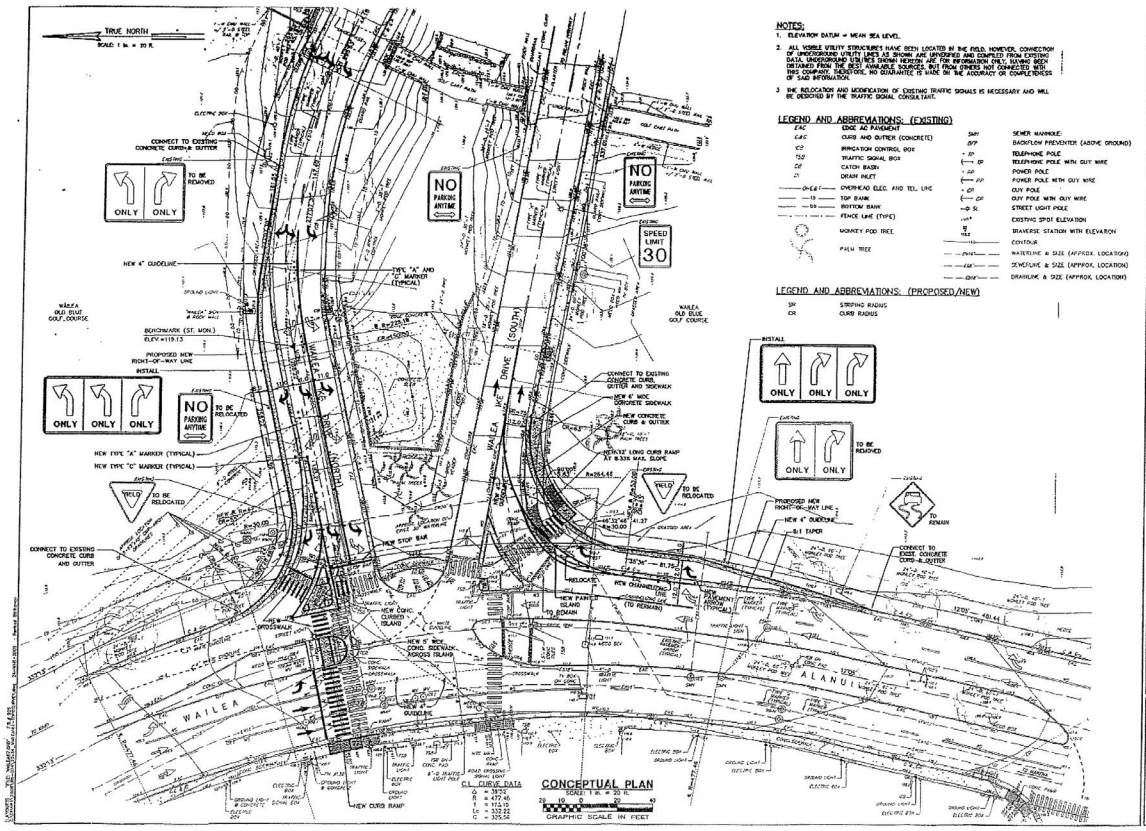
## EXISTING DRAINAGE SYSTEM

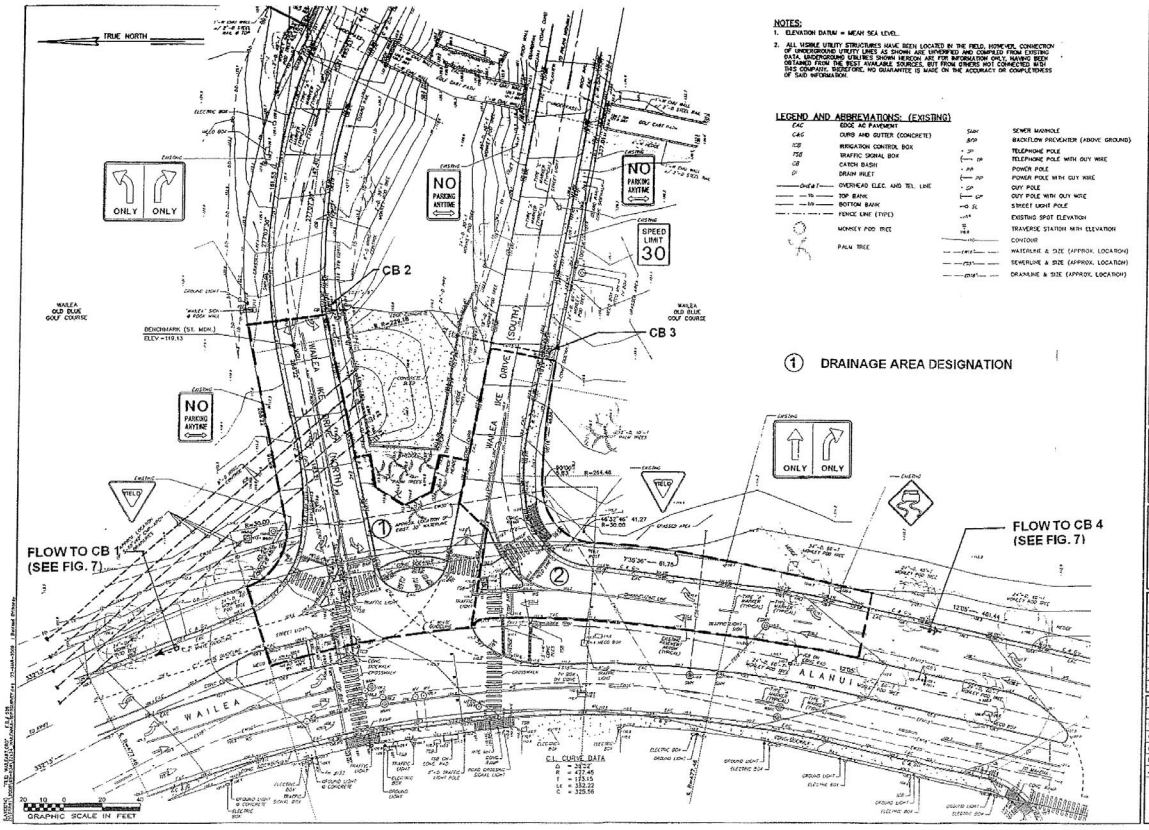
Scale: 1" = 400'

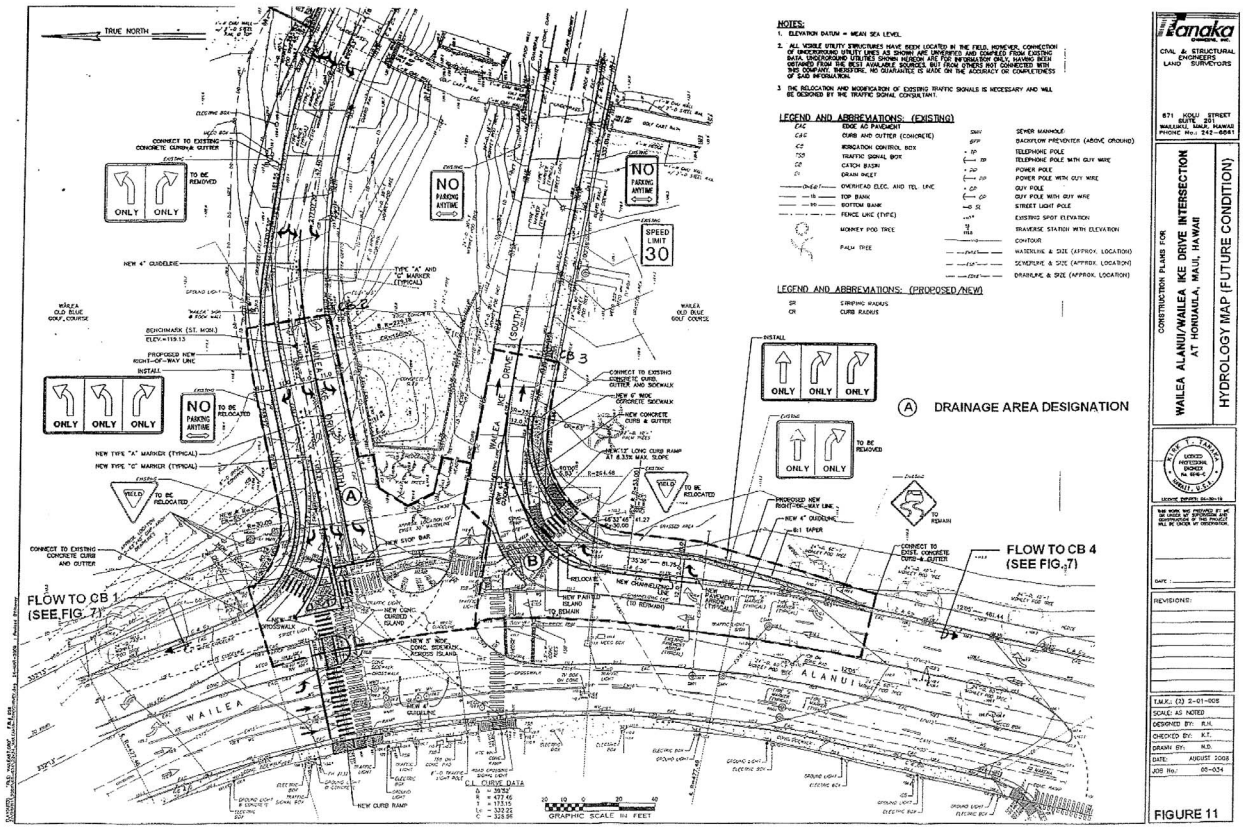
Source: Wailea Utilities

FIGURE 7




TRUE NORTH
SCALE: 1 in. = 20 ft.
NOTES:
1. ELEVATION DATUM = MEAN SEA LEVEL.
2. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED BY THIS 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.
3. SIGNAL RELOCATION AND MODIFICATION OF EXISTING TRAFFIC SIGNALS IS NECESSARY AND WILL BE DESIGNED BY THE TRAFFIC SIGNAL CONSULTANT.
LEGEND AND ABBREVIATIONS: (EXISTING)
LEGEND AND ABBREVIATIONS: (PROPOSED/NEW)
CONCEPTUAL PLAN
GRAPHIC SCALE IN FEET
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
CONCEPTUAL PLAN - INTERSECTION MODIFICATION
FIGURE 9


TRUE NORTH
NOTES:
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: (EXISTING)
CB 2
CB 3
① DRAINAGE AREA DESIGNATION
FLOW TO CB 1 (SEE FIG. 7)
FLOW TO CB 4 (SEE FIG. 7)
GRAPHIC SCALE IN FEET
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
HYDROLOGY MAP (EXISTING CONDITION)
FIGURE 10




Panaka
ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS
LAND SURVEYORS
871 KOLU STREET SUITE 201
WAILUKU, MAUI, HAWAII
PHONE No.: 242-6041

CONSTRUCTION PLANS FOR
WAILEA ALANUI/WAILEA IKE DRIVE INTERSECTION
AT HONUAULA, MAUI, HAWAII
HYDROLOGY MAP (FUTURE CONDITION)

REVISIONS:

T.M.K.: (2) 2-01-005
SCALE: AS NOTED
DESIGNED BY: R.H.
CHECKED BY: K.T.
DRAWN BY: M.D.
DATE: AUGUST 2008
JOB No.: 06-024

FIGURE 11

# APPENDIX E.

# April 16, 2009 Community Meeting

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

Bud Pikrone
**Wailea Community Association**
555 Kaukahi Street, Suite 214
Wailea, Hawai'i 96753-8333

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Mr. Pikrone:

During the County of Maui's review of the re-zoning application for Kihei-Makena Project District 9 (Honua`ula), it included a condition in which Honua`ula Partners, LLC (applicant) was made responsible for the widening improvements to Pi`ilani Highway to four (4) lanes from Kilohana Drive to Wailea Ike Drive, including intersection improvements along the project corridor. See **Figure 1**, location map.

The applicant was also required to improve the signalized intersection of Wailea Ike Drive and Wailea Alanui Drive. See **Figure 2**, location map. The condition states

> *"Modify the Wailea Alanui/Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9."*

The Pi`ilani Highway widening improvements will be located within the highway right-of-way and involves the use of lands owned by the State of Hawai'i. Pursuant to Chapter 343, Hawai`i Revised Statutes (HRS), an environmental assessment (EA) is required. Also, the improvements to the Wailea Alanui/Wailea Ike Drive intersection involves the use of County of Maui lands which will also require an EA. As part of the EA early consultation process, on behalf of the applicant, we are seeking early community input. In this regard, we have scheduled a community meeting on

**Date:** April 16, 2009
**Time:** 6:00 p.m.
**Place:** Kihei Community Center
303 East Lipoa Street
Kihei Hawai`i 96793

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

planning environment government

Printed on Recycled Paper

We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua'ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
F:\DATA\WCPT\Pilani Widening\association ltrs.wpd

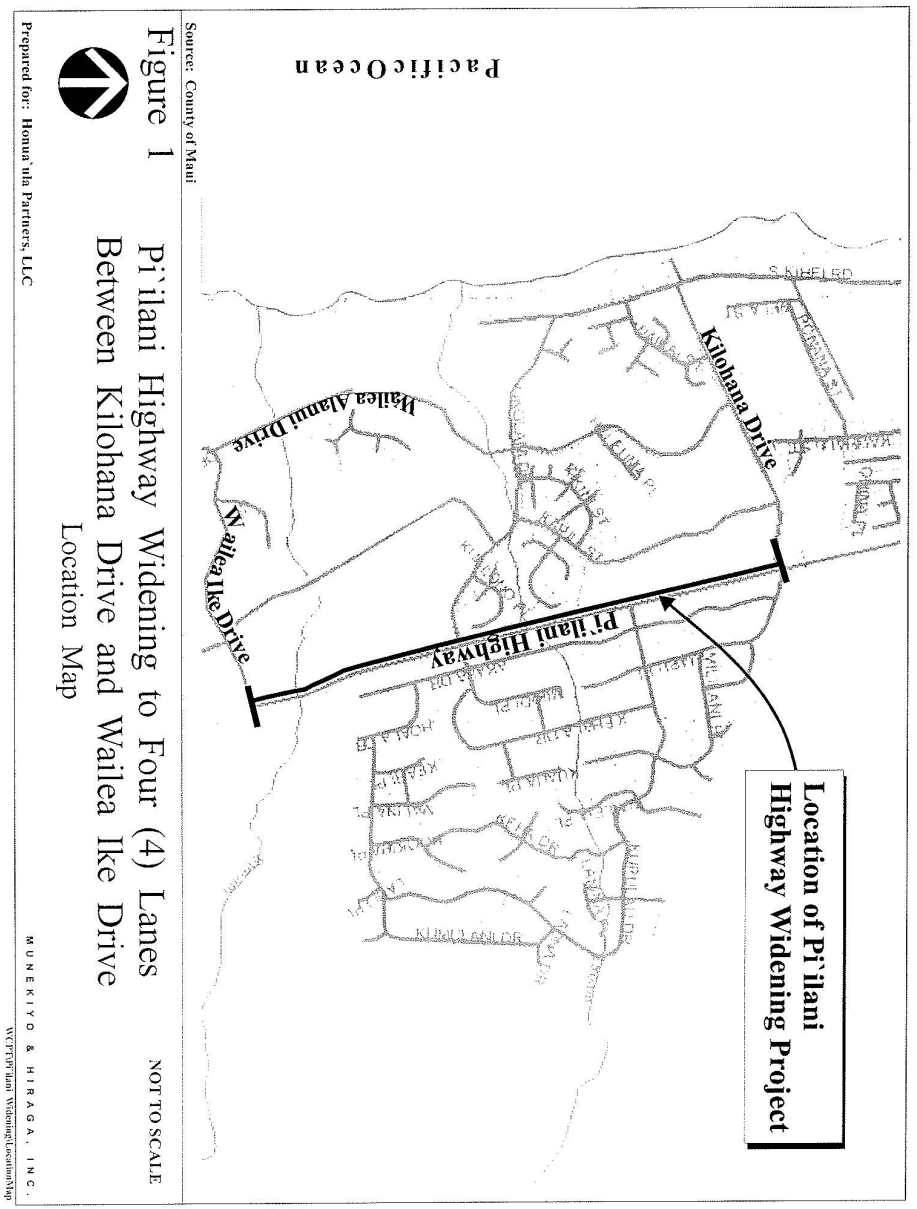



Figure 1 Pi`ilani Highway Widening to Four (4) Lanes
Between Kilohana Drive and Wailea Ike Drive
Location Map

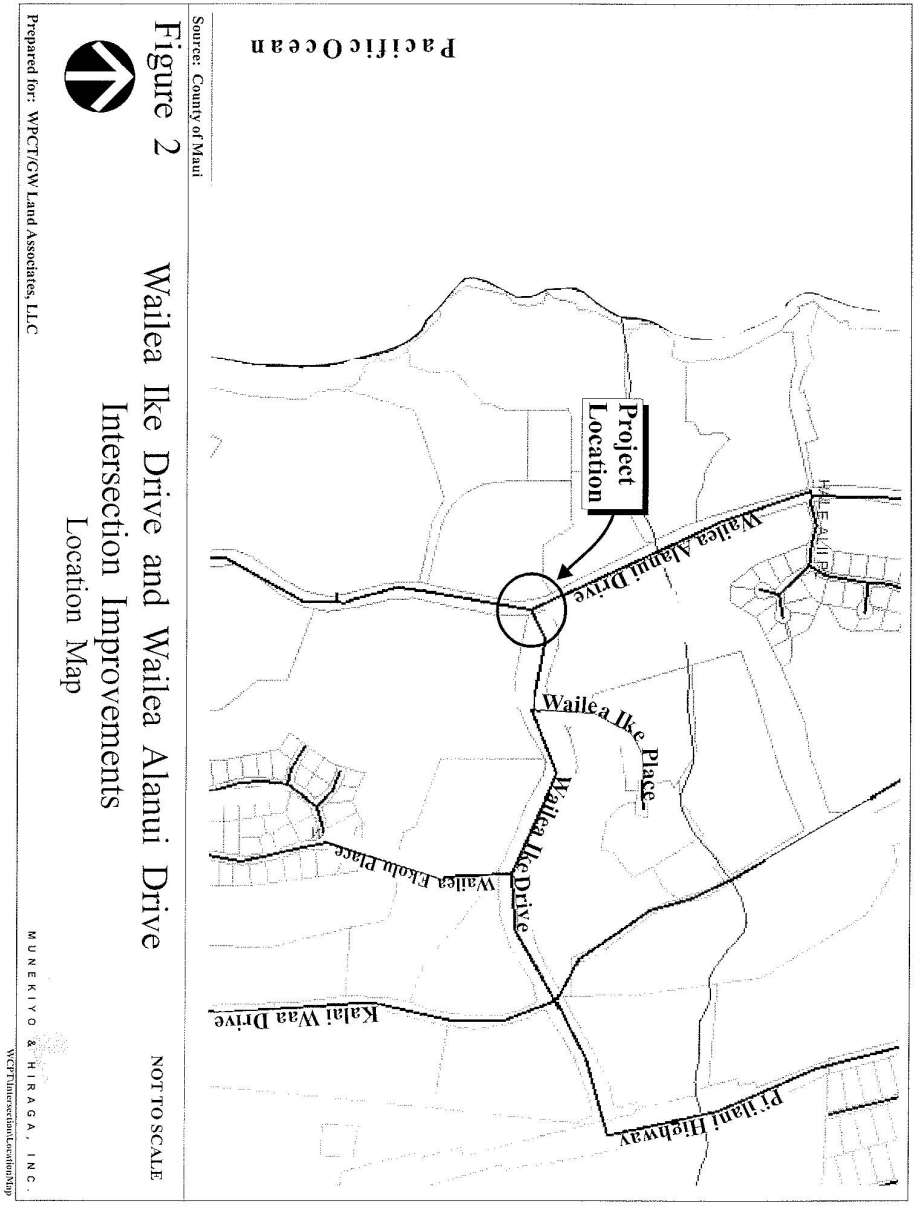



Figure 2
Wailea Ike Drive and Wailea Alanui Drive
Intersection Improvements
Location Map

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

Madge Schaefer, President
**Maui Meadows Neighborhood Association**
P. O. Box 160
Kihei, Hawai`i 96753

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Ms. Schaefer:

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Kihei Hawai`i 96793

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • planning@mhplanning.com • www.mhplanning.com

environment planning government
Printed on Recycled Paper

We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

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Very truly yours,

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua`ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
F:\DATA\WCPT\Pilani\Widening\association ltrs.wpd

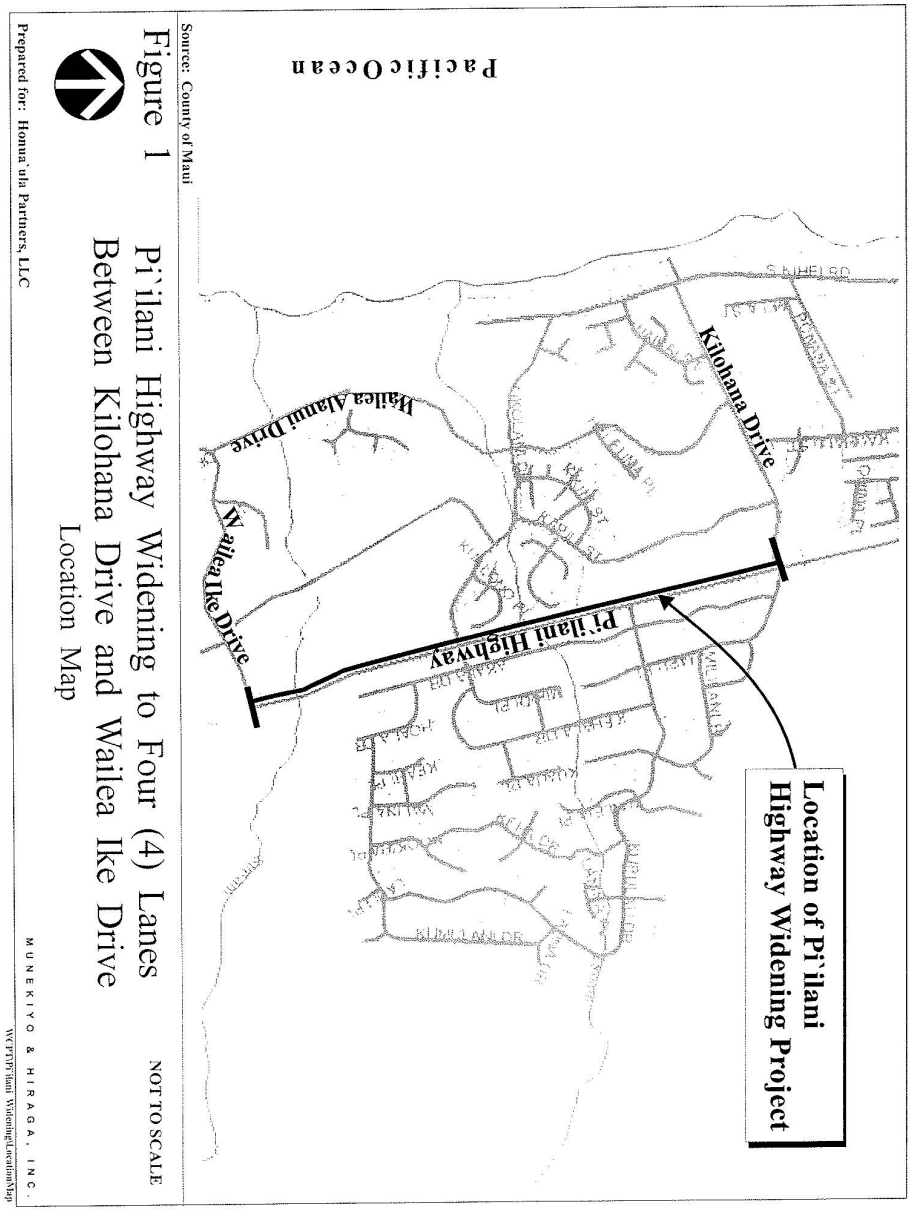
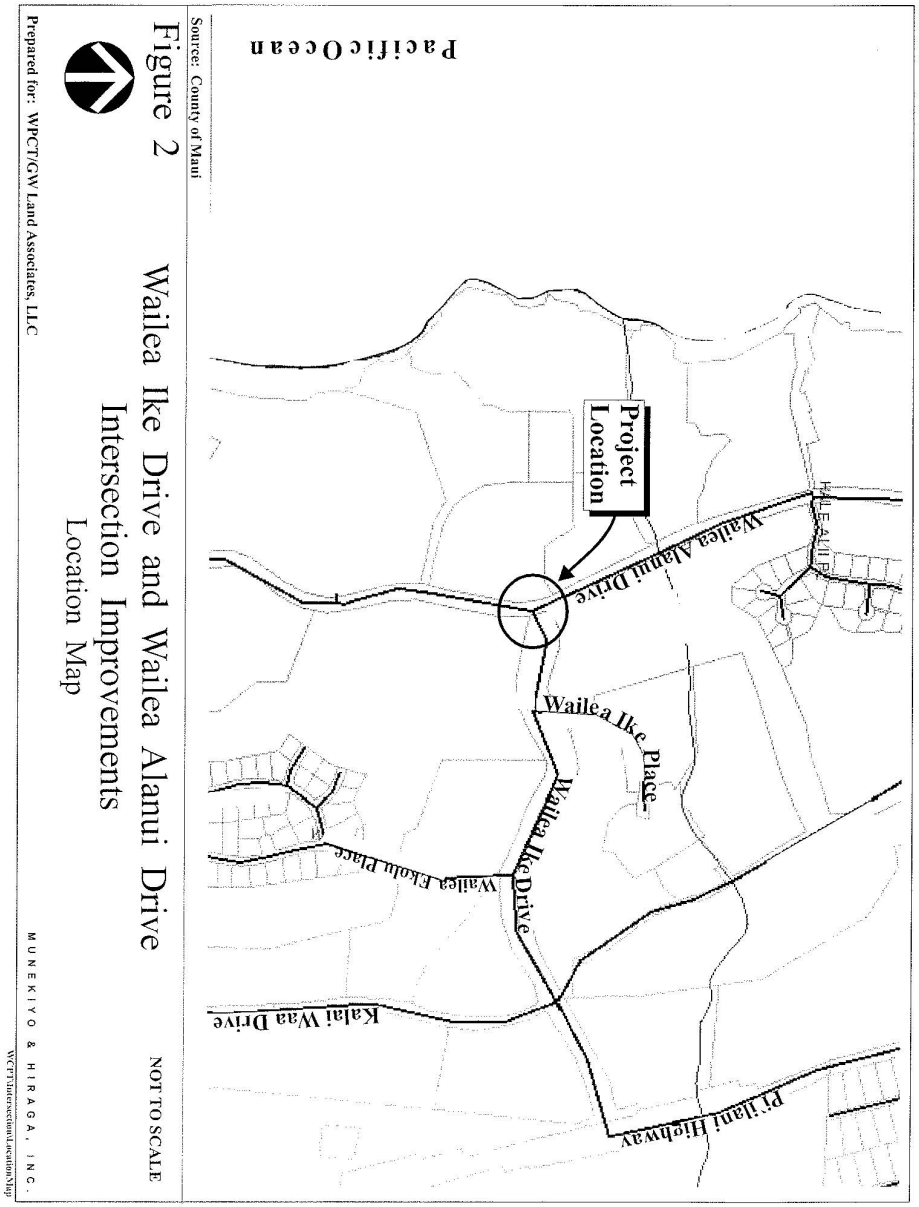



Figure 1 Pi`ilani Highway Widening to Four (4) Lanes Between Kilohana Drive and Wailea Ike Drive Location Map




MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

**Kihei Community Association**
P. O. Box 662
Kihei, Hawa`ii 96753

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Sir or Madam:

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**Time:** 6:00 p.m.
**Place:** Kihei Community Center
303 East Lipoa Street
Kihei Hawai`i 96793

planning environment

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We invite your community association and members to attend this community meeting to become informed of the project and to voice your concerns that should be addressed in the EA document.

We look forward to your participation in the scheduled community meeting. If additional clarification is required, please contact me at 244-2015.

Very truly yours,

Gwen Ohashi Hiraga, Principal

GOH:yp
Enclosures
cc: Charles Jencks, Honua`ula Partners, LLC (w/out enclosures)
Keith Niiya, Austin Tsutsumi & Associates (w/out enclosures)
Stan Watanabe, Austin Tsutsumi & Associates (w/out enclosures)
F:\DATA\WCPT\Pilani\Widening\association ltrs.wpd

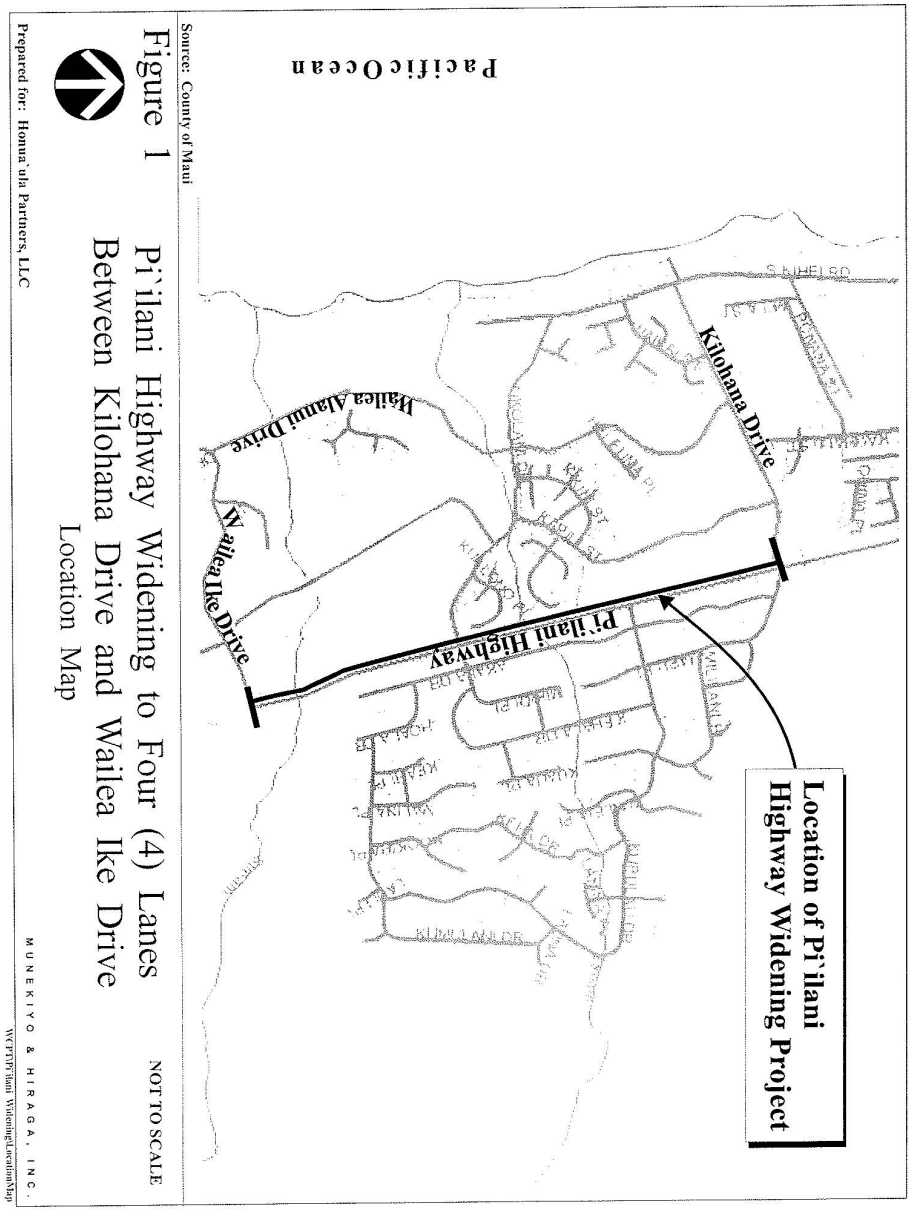


Figure 1 Pi`ilani Highway Widening to Four (4) Lanes Between Kilohana Drive and Wailea Ike Drive Location Map

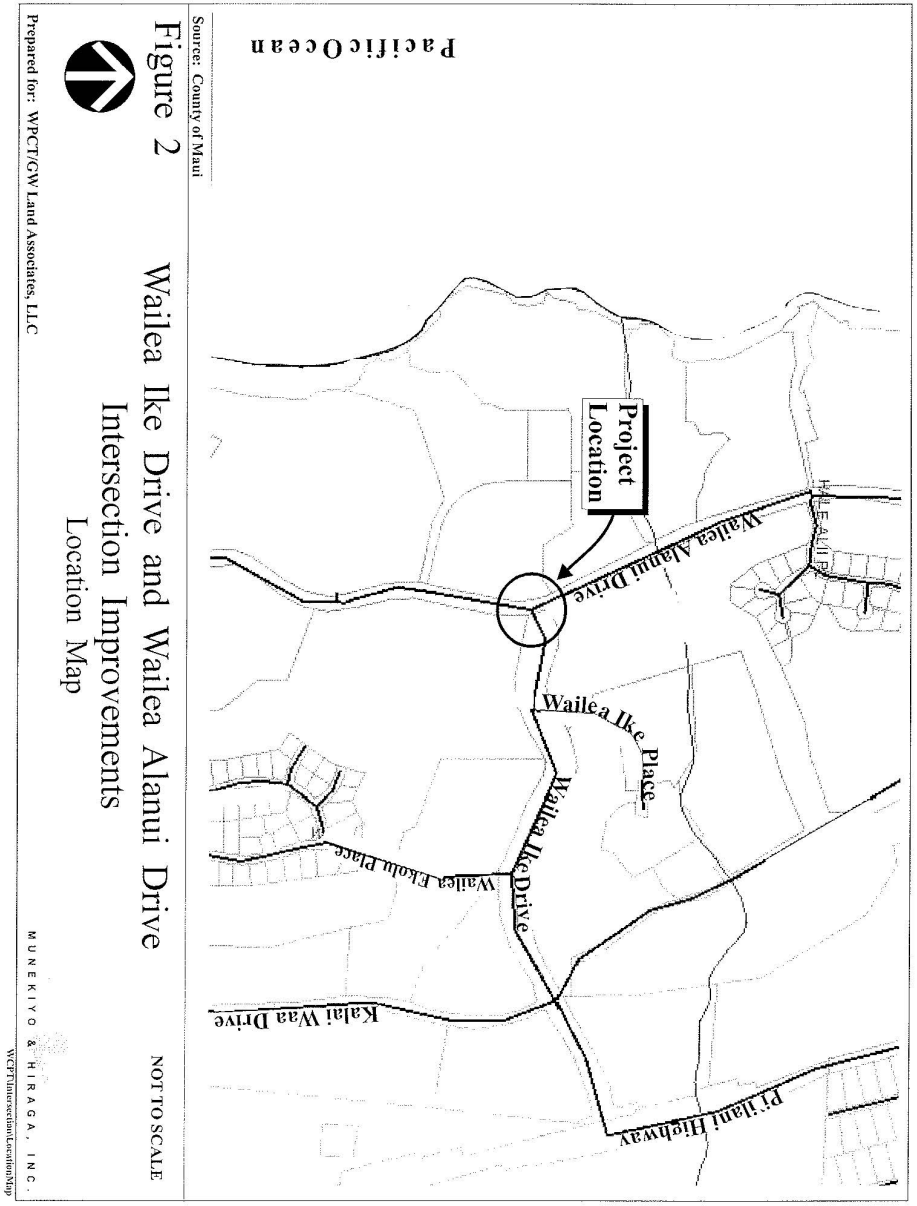


Figure 2
Wailea Ike Drive and Wailea Alanui Drive
Intersection Improvements
Location Map

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 20, 2009

Madge Schaefer, President
**Maui Meadows Neighborhood Association**
P. O. Box 160
Kihei, Hawai`i 96753

SUBJECT: Pi`ilani Highway Road Widening Project Between Kilohana Drive and Wailea Ike Drive and Wailea Ike/Wailea Alanui Intersection Improvements, Kihei, Maui, Hawai`i

Dear Ms. Schaefer:

During the County of Maui's review of the re-zoning application for Kihei-Makena Project District 9 (Honua`ula), it included a condition in which Honua`ula Partners, LLC (applicant) was made responsible for the widening improvements to Pi`ilani Highway to four (4) lanes from Kilohana Drive to Wailea Ike Drive, including intersection improvements along the project corridor. See **Figure 1**, location map.

The applicant was also required to improve the signalized intersection of Wailea Ike Drive and Wailea Alanui Drive. See **Figure 2**, location map. The condition states

> *"Modify the Wailea Alanui/Wailea Ike Drive intersection to add a signalized double right-turn movement from northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive prior to occupancy of the first unit in Kihei-Makena Project District 9."*

The Pi`ilani Highway widening improvements will be located within the highway right-of-way and involves the use of lands owned by the State of Hawai'i. Pursuant to Chapter 343, Hawai`i Revised Statutes (HRS), an environmental assessment (EA) is required. Also, the improvements to the Wailea Alanui/Wailea Ike Drive intersection involves the use of County of Maui lands which will also require an EA. As part of the EA early consultation process, on behalf of the applicant, we are seeking early community input. In this regard, we have scheduled a community meeting on

**Date:** April 16, 2009
**Time:** 6:00 p.m.
**Place:** Kihei Community Center
303 East Lipoa Street
Kihei Hawai`i 96793

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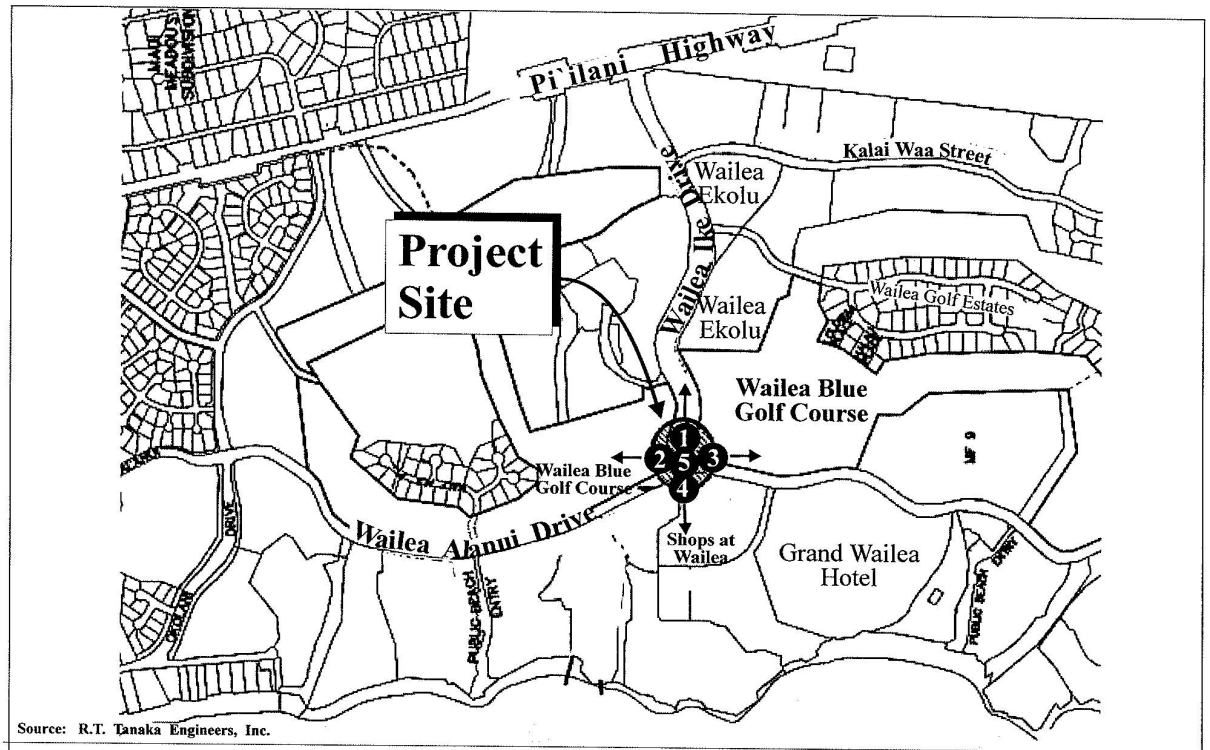


Source: R.T. Tanaka Engineers, Inc.

Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements

Photographic Reference Map

NOT TO SCALE

Prepared for: Honua`ula Partners, LLC

MUNEKIYO & HIRAGA, INC.

WCPT\Intersection\photoreference

# APPENDIX F.

## Site Photographs



**PHOTO NO. 1 - Intersection - View East**



**PHOTO NO. 2 - Intersection - View North**
**(Wailea Blue Golf Course)**



**PHOTO NO. 3 - Intersection - View South**
**(Wailea Blue Golf Course)**



**PHOTO NO. 4 - Intersection - View West**
**(Shops at Wailea)**



**PHOTO NO. 5 - Drainage in Wailea Ike Drive Median**

# APPENDIX G.

# Department of Land and Natural Resources, State Historic Preservation Division Letter Dated July 16, 2009

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

KEN C. KAWAHARA
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

July 16, 2009

Ms. Gwen Ohashi Hiraga, Principal
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793
planning@mhplanning.com

LOG NO: 2009.1118
DOC NO: 0907PC31
Archaeology

**SUBJECT:** **Chapter 6E-42 Historic Preservation Review – Early Consultation on the Wailea Resort Intersection Improvements to Wailea Alanui Drive and Wailea Ike Drive Paeahu Ahupua'a, Makawao District, Island of Maui**
**TMK: (2) 2-1-008:999**

Thank you for the opportunity to comment on the aforementioned project, correspondence for which we received on March 20 of 2009. Please accept our apologies for the lengthy delay in responding.

Based on the submitted document, the project involves intersection improvements to Wailea Alanui Drive and Wailea Iki Drive, as requested by the County of Maui in association with the rezoning application made by Honua'ula Partners, LLC. More specifically, the County requested that the applicant "*modify the Wailea Alanui/Wailea Ike Drive intersection to add signalized double right-turn movement from northbound to eastbound turning traffic and to provide two left-turn lanes for southbound traffic from Wailea Ike Drive...*" The proposed area of effect is within an existing County roadway/road right-of-way. The proposed project is also located in an area where numerous isolated and clustered pre-Contact period human burials and other culturally significant deposits have been found. Given the above information, the most reasonable form of mitigation appears to be precautionary archaeological monitoring during all project related ground altering disturbance.

Therefore, upon review of any permit application associated with the proposed project forwarded to us by the County of Maui, we will likely recommend the following:

A qualified archaeological monitor shall be present during *those portions of the project which involve ground altering disturbance* in order to document any historic properties which may be encountered and to provide mitigation measures as necessary. *Please note that ground altering disturbance includes previously disturbed stratigraphy, as culturally significant subsurface deposits are often found in these contexts.*

As per Hawai'i Administrative Rules (HAR) §13-279, this means that prior to the commencement of ground altering disturbance associated with the proposed project, the project developer or developer's agent must submit an appropriately prepared *monitoring plan* to this office for review and acceptance. The plan must contain the following provisions:

1) Specify the kinds of historically or culturally significant sites or remains of sites anticipated and where in the construction area they are likely to be found;
2) Specify how such sites or remains of sites will be documented;
3) Specify how such sites or remains of sites will be treated;
4) Specify that the archaeologist (s) conducting the monitoring has (have) the authority to halt construction in the immediate area of the find in order to carry out the plan;
5) Specify that coordination between the archaeologist and construction crew has been scheduled so that all involved parties are aware of the plan and what it means;
6) Specify what laboratory work will be performed on any cultural sites or remains of sites that might be found in the project area;
7) Specify details concerning the archiving of any collections that are made;
8) Specify a schedule of report preparation and that the report will be submitted within the required 180 days after completion of the proposed undertaking.

A list of those meeting the requirements to perform such work can be obtained on the SHPD's website at http://hawaii.gov/dlnr/hpd/pdfs/2009-Permittee.pdf or by contacting our main office at (808) 692-8015.

If you have any questions or comments regarding this letter, please contact the SHPD's Lead Maui Archaeologist, Ms. Patty Conte (Patty.J.Conte@hawaii.gov).

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Sinoto Consulting, LLC: akihikosinoto@aol.com
Jeff Hunt, Director, Dept. of Planning, FAX (808) 270-7634