Mr. Bruce S. Anderson, PhD.
Interim Director
State of Hawaii
Office of Environmental Quality Control
220 South King Street Fourth Floor
Honolulu, Hawaii 96813

Dear Mr. Anderson:

Subject: Negative Declaration for Owa Subdivision, TMK: 3-8-07: 38, Wailuku, Maui, Hawaii.

The County of Maui Planning Department has reviewed the comments received during the 30-day public comment period which began on the May 8, 1994 OEQC Bulletin Publication Date. This agency has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the next available OEQC bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA.

Please contact Mr. Clayton Yoshida of this office at 243-7735 if you have any questions.

Very truly yours,

[Signature]

Brian Miske
Planning Director

Encl.

cc: Robert Sasaki, A&B Properties
Marie Kimmey, AIA
Project File
Colleen Suyama
Clayton Yoshida, AICP
OWA SUBDIVISION
KAHULUI • MAUI • HAWAII

A & B PROPERTIES INC.
(A WHOLLY OWNED SUBSIDARY OF A & B INC.)

FINAL
ENVIRONMENTAL ASSESSMENT

CHANGE IN ZONING
AND
COMMUNITY PLAN AMENDMENT APPLICATION

RIECKE SUNNINLAND ARCHITECTS LTD KONO
305 E. WAKEA AVENUE
PO BOX 1627
KAHULUI, MAUI, HAWAI'I 96732
TELEPHONE (808) 877-7688

JULY 1994
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I.

INTRODUCTION
I. INTRODUCTION

A. INTRODUCTION

This environmental assessment (EA) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS), and is intended to fulfill the environmental requirements for a Change in Zoning (CIZ) and a Community Plan Amendment (CPA) filed with the County of Maui Planning Department.

The EA presents information required by Chapter 200 of Title 11, Administrative Rules, entitled "Environmental Impact Statement Rules", prepared by the State Department of Health. This includes: identification of the petitioner; identification of the approving agency; identification of agencies consulted in preparing the assessment; a general description of the action's technical, economic, social and environmental characteristics; a summary description of the affected environment; identification and summary of major impacts and alternatives considered; proposed mitigation measures; and a determination of the significance of the proposed action.

B. BACKGROUND

In September 1992 a joint application for a Change in Zoning and a Community Plan Amendment, including a Draft EA, were submitted to the County of Maui Planning Department.

In April 1994 the Maui County Planning Department sent copies of the CIZ/CPA application and Draft EA to the Office of Environmental Quality Control (OEQC). Notice of the availability of the draft EA was published in the May 8 and May 23, 1994 editions of the OEQC Bulletin, commencing a 30-day public comment period which ended on June 7, 1994. During this period, written comments were received from a number of federal, state and county agencies as well as one public comment. These comment letters are reproduced in Appendix E.
C. DEVELOPMENT INFORMATION

Applicant/
Property Owner: A & B Hawaii, Inc.
P. O. Box 156
Kahului, Hawaii 96732
(808) 877-5523
Attention: R.K. Sasaki

Preparers of Environmental
Assessment: Riecke Sunnland Kono Architects, Ltd.
P. O. Box 1627
Kahului, Hawaii 96732
(808) 877-7688
Attention: Marie Kimmey, AIA

Property Location:
Kahului Beach Road and
Kanaloa Avenue
Kahului, Maui, Hawaii

Tax Map Key:
2nd Division 3-B-07:38

Site Area:
4.041 acres

Existing Land
Use Regulations:
State Land Use District: Urban
Wailuku-Kahului
Community Plan: Open Space
County Zoning: R-3 Residential
Special Management Area: Entire Site
Flood Zone: Entire site is within 100
year flood plain and
portions are in Tsunami
Zones V23, 17 and 15

Existing Land Use:
Open Space, Unimproved land with
overgrowth of tall shrubs and grass and
five abandoned concrete walls (remains
of former Makaweli Rock Crusher).

Proposed Action:
Change current land zoning to R-O
Zero Lot Line Residential and PK-1
Neighborhood Park in order to
construct a 28 unit affordable
subdivision and a small park.
Requested Permits:
Change in Zoning (CIZ)
Community Plan Amendment (CPA)
[Application for Special Management Area Use Permit (SMA) will be submitted upon approval of CIZ and CPA]

Accepting/Approving Agencies:
Maui County Planning Department
Maui County Planning Commission

Agencies Consulted/Commenting
- County of Maui, Wailuku-Kahului Community Plan/Planning Dept.
- County of Maui, Dept. of Water Supply, availability of water
- County of Maui, Wastewater Division, availability of sewer
- County of Maui, Dept. of Public Works
- Darby and Associates, Traffic Noise Impact Assessment
- Hawaiian Telephone Company, availability of telephone service
- Maui Electric Company, availability of electricity
- Maui Police Department, traffic patterns
- Parsons Brinkerhoff Quade and Douglas Inc., Traffic Impact Assessment
- State of Hawaii, Dept. of Accounting and General Services, Survey Division
- State of Hawaii Department of Health
D. IDENTIFICATION AND SUMMARY OF PROBABLE IMPACTS AND MITIGATING MEASURES

1. Archaeological and Historic Resources

The subject parcel lies within the large prehistoric ahupua'a of Wailuku, in the coastal zone. Here one would expect to find housing in dry area "living zones", particularly if there was a freshwater source nearby. There is a possible stream bed on the southern side of the parcel.
Prehistoric land use also may have been for activity areas associated with the sea and shoreline utilization. A site suggesting the latter kind of prehistoric land use was located three-quarters of a kilometer west of this parcel, as well as on the adjacent Nisei Veterans Memorial Center site.

Human burials have been discovered in other sand dune areas on Maui, and the potential for such finds is present at this site.

An archaeological inventory survey, including subsurface investigation, did not find any subsurface pre-contact Hawaiian cultural deposits, burials or human remains. The study concluded that the proposed action did not affect archaeological sites. As requested by DLNR State Historic Preservation Division, a preservation plan for the Makaweli Rock Crusher site will be submitted to the State Historic Preservation Division for review and approval. In addition, an archaeologist will be on-site during construction excavation to monitor any construction activities.

2. Traffic Circulation

The proposed project site is located on Kahului Beach Road north of Kanaloa Avenue. Public access is not currently provided to the project site. Traffic on the local roadways and regional highway system would increase with the proposed project.

The unsignalized intersections formed by the Proposed Subdivision Road at Kahului Beach Road and at Kanaloa Avenue would experience acceptable Levels-of-Service with the proposed project. The signalized intersections along Kahului Beach Road at Kanaloa Avenue and at Lower Main Street/Waiehu Beach Road would also experience acceptable Levels-of-Service during both the a.m. and p.m. peak hours with the proposed project.

Roadway widening and right-of-way improvements, as agreed upon with the County of Maui Public Works Department, will be constructed by the owner.
3. **Noise Impacts Analysis**

Various federal agencies specify guidelines and standards in assessing environmental noise and set noise limits as a function of land use. For instance, noise exposure at the residence may become a factor influencing eligibility for HUD/FHA financing. HUD assistance for the construction of housing is prohibited generally for projects within the Unacceptable Noise Zone and is discouraged for projects within the Normally Unacceptable Noise Zone.

Ambient sound level measurements were conducted on August 9, 1993 to assess the existing acoustical environment within and adjacent to the project site. It was determined that the 90-foot minimum setback of the homes from the center line of Kahului Beach Road should limit the traffic noise level exposure at these homes adequately to meet the standards and guidelines established by HUD, FHWA, and EPA.

4. **Drainage**

Estimated runoff from the project site under present conditions are approximately 4.5 cfs. Storm water runoff from the developed site will be about 5.9 cfs, an increase of about 1.4 cfs. to the existing. The additional storm water generated from the site due to development will be collected by a drainage sump. The runoff amount presently being collected by an existing 36" drain pipe crossing Kahului Beach Road will continue to flow through this existing facility.

The final storm water collection system will be adequate to contain the anticipated increase in runoff generated from the site due to development, with no adverse effects to adjacent and downstream properties. The existing storm drain facilities will continue to carry an equal or lesser amount of storm water runoff than it is presently handling.

5. **Infrastructure**

The existing water supply in Maui is limited and the applicant has been advised that water for construction and domestic purposes of the project may not be available until such time as new sources have been developed to service the Central Maui/Kihei area. The applicant will cooperate with the Board of Water Supply and meet all...
of its requirements at such time as application for water service is approved.

Wastewater capacity in Maui is also limited and the applicant will pay all fees and meet all off-site requirements needed to provide wastewater service to the site.

The applicant will work closely with Maui Electric Company and Hawaiian Telephone Company to ensure that adequate electrical power and communication service will be provided to the site.

E. ALTERNATIVES CONSIDERED

Alternatives to the project which were considered included a "no action" alternative and a build-out phasing alternative. Both these alternatives were judged to be less favorable than the proposed project. The no action alternative was eliminated because of market demands, based upon the owners desire to make use of the property. The phasing alternative was eliminated because of its longer construction period and resulting higher development costs.

F. DETERMINATION

Under the provisions of Chapter 200 of Title 11, Hawaii Administrative Rules, prepared by the Department of Health, which establish criteria for determining significant environmental impact and based on the analysis contained herein, the proposed action will not have any substantial adverse effect on the environment and a negative declaration relating to the need for an Environmental Impact Statement (EIS), is requested.
II.

DESCRIPTION OF PROPOSED PROJECT
II. DESCRIPTION OF THE PROPOSED PROJECT

A. LOCATION

The proposed project will be located at the boundary of Kahului and Wailuku, Maui, adjacent to the intersection of Kanaloa Avenue and Kahului Beach Road, at TMK: 3-9-07:38. The entire 4.041 acre site is in the Special Management Area.

B. OWNERSHIP

A & B Hawai, Inc. Owner.
P.O. Box 156
Kahului, Hawaii 96732

C. PROPOSED ACTION (hereinafter called “the project”)

To construct a subdivision with 28 affordable homes, in the 80% - 140% range of Maui County median income, with 3,000 sq. ft. minimum lots on 2.993 acres of land. In addition, the project will set aside 1.48 acres of land for a neighborhood park.

The proposed development will be in compliance with Section 20.12.640 Objectives of the Special Management Area Rules and Regulations of the Maui County Code. The structures that will be built on the proposed lots will comply with the coastal high hazard ordinance.

D. DESCRIPTION OF THE PROJECT

The project provides a Zero Lot Line subdivision with 28 parcels of 3,000 square feet minimum area. Three two-bedroom, two bath 668 sq. ft units and 25 two-bedroom, one bath 760 sq. ft. units are proposed. Both unit types will also include covered lanais of approximately 125 sq. ft.

The buildings will be wood frame with cement finish. Lower level portions at some units will consist of prefabricated concrete wall sections. Earth tone colors and materials will be used throughout.

A small park area will be located at the south east corner of the property, with a green buffer area between the units and the beach road. A new roadway with a 44'-0" right-of-way, which is acceptable by the County of Maui, will provide access to the lots. Xeriscape landscaping will be provided on the lots as well as within the Park.
The project will also consist of construction of subdivision improvements required by the Subdivision Ordinance of the County of Maui. These improvements will include water, sewage, storm drainage, electrical, telephone and cable television systems. The street will be constructed to the standard for roadways in a residential district and dedicated to the County upon completion. The improvements will be completed in one phase.

E. EXISTING LAND USE

The parcel currently is unused, unimproved land with an overgrowth of tall grass and non-native shrubs. Five abandoned concrete pillars and arches which are all that remains of the former Makaweli Rock Crusher are located on the northeast portion of the site. At one time the site was traversed by Kahului Railroad tracks, which were finally dismantled and removed in 1967. An existing 8-inch waterline and an existing 30-inch sewerline run through the property. Both lines are owned by the County of Maui.

F. ADJACENT LAND USE

The surrounding properties include; a developed R-3 Residential Subdivision, developed light industrial properties, the future Nisel Veterans Memorial Center parcel, Rose of Sharon Church, undeveloped County of Maui property, the Ocean (across Kahului Beach Road from the site), and on the South, the Kahului Town Development's 5th Increment and Puuone Tract Unit II.

G. ACCESS

Vehicular access to the site will be provided by a new 44 foot right-of-way through the parcel from Kanaloa Avenue and Kahului Beach Road.

Kanaloa Avenue is a two-lane roadway that provides access to residential neighborhoods. It intersects Kahului Beach Road on its eastern (makai) terminus forming the stem of a signalized T-intersection. All approaches at the Kahului Beach Road/Kanaloa Avenue intersection provide separate lanes for turn movements. The posted speed limit on Kanaloa Avenue is 30 miles per hour.
Kahului Beach Road is a two-lane highway which provides access from Kahului toward Wailuku. Kahului Beach Road terminates on its northern end at its intersection with Waiheu Beach Road. West of Waiheu Beach Road, Kahului Beach Road becomes Lower Main Street. All approaches at the Kahului Beach Road/Lower Main Street/Waiheu Beach Road intersection provide separate lanes for turn movements. The posted speed limit on all approaches to the intersection is 30 miles per hour.

H. PARKING

Each of the 28 residences will be provided with parking for two vehicles, for a total of 56 dedicated parking spaces. Ten of the units will include covered parking.

I. SOCIAL - ECONOMIC

The proposed project will add to the economic base of Kahului by generating additional revenues to the community through an increase in the County's overall tax base. The improved lots will be sold to individuals for single family residential use, thereby increasing the housing stock on Maui.

There is a proven need for residential units for buyers in the 80% - 140% range of Maui County median income.

This quality residential project will provide much needed housing in the affordable range. These units will be in demand for "first-time" buyers as well as for retirees desiring to move into a compact, low maintenance residence. Kahului and Wailuku comprise the commercial center of Maui. Many people prefer to live in close proximity to their place of employment and major shopping districts. Owa subdivision will satisfy these needs.
III.

INFRASTRUCTURE/
EXISTING CONDITIONS
III. INFRASTRUCTURE / EXISTING CONDITIONS

A. UTILITIES

1. Water

The Department of Water Supply (DWS) utilizes a consumption standard for the new residential developments of 600 gallons per units per day (average demand). The average daily demand of the proposed 26 houses will therefore be approximately 16,800 gallons of water per day (gpd).

Since 1975, A&B Properties, Inc. has participated in the Central Maui Water Joint Venture with other private parties to develop water sources in the Iao aquifer. To date, 13.4 mgd of pumping capacity is in place. A&B Properties, Inc.'s allocation of this source development is 2.8 mgd, with current usage of about 500,000 pgd for existing A&B developments.

The Central Maui Source Joint Venture continues in existence and proposes to cooperate with the Board of Water Supply to develop additional water sources. A&B Properties, Inc. is a participant with the County and other private parties, in the East Maui Water Joint Venture, which has investigated water development in East Maui.

Potable water for the development will be provided by an existing Department of Water Supply 8-inch waterline in the proposed subdivision and on Kanaloa Avenue. The onsite system will provide an adequate domestic supply and fire protection.

The applicant has been advised by David Craddick, Director of Maui County Water Department, that water for the construction and domestic purposes of the project may not be available until such time as new sources have been developed to service the Central Maui/Kihei area. The Water Department will determine if water is available at such time as an application for water service is approved.
Fire, domestic, cooling and irrigation water calculations will be provided during the building permit process. The applicant will provide water system improvements, fire protection and water service in accordance with County standards. The County by Ordinance 2108 would require that the developer install low-flow fixtures, for example 1.6 maximum gallon toilets.

The applicant will provide recirculating air conditioning systems where cooling is intended. Non-potable water will be used for the grading and construction of the project. Native strand and coastal species will be used wherever possible in the proposed xeriscape landscaping to support the unique, natural history of the Kahului Beach neighborhood.

2. **Sewage**

An 8-inch sewerline and laterals to each lot will be constructed. The sewerline will be connected to the existing County sewage system. An existing 30-inch county sewer trunkline runs across the property in an easement.

The applicant has been advised that the County of Maui Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.

The applicant will pay assessment fees for treatment plant expansion costs in accordance with the ordinance setting forth such fees. At the present time, wastewater assessment fees are only utilized in Khel. The applicant is aware that other areas may be subject to fees at a later time.

The applicant will also fund any necessary off-site improvements to collection system and wastewater pump stations, as agreed upon with the County Wastewater Reclamation Division.

3. **Electrical, Telephone and Cable Television**

Electrical and telephone services will be provided through underground extensions of the overhead systems that exist on Kahului Beach Road. These systems will be designed to meet the requirements of Maui Electric Company and Hawaiian Telephone Company.
Underground ductlines and handholds for future cable television service will be installed within the subdivision.

The applicant will provide specific electrical data (load, voltage, etc.) to determine the probable impact to the MECO electrical system. The applicant’s consultant will meet with MECO to plan for the project’s electrical requirements. MECO has electrical facilities near the project location.

4. **Solid Waste**

The applicant, the contractors and future homeowners will implement solid waste reduction, re-use and recycling programs to reduce the amounts of solid waste to be disposed of at the County landfills.

Alternative means of disposal of grubbed material and rock will be utilized other than disposing material at the County landfills.

Solid waste will eventually be collected by either the County of Maui or a private company, and ultimately disposed of at the County operated sanitary landfill.

B. **PUBLIC PROTECTION**

The development will be serviced by the Maui Police Department, whose headquarters is located approximately two miles away in Wailuku. Fire protection will be provided by the County Fire Station in Wailuku, which is about 3 miles from the site.

C. **SOILS**

According to the United States Department of Agriculture, Soil Conservation Services, **Soil Survey of the State of Hawaii**, the majority of the soil on the subject site is Puuone sand (PZUE). This soil is characterized by rapid permeability and low runoff potential. It is subject to moderate to severe erosion if not protected.

Lowland oxisols (highly stable), volcanic entisols, and aeolian sands are also present on the site.
IV.

DESCRIPTION OF
THE ENVIRONMENT
IV. DESCRIPTION OF THE ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATING MEASURES

A. HISTORICAL, ARCHAEOLOGICAL OR CULTURAL

The project is located on property, owned by A & B - Hawaii, Inc., which has been vacant for many years. Archaeological research work performed on the property adjacent to the A & B parcel discussed here, the site of the future Nisei Veterans Memorial Center, produced three significant sites (Fredericksen, October 1992). The occurrence of these sites in such close proximity increased expectations for further archaeological discoveries on the Owa Subdivision parcel. This expectation was not sustained by the on-site work.

Although some historic artifacts affiliated with the Kahului Railroad trackbed/complex are present, (the old Kahului Railroad bed, extends across the subject parcel from its south through its north border), no clearly pre-contact Hawaiian artifacts were discovered. Additionally, no identifiable Hawaiian cultural layers, indicating either permanent or temporary land use, were discovered.

Sizable portions of this parcel had been previously disturbed by various construction projects. Whether or not existing possible sites were destroyed during this process will probably never be known. Since major grubbing and land sculpting are planned as preliminary tasks to actual on-site construction of the housing development, monitoring will be provided by archaeological personnel. This will enable observation for possible archaeological materials (including human burial sites) to take place during land removal.

Should evidence of historic sites be located or uncovered during earthmoving or construction, activity in the area of the find will cease and the monitoring archaeologist will be provided sufficient time to assess the significance of the site and complete data recovery. At the completion of the monitoring, a report of findings and activities shall be submitted to the State Historic Preservation Division for review and approval.

In addition, prior to the initiation of vegetation grubbing, earthmoving, or excavation on the project site, a preservation plan for Site 50-04-3135 (the Makawell Rock Crusher) shall be submitted to the State Historic Preservation Division for review and approval. This plan will be included in the subsequent contract for the site work.
An archaeological inventory survey prepared by Xamanek Researches, is submitted as Appendix "A".

**B. TRAFFIC**

Traffic on the local roadways and regional highway system would nominally increase with the proposed project. Project generated traffic would increase at the Kahului Beach Road/Kanaloa Avenue intersection and the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection by less than one percent during both the a.m. and p.m. peak hours.

The unsignalized intersections formed by the Proposed Subdivision Road at Kahului Beach Road and at Kanaloa Avenue would experience acceptable Levels-of-Service with the proposed project. The signalized intersections along Kahului Beach Road at Kanaloa Avenue and at Lower Main Street/Waiehu Beach Road would also experience acceptable Levels-of-Service during both the a.m. and p.m. peak hours with the proposed project.

The applicant will work closely with the County of Maui Department of Public Works and will construct all agreed upon roadway widening and right-of-way improvements as required.

A Traffic Impact Assessment for Owa Subdivision, prepared by Parsons Brinkerhoff Quade & Douglas, Inc., is submitted as Appendix "B".

**C. NOISE**

Various federal agencies specify guidelines and standards in assessing environmental noise and set noise limits as a function of land use. The U.S. Department of Housing and Urban Development (HUD) has established Environmental Criteria and Standards for interior and exterior noise impacting housing sites, the Federal Highway Administration (FHWA) has established a set of design goals for traffic noise exposure and the U.S. Environmental Protection Agency (EPA) has identified a range of yearly day-night average sound levels, Ldn, sufficient to protect public health and welfare from the effects of environmental noise.
Ambient sound level measurements were conducted on August 9, 1993 to assess the existing acoustical environment within and adjacent to the project site. The project site and vicinity experience ambient sound levels (L90) of approximately 51 to 62 dBA, which is typical of urban areas. The higher ambient noise levels were measured near Kahului Beach Road and can be attributed to traffic noise. A 90-foot minimum setback of the homes from the center line of Kahului Beach Road should limit the traffic noise level exposure at these homes adequately to meet the standards and guidelines established by HUD, FHWA, and EPA.

No major noise impacts are anticipated other than temporarily during the period of construction. These impacts, however, will be limited to normal daylight working hours.

A Traffic Noise Impact Assessment prepared by Darby and Associates Acoustical Consultants in 1993 is submitted as Appendix "C".

D. STORM DRAINAGE

1. Existing Conditions

The ground adjacent to the developed residential area along the south side of the site slopes down at about 15% from 40 feet elevation to a depressed area at about 6 feet elevation. This depressed area collects runoff from the site and adjacent areas then deposits it into the Pacific Ocean through an existing 36-inch pipe. Estimated runoff from the project site under present conditions is approximately 4.5 cfs. From the depressed area, the ground slopes up on the north side of the project to Kahului Beach Road at an elevation of 10 to 12 feet.

The site is presently covered with grass and brush. The soil is generally Puuone Sand (PZUE) and is characterized by rapid permeability and low runoff potential. It is subject to moderate to severe erosion if not protected.

2. Proposed Improvements

The project will consist of twenty-eight zero-lot line residential lots, each with areas of 3,000 square feet or greater, and one road lot for access purposes. Improvements will include water, sewer, storm drainage, electrical, telephone and cable television systems. Storm water runoff from the developed site will be about 5.9 cfs, an
increase of about 1.4 cfs. to the existing. The additional storm water generated from the site due to development will be collected by a drainage sump. The runoff amount presently being collected by the existing 36" drain pipe crossing Kahului Beach Road will continue to flow through this existing facility.

3. **Theoretical Flood Inundation**

The Owa Subdivision is located in the 100 year flood area and is within theoretical tsunami inundation Zones 15, 17 and 23. This determination was made from the Flood Insurance Rate Map (Firm) No. 190 of the Kahului - Wailuku area, provided by the Federal Emergency Management Agency and dated June 1, 1981.

The regulatory flood elevation requirement for the residential portion of the parcel is approximately 17 feet above sea level. Living areas in the subdivision have finished floor elevations of 18 feet minimum based on mean sea level.

4. **Water Quality**

Due to the very slight increase of surface runoff volume generated by the project site and the existence of drainage systems already in place, the effects of the project will not be detrimental to the water quality of adjacent and downstream properties.

5. **Conclusion**

A storm water collection system will be constructed to adequately contain the anticipated increase in runoff generated from the site due to development, with no adverse effects to adjacent and downstream properties. The existing storm drain facilities will continue to carry an equal or lesser amount of storm water runoff as it is presently handling.

A Storm Drainage Report prepared by A & B Properties, Inc. in June, 1994 is submitted as Appendix "D".

E. **RAINFALL AND CLIMATE**

The Kahului area is arid, with an average of approximately 20 inches of rainfall annually. The climate of the area is determined for the most part by northeasterly tradewinds. The mean annual temperature is 75 degrees F.
Periods of hot and dry weather can be expected on Maui during the months of April to September, while cool and wet periods normally occur during the months of January through March.

Precipitation measurements taken at the Kahului Airport from 1984-1988 showed the following:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Annual Rainfall in inches</th>
<th>Departure from norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>8.56</td>
<td>-11.28</td>
</tr>
<tr>
<td>1985</td>
<td>20.90</td>
<td>0.16</td>
</tr>
<tr>
<td>1986</td>
<td>18.39</td>
<td>-1.45</td>
</tr>
<tr>
<td>1987</td>
<td>37.00</td>
<td>17.16</td>
</tr>
<tr>
<td>1988</td>
<td>26.70</td>
<td>6.86</td>
</tr>
</tbody>
</table>

The temperature records from Kahului WSD (No. 398 AP) showed the following monthly average temperature from 1983-1986:

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Temperature in °F</th>
<th>Departure from norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>75.3</td>
<td>-0.2</td>
</tr>
<tr>
<td>1984</td>
<td>77.6</td>
<td>+2.1</td>
</tr>
<tr>
<td>1985</td>
<td>74.00</td>
<td>+1.5</td>
</tr>
<tr>
<td>1986</td>
<td>75.8</td>
<td>+0.3</td>
</tr>
</tbody>
</table>

Tropical storms and hurricanes and the waves and storm surge they generate are significant causes of property damage in the Hawaiian Islands. Historically only one hurricane has actually touched land on Maui. This direct hit occurred in the late 1800's on the northern side of the island near the Keanae peninsula. However, high winds and driven rain associated with off-shore hurricanes have affected Maui from time to time.

New construction techniques and regulations put into effect since the September 1992 devastation of Hurricane Iniki will be followed in the construction of Owa Subdivision. The buildings will be solidly tied together to resist wind forces. All connection points will be considered from roof to foundation. The buildings will also resist lateral wind forces that can wrack structures out of shape or blow them over. Lateral forces are resisted by shear walls and by the shear resistance of floors and roofs.
These construction guidelines will insure superior performance of the Owa Subdivision homes in the event hurricane force winds and rain strike the Kahului Beach area.

F. AIR QUALITY

The annual arithmetic averages for total suspended particulates from a State Department of Health air sampling station that was located in the Kahului Shopping Center approximately one mile east of subject site are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>TSP (ug/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>76</td>
</tr>
<tr>
<td>1982</td>
<td>70</td>
</tr>
<tr>
<td>1983</td>
<td>69</td>
</tr>
<tr>
<td>1984</td>
<td>64</td>
</tr>
<tr>
<td>1985</td>
<td>57</td>
</tr>
</tbody>
</table>

No permanent impact on air quality from the subdivision development is anticipated. There will be some temporary effect from the construction of the subdivision improvements, and the construction of the houses in the future when the lots are developed. The effect of construction should be minimal because dust controlling measures by the contractors will be required.

G. VEGETATION

The site is covered with grass and brush. There are no rare or endangered species of vegetation known to be existing on the property. Planting of native shoreline and water resistant species will provide an attractive vista and enhance views in this important Kahului/Wailuku corridor.

H. ANIMAL LIFE

There appears to be no rare or endangered species on the subject property or in the general vicinity of the proposed project.

I. VISUAL

View corridors of the ocean from the adjoining residential subdivision will be reduced but not totally eliminated when houses are constructed in this subdivision.
V.

CHANGE IN ZONING SUMMARY
V. CHANGE IN ZONING SUMMARY

A. Policies and objectives of the general plan, the provisions of the community plan applicable to the application, the provisions of the applicable district and an analysis of the extent to which the application, if granted, conforms to these policies, objectives, and provisions.

Although the current Wailuku - Kahului Community Plan indicates open space for the subject parcel, the General Plan indicates Urban use and the underlying zoning designation is residential. The proposed project, by providing for both Residential and Park (open space) uses, provides a logical synthesis of State and County Policies.

Location Maps are included as EA/Fig. 1 and EA/Fig. 2.

B. Detailed land use history of the parcel which includes, but which is not limited to, former and existing state and county land use designations, violations, and uses.

The subject parcel lies within the large prehistoric ahupua’a of Wailuku, in the coastal zone. Prehistoric land use may have been for activity areas associated with the sea and shoreline utilization as well as housing. A site suggesting prehistoric land use was located three-quarters of a kilometer west of this parcel, as well as on the adjacent future Nisei Veterans Memorial Center site.

In historic time, the present study parcel was leased to Kahului Railroad for development of a commercial network between the various sugar mills and Kahului Harbor. Kahului Beach Road and Lower Main Street follow the former Kahului Railroad track line that ran from Kahului Harbor to a junction near Waihe'e Beach Road, where one spur ran to Paukukalo, and the other continued to Wailuku Sugar Mill, Wailuku and Waikapu. The railroad and the associated Makaweli Rock Crusher Mill constitute the most significant land use of the parcel in historic times.

The Wailuku Sugar Company closed railroad operations in 1947, initiating sugarcane hauling by truck. This shift closed the railroad spur to Wailuku Mill. Only one steam engine, Engine No. 12, remained in service by the mid-1950's. During the 1960's railroad enthusiasts were treated to excursions pulls by No. 12. In 1967, 88 years after the first tracks were laid, the railroad line was dismantled and the hardware was salvaged and sold.
During the Railroad era, if underlying Zoning and Community Plan designations had been in place they would have been Industrial in nature. the modern "down-zoning" to Residential indicates a better use for the parcel.

C. Preliminary archaeological and historical data and comments from the Department of Land and Natural Resources and Office of Hawaiian Affairs of the State of Hawaii. If applicable, a preservation/mitigation plan which has been reviewed and approved by the Department of Land and Natural Resources and Office of Hawaiian Affairs.

The State Historic Preservation Division of the DLNR has recommended the following conditions be attached to CIZ/CPA approval to ensure "no adverse effect" to the significant historic site:

1. Prior to the initiation of vegetation grubbing, earthmoving, or excavation on the project site, a preservation plan for Site 50-04-3135 (Makaweli Rock Crusher) shall be submitted to the State Historic Preservation Division for review and approval.

2. Vegetation grubbing and all earthmoving activities on the project site shall be monitored by a qualified archaeologist. Should evidence of historic sites be located or uncovered during earthmoving or construction, activity in the area of the find will cease and the monitoring archaeologist will be provided sufficient time to assess the significance of the site and complete data recovery. At the completion of the monitoring, a report of findings and activities shall be submitted to the State Historic Preservation Division for review and approval.

The applicant will abide by both of these recommendations. An Archaeological Inventory Survey is included as Appendix "A".

D. Analysis of the secondary impacts of the proposed use on surrounding uses which includes, but which is not limited to, increases in population value, population, housing, community services and facility needs, secondary jobs and employment generated, and compatibility with surrounding uses. If applicable, 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.
There is a proven need for residential units for buyers in the 80% - 140% range of Maui County median income.

This quality residential project will provide much needed housing in the affordable range. These units will be in demand for “first-time” buyers as well as for retirees desiring to move into a compact, low maintenance residence. Kula and Wailuku comprise the commercial center of Maui. Many people prefer to live in close proximity to their place of employment and major shopping districts. Owa subdivision will satisfy these needs.

F. Traffic impact analysis and, if applicable, a traffic master plan, which includes, but which is not limited to, comments from the Department of Transportation of the State of Hawaii and the Department of Public Works of the County.

Traffic on the local roadways and regional highway system would nominally increase with the proposed project. Project generated traffic would increase at the Kahului Beach Road/Kanaloa Avenue intersection and the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection by less than one percent during both the a.m. and p.m. peak hours. A Traffic Impact Assessment is included as Appendix “B”.

The applicant will work closely with the County of Maui Department of Public Works and will construct all agreed upon roadway widening and right-of-way improvements as required, and as outlined in preliminary comment letters included in Appendix “E”.

F. If applicable, an assessment of the impact which the proposed use may have on agricultural use of the parcel which includes, but which is not limited to, a feasibility analysis of potential agricultural uses suited to the site and written comments from the Department of Agriculture of the State of Hawaii and the U.S. Soil Conservation Service.

The project site is currently not under agricultural activity and is not expected to adversely impact agricultural production.

G. Water source, supply and distribution system analysis which includes, but is not limited to, methods of irrigation existing on the parcel and proposed for the application, location and use of groundwater and nonpotable water sources. If applicable, a water master plan, which includes but which is not limited to, comments from the Department of Land and Natural Resources of the State of Hawaii and the Departments of Water Supply and Public Works of the County.
There is no existing water or irrigation system serving the project site. Installation of future water systems will be done in accordance with low-flow fixture and Xeriscape restrictions as outlined by David Craddick, Director of Maui's Department of Water Supply.

H. Sewage disposal analysis, a description of a proposed method of sewage disposal and comments, if applicable, from the Departments of Health and Land and Natural Resources of the State of Hawaii and Departments of Public Works and Water Supply of the County.

The applicant will coordinate on-site sewage design with the Wastewater Reclamation Division of the Maui County Department of Public Works. Required fees and/or off-site improvements to the collection system and wastewater pump stations will be taken care of during development of the parcel.

I. Solid waste disposal analysis, a description of a proposed method of solid waste disposal and comments, if applicable, from the Departments of Health and Land and Natural Resources of the State of Hawaii and the Departments of Public Works and Water Supply of the County.

The applicant, contractors and future homeowners shall implement solid waste reduction, re-use and recycling programs to reduce the amount of solid waste to be disposed of at the County landfills. In addition alternative means of disposal of grubbed material and rock shall be utilized other than disposal at the County landfills as recommended by the County Department of Public Works.

J. Identification of environmentally sensitive areas, habitat, and botanical features which includes, but which is not limited to, wetlands, streams, rock outcroppings, endangered plants and animals, and exceptional trees. If applicable, baseline study and preservation/mitigation plan, and comments, if applicable, from the Department of Land and Natural Resources of the State of Hawaii, U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers.

There appears to be no environmentally sensitive areas, inhabitants or botanical features located on the project site. No permit will be required from the Army Corps of Engineers.
K. Identification of the topographical and drainage patterns existing on the subject parcel and any proposed alterations to these patterns.

The ground adjacent to the developed residential area along the south side of the site slopes down at about 15% from 40 feet elevation to a depressed area at about 6 feet elevation. This depressed area collects runoff from the site and adjacent areas which then deposits it into the Pacific Ocean through an existing 36-inch pipe. Estimated runoff from the project site under present conditions is approximately 4.5 cfs. From the depressed area, the ground slopes up on the north side of the project to Kahului Beach Road at an elevation of 10 to 12 feet.

Storm water runoff from the developed site will be about 5.9 cfs., an increase of about 1.4 cfs. to the existing. The additional storm water generated from the site due to development will be collected by a drainage sump. The runoff amount presently being collected by the existing 36" drain pipe crossing Kahului Beach Road will continue to flow through this existing facility.

The Owa Subdivision is located in the 100 year flood area and is within theoretical tsunami inundation Zones 15, 17 and 23. This determination was made from the Flood Insurance Rate Map (Firm) No. 190 of the Kahului - Wailuku area, provided by the Federal Emergency Management Agency and dated June 1, 1981.

The regulatory flood elevation requirement for the residential portion of the parcel is approximately 17 feet above sea level. Living areas in the subdivision have finished floor elevations of 18 feet minimum based on mean sea level. Flood zone information is included in the Flood Zone Map (EA/Fig. 3) and on the Site Plan (Z-1).

Identification of all meetings held between the applicant and any community or residential group which may be impacted by the applicant’s request, the issues raised by these meetings, and any measures proposed by the applicant to deal with or to mitigate these issues.

The applicant and applicant’s architect met several times with County Planning Department officials, before submittal of the OIZ/CPA application and in year after submittal during which no action was taken. To date no community meetings or public hearings have been held in this matter.
M. Provide a Development Schedule.

Upon approval of the CIZ/CPA submittal the applicant will apply for a Shoreline Management Area Use Permit, which will reiterate the environmental and other issues outlined in this report. Assuming normal time taken for review and approval of that application, time required for design, building permit approval and construction contract negotiation, construction on the project is not likely to begin until the summer or fall of 1995. Completion of construction is thus anticipated to be in 1996.

N. Operations and management of the proposed use which includes, but is not limited to, number of employees, proposed employee housing plan, hours of operation, fees charged to residents and visitors, provisions for off-site parking.

The proposed residences will be sold on a fee simple basis and the homes are envisioned for owner occupancy or long term rentals. The project will not be used as a Vacation Rental property and there will be no employees. Off-street parking for 2 vehicles per house lot are provided in the plan. Preliminary plans of the proposed development as included as Figures Z-1 through Z-5.

O. Identification of traditional beach and mountain access trails and additional trials which may be required for public access to the beaches and mountains, and if applicable, preservation/mitigation plan, and comments from the Departments of Land and Natural Resources and Office of Hawaiian Affairs.

Existing terrain and thick grown of grasses and scrub brush prohibit use of the property for access trails. No public access to the beaches and mountains will be affected by the proposed development.

P. Identification and assessment of chemicals and fertilizers used, including but not limited to, detailing effects upon surface, underground, and marine water resources and neighboring properties and surrounding flora and fauna. If applicable, a mitigation plan and maintenance program and schedule, and comments from the Departments of Health and Land and Natural Resources of the State of Hawaii, U.S. Fish and Wildlife Service, and U.S. Environmental Protection Agency.

There is no record of the use of chemicals and/or fertilizers on the subject parcel.
CONCLUSION

Under the provisions of Chapter 200 of Title 11, Hawaii Administrative Rules, prepared by the Department of Health, which establish criteria for determining significant environmental impact, pursuant to Chapter 343 Hawaii Resided Statutes (HRS), Title 19 of the Maui County Code and, based on the analysis contained in this report, we have shown that, the proposed action will not have any substantial adverse effect on the environment and a negative declaration relating to the need for an Environmental Impact Statement (EIS) is requested.
VI.

FIGURES
LOCATION MAP

OWA SUBDIVISION  EA/FIG. 2
KAHULUI  •  MAUI  •  HAWAII
TMK: 3-8-07:38
FLOOD ZONE MAP

FROM FLOOD INSURANCE RATE MAP 15003 0190 B DATED JUNE 1, 1981
APPENDICES
APPENDIX A

AN ARCHAEOLOGICAL INVENTORY
SURVEY FOR OWA SUBDIVISION, A & B
PROPERTIES, INC., KAHULUI, MAUI, HAWAII
(TMK 3-8-07: 38)

Prepared for:
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Kahului, Hawaii

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Walter M. Fredericksen
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November, 1992
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Map 3 - Topographic Survey Map, showing locations of Sites 3112, 3135, and test excavations.

Map 4 - Topographic Map, U.S.G.S., Wailuku Quadrangle, Scale 1:24,000, 1955, showing railroad line.

Figure 1 - East face profile of Backhoe Trench #13, cross-section of railroad bed (Site 3112).

Figure 2 - North face profile of Backhoe Trench #2.

Figure 3 - Southeast face profile of Backhoe Trench #11.

Photo 1 - South face of railroad bed retaining wall (part of Site 3112).

Photo 2 - View of Site 3135 from the railroad bed, showing concrete pillars, buttresses and chute.

Photo 3 - Backhoe testing amidst dense vegetation.

Photo 4 - View of what remains of Makaweli Rock Crusher, Site 3-35, from Kahului Beach Road, showing pillars with "1921" date.

Photo 5 - View of Makaweli rock crusher mill taken in 1946, showing various structures associated with it. Furniture in foreground salvaged from tidal wave damaged buildings. (Mau Historical Society Archives)

Photo 6 - Photo of Makaweli mill taken in 1946, showing railroad bed directly behind. (Mau Historical Society Archives)

Photo 7 - Painting by Edward Bailey, showing railroad construction in the 1880's. (Mau Historical Society Archives)
INTRODUCTION

In July, 1992, Linda Lange, of Riecke, Sunnland and Kono, Architects, Ltd., contacted us regarding an A & B project, the OWA Subdivision, proposed for TMK 3-8-07:38. This parcel of land borders the Kahului Beach Road about 200 meters south of the Lower Main/Waiehu intersection traffic light. The parcel is contiguous to the Nisei Veterans Memorial Center (TMK 3-8-07: 123) parcel along its northern property line. The two parcels mentioned above were originally one property, subdivided into the present two parcels. The A & B parcel is to be developed for affordable housing lots and house-units.

Following our initial assessment survey of the parcel and consultation with Ms. Annie Griffin of the Historic Sites Section we submitted a proposal on July 24, 1992. Our research strategy included a walk-over reconnaissance surface survey for planning a series of subsurface tests for backhoe as well as manual excavation. The field research would be recorded in field notes and photographic documentation. The report would then summarize the data.

We were then put into contact with Mr. Hideo Kawahara, A & B Properties, Kahului, Maui, for authorization to begin the archaeological inventory survey. Field work began on September 4, 1992, continuing on the 5th, 6th, 10th, 16th and 24th of that month.

As with the Nisei Veterans Memorial Center parcel bordering the subject parcel, considerable land disturbance will occur during development preparation, which will include extensive grubbing and grading of the present topography. Because the parcel contains portions of a sand dune presently heavily overgrown with kahalana, kula, koa hoole, and the like, monitoring should be done during site building preparation. Human burials are sometimes found in dune areas and subsurface testing will not always lead to the discovery of random, isolated burials. Monitoring will help insure that any burials which may be present are discovered and properly treated according to State regulations.

The subject parcel has undergone considerable land disturbance in historic and recent times. The preparation of a railroad bed and tracks on the dune crest required stabilizing the crest for supporting the weight and strain of such a complex.
Several major water line pipes (up to 16" in diameter) and sewage lines border and cross the subject parcel, all requiring deep trenching for their placement. Further excavation for road protection along the parcel's border and excavation for retention of storm/flood water runoff and under-the-road drainage culverts accessing the ocean only ca. 25 to 50 meters away, also contribute further to land disturbance on the subject parcel. An access road on the mauka border of the parcel, running along the Rose of Sharon Church property border, was bulldozed and filled in for elevation also. Some construction along the mauka border contributed to considerable earth-fill and modification of the parcel. These disturbances were factors in the design strategy for subsurface backhoe and manual excavation on the site.

Concrete, arched piers dated "1921" on the pier nearest the Kahului Beach Road still stand, and were part of the Makaweik Rock Crusher operation (See Map 3; Photos 3-5). A & B Properties Ltd. have stated they intend to leave these structures standing "as is", as part of their development scheme.

SURVEY AREA

The survey parcel (TMK 3-5-97:36) consists of ca. 4.03 acres of land located near the northeast shoreline of the coast of Maui Island, Hawaii (See Map 2). Kahului Beach Road runs along the northeast border, while Kalanola Avenue borders the parcel to the south. The Rose of Sharon Church property and other Puuone subdivision residential properties border the subject parcel along its western side. The northwest border abuts the Nisei Veteran's Memorial Center property. An access path bifurcates the Nisei Veterans Memorial Center and the A & B parcels along their mutual border, and nearly falls on the easement for a planned future roadway.

The old Kahului Railroad track traversed the subject parcel from its south to and through its north border, as it continued onward through the Nisei Veterans Memorial Center parcel and to Wailuku town. Track-bed retaining walls of drystone masonry construction are still visible at several points along the track bed, which forms the highest feature on the two parcels.

NATURAL HISTORY

The subject parcel generally parallels Kahului Bay beach shoreline which lies ca. 25 to 50 meters north and east of its border. It is geologically included in the ancient Kula series of lava flows. Lowland oxisols (highly stable) and volcanic entisols
(ash/sand derived soils) are dominant soil types (University of Hawai‘i, 1983, pp. 39-41). According to Foote et. al. (1972, p. 117), on sandhills near the ocean, with 7 to 30 percent slopes, Pu‘uone Sand (PZUE) prevails. This is described as having a grayish-brown surface layer of calcareous sand about 20 inches thick, underlain by grayish-brown cemented sand. This soil is moderately alkaline. Permeability is rapid above the cemented layer. Runoff is slow, and wind erosion moderate to severe.

Aeolian sands have formed a prominent dune running the length of the south/north axis of the parcel. Maximum elevation is ca. 30 feet above sea level. A lower, depression zone about 20 feet above sea level lies manka of the sand dune. Lithified sand is apparent in some surface outcrops and in subsurface excavations.

Flora on the parcel include the exotics Sea Grape (Coccoloba uvifera), Indian Pluche (Pluchea indica), Tree Heliotrope (Messerschmidia argentina), and False Kamani (Terminalia catappa). Indigenous species Kilo (Thepesia populnea), and Beach Naupaka (Scaevola taccada).

Eroded, exposure-faded African snail shells are strewn over the surface of the site area.

BACKGROUND HISTORICAL RESEARCH

Land Use: Historic

The study parcel is included in the large ahupua'a of Wailuku. This land division stretched from Wailuku to Peia, and nearly halfway across the isthmus. Its population in 1831-32 was listed as 2,256 (Cordy, 1978, pg. 59). After the Great Mahele in 1848, it was declared to be Crown Land, set off for the support of the "royal state and dignity". After the death of the last Kamehameha (Lot, or Kamehameha V) in 1872, the land went to his sole heir, his sister Ruth. In 1876 the Crown Lands Commissioners leased the eastern 16,000 acres to Claus Spreckels. In September of 1880 he purchased the claim of Princess Ruth Ke‘elikolani to a one-half interest in the Crown Lands of Hawaii, worth approximately $750,000. He paid her $10,000 and also loaned her $60,000 at 6% interest enabling her to pay off 12% notes held by other people. Many in government worried that Spreckels might exercise his claim to nearly one-half million acres of Crown Land. To settle the Crown Lands title for all time, the Legislature in 1882 authorized the conveyance of the entire ahupua'a of Wailuku (24,000 acres) to Spreckels in exchange for his complete surrender to the claim he had acquired to one-half of the Crown Lands of Hawaii. This was Grant (Royal Patent Number) 3343, signed by King Kalakaua on July 21, 1882 (Adler, 1966, pp. 62-64).
In 1885, Spreckels and his wife Anna sold the property to Hawaiian Commercial and Sugar Company, a California corporation which he owned, for the sum of five dollars (Fredericksen, September 1888, p. 8). After a number of years of stock purchasing and manipulation, the controlling interest in the company went to Alexander and Baldwin, and in January of 1899, this new partnership was established. Prior to this, the portion containing the OWA subdivision had transferred to Hattie P. Parker, wife of Samuel Parker, "a Honolulu businessman and landowner who inherited a large cattle ranch on the island of Hawaii...." and "a poker playing crony of Spreckels and Kalakaua" (Adler, 1966, p. 292).

In a title document, provided by Alexander and Baldwin Properties, Inc., the purchase of this portion by Hawaiian Commercial Sugar Company is recorded as follows:

"This indenture made this 30th day of March, 1899, between Hattie P. Parker, in her own right, and by and with the consent of her husband Samuel Parker, signified by his execution of these presents, and the said SAMUEL PARKER, in his own right, of Mana in the Island of Hawaii, the parties of the first part, and the HAWAIIAN COMMERCIAL SUGAR COMPANY, a foreign corporation doing business on the Island of Maui, the party of the second part:

WITNESSETH: That the said parties of the first part, for and in consideration of the sum of FIFTEEN THOUSAND AND FIVE HUNDRED DOLLARS to them in had paid by the said party of the second part, the receipt whereof is hereby acknowledged, have granted, bargained and sold, and by these presents do grant, bargain, sell and convey unto the party of the second part all that tract of land situate in the District of Wailuku, Island of Maui.....Area 920 acres, more or less."

A total of 9 leases went with the sale of the property, 7 commencing on July 16, 1892, for 15 years hence, to private individuals including E. H. Bailey. One was held by Hawaiian Fruit and Taro Company for 10 years from November 1, 1892. The ninth lease was held by Kahului Railroad Company for 75 years from August 1, 1884.

The present study parcel lies within that portion leased to Kahului Railroad for development of a commercial network between the various sugar mills and Kahului Harbor.

Presently, Kahului Beach Road and Lower Main Street follow the former Kahului Railroad track line that ran from Kahului Harbor to a junction near Waiehe'e Beach Road, where one spur ran to Paukukalo, and the other continued to Wailuku Sugar Mill, Wailuku and Waikapu. The railroad and the associated Makaweli
Rock Crusher Mill constitute the most significant land use of the parcel in historic times. The track apparently ran along the highest part of the subject parcel at an elevation of ca. 30 feet above sea level. Dry masonry stone retaining walls are still intact and visible along both the mauka and makai portions of the former railroad bed (Photo 1). The route of the former railroad is shown on the 1955 USGS Topographic Map (Map 4).

The most striking architectural remnants of the railway system located on the subject parcel are the 5 concrete pillars and arches, the most visible makai one impressed with the date, "1921". A wooden frame building rested on these pillars, serving as the housing for the Makawili Rock Crusher apparatus (Photos 5, 6). It was constructed so the train carrying rock could off-load from the track-bed into the crusher. The concrete pilings elevated the crusher adequately above ground level so trucks could be driven in and be filled with crushed rock. In a Maui News article (April 15, 1925), it was reported that newly developed building materials, Hollow Concrete Bricks, were being produced at the Kahului Railroad Company's Makawili Rock Crusher.

The Maui News contains several other articles dealing with activities in the general vicinity of the subject parcel. An article dated February 8, 1902, describes a problem and potential solution resulting from the railroad:

"Superintendent R. W. Fuller of the Kahului Railroad Company in preparing to make some important changes in the line of railroad track between Kahului and Wailuku. At present the sharp turn and the railroad crossing at the beach is extremely dangerous on account of the sand dunes that shut out the approaching trains from the view of those approaching the crossing with teams, especially when the wind is blowing a gale.

The track will be moved some hundreds of feet south of its present location, so that the point where it crosses the road as well as the approaching trains themselves can be seen for quite a distance. On crossing the road, the track will skirt the pasture at greater distance from the public road."

And on June 8, 1907, another reference describes plans for improving the land for further residential use in the future:

"The Kahului Railroad Company is filling in the lowlands in and about Kahului and will in time raise the level of the"
entire town site. When the work is completed and proper drains provided, the town should be free of mosquitos and the place a most desirable locality in which to live."

The Wailuku Sugar Company closed railroad operations in 1947, initiating sugarcane hauling by truck. This shift closed the railroad spur to Wailuku Mill. Only one steam engine, Engine No. 12, remained in service by the mid-1950's. During the 1960's railroad enthusiasts were treated to excursions pulled by No. 12. The railroad continued to serve the Libby, McNeill and Libby pineapple cannery in Haiku, until the latter was sold to Baserot Pineapple Company. Baserot gave notice that future pineapple shipments would be by truck. On April 28, 1965, The Kahului Railroad Company applied to the Interstate Commerce Commission for permission to close railroad operations. On May 24, 1966, the last train ride was made for the company's retired employees and their guests. During 1967, 88 years after the first tracks were laid, the railroad line was dismantled and the hardware was salvaged and sold (Best, pp. 31-33).

A painting by Edward Bailey, a missionary to the Islands, between 1840 and 1880, shows the parcel as it appeared in the 1880's. The railroad can be seen atop the sand dune (Photo 7).

Land Use: Prehistoric Settlement Patterns

The subject parcel lies within the large prehistoric ahupua'a of Wailuku, in the coastal zone. Here one would expect to find housing in dry area "living zones" (Kirch, 1985, p. 4), particularly if there was a freshwater source nearby. There is a possible stream bed on the southern side of the parcel (See Figure 3, Test Trench #11).

Prehistoric land use also may have been for activity areas associated with the sea and shoreline utilization. A site suggesting the latter kind of prehistoric land use was located three-quarters of a kilometer west of this parcel (Site 1172, referred to in discussion below), as well as on the adjacent Nisei Veterans Memorial Center site.

Human burials have been discovered in other sand dune areas on Maui, and the potential for such finds is present at this site.

BACKGROUND ARCHAEOLOGICAL RESEARCH

A perusal of the literature and discussion with staff at SHPD shows that no previous archaeological work has been undertaken on the subject parcel. The authors, however, have conducted two
inventory surveys in the general area adjacent to Lower Main Street (December, 1990; January, 1992). The first of these two studies was on TMK 3-4-39:77, a parcel ca. 1.25 kilometers mauka of the present A & B study parcel. No archaeological artifacts or features were discovered during this study. Most of the sand dune and Kahului Railroad bed had been removed prior to the study (December 1990).

The second of the two studies was on TMK 3-4-39:82, ca. 1.75 kilometers mauka of the present A & B study parcel. As with the first discussed study above, no prehistoric artifacts or features were discovered. It should be stated that no subsurface testing was done on that site. One historic feature, part of the old Kahului Railroad bed, contained a concentration of water-worn stones, and was located adjacent to the Lower Main Street border of the parcel. It is elevated ca. one meter above present street level and is the only remaining portion of the railroad bed in that area, since other parcels have already been excavated to street level.

During a Bernice P. Bishop Museum survey in 1971-72, site 1172 was discovered and recorded on TMK 3-8-36:94. It was named the Lower Main Street Hidden Site. It lies ca. one kilometer mauka of the present study parcel. It is described as having at least one cultural layer with glass and metal shards, water-worn stones, charcoal, coral, and a number of shell remnants, e.g., cowrie, tere, drupe, ophihi, and land shells. Three pre-contact artifacts were found in the face of the cliff, including one end of a hammerstone, a possible triangular shaped hammerstone and a coral file. As stated in the report, "The research potential of this site is good. Excavation could yield information on diet, tool making, and possible length of occupation. The presence of charcoal means that it may be possible to date the occupation by the radiocarbon dating technique." (Connolly, 1973).

The authors performed an inventory survey on the parcel contiguous to the subject parcel, TMK 3-8-07:123, which will be the future site of the Maui Veterans Memorial Center. Work on that parcel initially identified the railroad bed which now bears the State site number 3112. Two additional sites, one a historic refuse area (Site 3119), and one subsurface site (Site 3120) were identified. Material cultural deposits and a tentative early radiocarbon date of 1790 +/- 20 (R-142) make this site valuable in terms of data recovery on early Hawaiian habitation/activity sites. The discoveries from these sites helped set the strategy for work on the subject parcel (Fredericksen, October 1992).

Mr. Charles Reau, an informant knowledgeable of the prehistory of Wailuku, provided some data on the archaeology of the area. According to Mr. Reau, there were 3 heiau located on the large Wailuku dune. One was located across from the Maui Soda Company, fronting on Lower Main Street. A second one was located in the vicinity of the power transformer near the Hill and
Lower Main Street intersections. A third one may have been located near the present Home Maid Bakery. During construction of the parking lot next to the bakery, a local antiquity collector, Wesley Wong, found 5 "Tahitian style" adzes. Mr. Keau also commented there might well be human burials in the remaining dune area. This notion is supported by human burial discoveries in other sand dune areas of Maui.

ARCHAEOLOGICAL FIELD SURVEY

From two to six field personnel were involved in the field survey. Principal investigators were Walter M. Fredericksen, MA, PhD (ABD), and Demaris L. Fredericksen, MA, PhD (ABD). The Field Director was Erik M. Fredericksen, MA. The initial strategy included an on-site surface survey and background orientation research. The on-site surface survey closely examined the parcel for any surface indications. Heavy undergrowth made access to many parts of the parcel extremely difficult.

Three manual test pits and 14 backhoe test trenches were excavated. The pits and trenches were situated on dune areas, and in relatively undisturbed portions of the parcel.

SURVEY FINDINGS

Site 50-50-04-3112

The most significant historic feature of the site is the remnant of the Kahului Railroad complex. The railroad bed that lies atop the sand dune at about 30 feet elevation, is designated as Site 50 (State of Hawaii), 50 (Island of Maui), 04 (Quadrangle), 3112 (Number) on the contiguous property (TMR: 3-8-07: 123), the future site of the Nuisal Veterans Memorial Center. It bears the same site number on this property, and is hereafter referred to as Site 3112.

Site 50-50-04-3135

In addition to the railroad bed, 5 intact concrete/masonry pillar and arch structures are located on the parcel, remnants of the Makaweli Rock Crusher. The one nearest to and most visible from the Kahului Beach road is engraved with the date "1921". These five support structures served as the base for a large wooden building in which rock was crushed and off-loaded into waiting trucks for transport to areas having use for the material. The 5 pillars are each 30 feet 6 inches long and 1 foot wide.
Each has an arched doorway 8 feet in from the ends, which are 3 feet wide. They are 15 feet apart, and about 12 feet in height, and are made of reinforced concrete. On the mauka side there are several buttresses and substantial reinforced concrete walls, which are part of a concrete chute system which drops from the railroad bed to ground level (Photos 3 and 4). This complex has been designated as Site 50-56-04-3135, and hereafter referred to as 3135.

Numerous portions of rotted railroad track ties were discovered, some on and some beneath the surface of present ground level. A number of the ties still had iron railroad spikes in place. The iron tracks were salvaged during the 1960's after the closing of the railroad.

TEST EXCAVATIONS

Three manually excavated test pits were placed in mauka areas of the site to determine productive locations for the Backhoe test excavations (Map 3). All three tests were ca. .5 m. square and excavated to a depth of ca. .5 m. All tests were sterile below the first ca. 10 cm., which contained occasional recent materials such as bottles, plastic remnants, toy remnants, and similar types of artifacts. The soil was aeolian sand, much of which had been disturbed by relatively recent assaults on the parcel with heavy earthmoving construction equipment. Bits of recent construction lumber, PVC and galvanized pipe, and like materials were mixed below surface in the sand. The pits were sterile of midden or other types of cultural material, other than the recent, above-described discarded materials. Shell fragments and coral bits were occasionally discovered as part of recent disturbed fill/matrix.

The preliminary results from these test pit excavations indicated the site had been disturbed during construction of residential housing and trenching for a number of sewage and water pipes. Major earth removal from the makai border area of the site for an apparent storm floodwater retention basin has also taken place. Some of these features are shown as they exist on the site topographic map (Map 3).

Random backhoe trenching seemed to give the greatest probability of survey success. The strategy called for backhoe trenches placed in such a way as to provide a maximum sample of the accessible parts of the site.

A total of thirteen (13) backhoe test trenches were excavated throughout the parcel (See Map 3). Initially, a rough access road had to be cleared by backhoe. During this process, the backhoe suffered a major breakdown, and several days were required for its repair. The access area was cleared on the mauka side of the existing railroad bed, since a level area about 3
meters wide existed along that side of the railroad bed. On the makai side of the railroad bed, the dune face drops away at an angle of ca. 60 degrees, to the lower land surface along Kahului Beach Road. This lower land area has been excavated for water and sewage pipelines and a retention basin and berm build-up.

The dense undergrowth (hoaole koa, seagrape, Indian pluchoa, heliotrope, beach naupaka, etc.) has caused considerable soil disturbance through root displacement and penetration of the porous, sandy soil. Some historic materials, such as bottle glass and pottery sherds were found in the numerous rotted-out root impressions and the many rodent burrows taking advantage of the root system maze.

All backhoe test trenches were excavated to the same basic dimensions. The width of the backhoe bucket was ca. .5 meter, which was wide enough for any necessary inspection of the profiles. Length was normally 3 meters, and depth varied, but was usually ca. 2 meters. The unstable nature of the soil made profile preparation and reading difficult, and impossible at some times. If archaeological personnel had to descend into a trench, they usually did so on the backhoe shovel for safety and to facilitate escape if a cave-in occurred.

Eight backhoe trenches were excavated along the cleared access road (TT #1 through 7, and TT #13, the railroad bed profile). With the exception of TT #13 they were all at approximately the same magnetic bearing and were spaced ca. 20-25 meters apart. Two backhoe trenches were excavated extending downslope on the makai side of the railroad bed. Test trench #9 was excavated ca. 27 meters NE (047 degrees Mag.) from Test trench #7 (the last one along the cleared access road) and Test trench #8 was excavated along the same magnetic bearing as TT #9, but was moved upslope to within ca. 7 meters of TT #7 (as shown on Map 3).

One backhoe trench #10 was excavated downslope and toward the concrete pillar/arch complex. Two backhoe trenches #11 & 12 were excavated alongside a rough access road bordering the Rose of Sharon Church property and the property borders of several residential developments. These latter two trenches were dominated by recent construction detritus and the earth was very disturbed (See Map #3)

No clearly pre-contact Hawaiian artifacts were recovered from any of the test trenches. In some instances, primarily TT #13 (the transect of Site 3112), historic artifacts were recovered. Some were late 19th to early 20th century in origin, i.e., porcelain sherds from jugs, cups and plates and/or saucers, buttons and bottle fragments, and some whole, heavily patinated bottles, usually vials for medications and/or fragrances and potions. Others were clearly recent historic, e.g., identifiable beer bottles, plastic fragments, tool and fastener remnants. Coal fragments and oxidized railroad spikes, rail clamps and related materials were also discovered. In this test trench provenience
was mixed, with artifacts located throughout the 1.5 meter depth of the transect profile. The most interesting historic artifact was a small glass bottle, clearly embossed, "KicKapoo Indian Oil -- Healy and Bigelow".

Test trench 10 produced dressed stone, train ash deposits and mixed fill nearby the site of the former rock-crusher pillar/arch structures. There were no artifacts, however.

In the other trenches, numbers 1 through 12 mixed fill predominated, mostly composed of sandy soils, some apparent lensing of varicolored sands, probably caused by oxidation of intrusive ferrous metals of various types and mineral leaching, in other instances. Lithified sand was discovered in a number of the tests, usually at depths greater than 20 cm. below surface, and oftentimes, where located, would present a lens of 20 or more cm. in thickness. Water-worn beach pebbles and larger stones were found intermittently in most of the trenches. They were not found in apparent patterned forms, but were seemingly random and part of the fill.

SUMMARY OF TEST TRENCHES

Test Trench #1: Located ca. 25 meters east of Rose of Sharon Church concrete tile wall. Dimensions: 3 m. x .5 m. x 2.5 m. in depth. Yellowish sand (10 YR 8/2), Sterile, no artifacts.

Test Trench #2: Located ca. 20 meters northwest (330 mag.) of TT #1. Dimensions: 3 m. x .5 m. x 2.2 m. in depth. At 10 cm. below surface, a lens of red, clayey soil (10 R 3/6), underlain with lenses of alternating dark gray sand (10 YR 6/1), yellowish sand, (10 YR 8/2), dark gray sand (10 YR 7/1), yellowish sand, (10 YR 6/2), sterile gray sand with rounded coral, (10 YR 6/2--See Figure 2). Some water-worn stones (10 to 20 cm.), sparsely intermittent, and some small coral pieces (under 10 cm.) were found in the trench. Generally, the banded dune sand seemed to be sterile, with no artifacts.

Test Trench #3: Located ca. 20 meters northwest of TT #2. Dimensions: 3 m. x .5 m. x 2 m. in depth. This trench was similar to TT #2, with mixed surface fill and red soil and gravel under the fill. Homogeneous sand beneath the red soil/gray lens is followed by alternating lensing, similar to, but not as pronounced as in TT #2. Sterile, no artifacts.

Test Trench #4: Located ca. 20 meters northwest (330 mag) of TT #3. Dimensions: 3 m. x .5 m. x 1.75 m. in depth. Surface lens of red soil, underlain with crushed coral lens, with some large angular pieces of gray quarried rock and some water-worn beach
stones. Some variable lensing (as in TT $2 - 3$) - gray/yellow/gray sands. Sterile, no artifacts.

Test Trench #5: Located ca. 20 meters northwest of TT #4. Dimensions: 3 m. x .5 m. x 2 m. in depth. This trench is similar to TT #2, 3, 4, with less-pronounced lensing. Sterile, no artifacts.

Test Trench #6: Located ca. 20 meters from TT #5 (225 mag). Dimensions: 3 m. x .5 m. x 2 m. in depth. Ca. 15 cm. mixed, recent overburden, with striated, lithified sand from ca. 20 cm. below surface to nearly depth of trench. Sparse, intermittent water-worn pebbles and stones, but mostly fine, light sand (10 YR 8/3). Sterile, no artifacts.

Test Trench #7: Located ca. 17 meters from TT #6 (320 mag), in line and ending at parcel border pathway. Dimensions: 3 m. x .5 m. x 2 m. in depth. Ca. 15 cm. surface fill, underlain with sand. Sparse water-worn pebble and stones occurring intermittently in homogeneous sand. Sterile, no artifacts.

Test Trench #8: Located ca. 17 meters (047 mag), from TT 7. Dimensions: 3 m. x .5 m. x 2 m. in depth. Mixed surface overburden to ca. 15 cm. below surface, underlain by amorphous, sandy fill similar to other trenches. At ca. 75 cm. below surface, a 10 cm. thick red earth lens is apparent. Sterile, no artifacts.

Test Trench #9: Located ca. 10 m. from TT #8 (047 mag), and ca. 20 m. from Kahului Beach Road. Dimensions: 3 m. x .5 m. x 2 m. in depth. Amorphous sand fill, as in other trenches, with intermittent stones. Sterile, no artifacts.

Test Trench #10: Located off parcel border patch, ca. 10 m. from TT #8 (140 mag), near rock crusher ruins. Dimensions: 3 m. x .5 m. x 1 m. in depth. Encountered quantities of dressed stone (similar to materials in existing ruins), beach water-worn stones and ash. All materials were randomly occurring, with no apparent pattern. Proximity to the existing ruins leads to the conclusion that these materials were related to the ruins, either during construction, repair, or as a by-product of rock crushing activity. There were no artifacts recovered.

Test Trench #11: Located ca. 20 meters west (080 mag) of backhoe cleared road and at right angles to it. Dimensions: 3 m. x .5 m. x 2 m. in depth. This trench bisected what appeared at the surface to be a former intermittent stream bed or erosional storm runoff channel. At ca. 90 cm. below surface, under the mixed overburden, a reddish/brown, clayey material occurred, which
continued to a depth of 2 m. below surface (Figure 3). The clayey material is ca. 1 m. in width, and is likely the remains of a streambed/runoff channel, as speculated above. There were no artifacts recovered.

Test Trench #12: Located ca. 75 meters from Kanaloa Road opposite the Rose of Sharon Church. This trench was excavated at right angles to the access road. Dimensions: 3 m. x .5 m. x 2 m. in depth. Surface fill heavily intruded by dense Koa haole roots and other dense undergrowth. Fine sand with sparse water-worn pebble intrusions to ca. 25 cm. below surface, with lithified sand to ca. 1 m. below surface, and reddish sand from thare to the depth of the excavation. Sterile, no artifacts.

Test Trench #13: Cross-section of Site 3112. Located makai of FT #2 and at right angles to it (065 mag), this trench bisects the railroad bed, and reveals a profile of the railroad bed (See Figure 1). Dimensions: 6.1 m. x .5 m. x 1.5 m. in depth. All material recovered from this trench was historic in nature and was randomly occurring throughout the 1.5 m. depth of the trench. A metal bottle cap, for example, was recovered from 1.10 m. below surface, nearly the maximum depth of the excavation. Surface to 20 cm. was mixed, sandy fill. From 20 to 40 cm. below surface, a dark grey sand lens predominated, with beach fill of pebbles and stones dominating the western side of the excavation. Layers of light to dark sand alternated from 40 cm. to 1 m. below surface, where large rounded beach stones, and angular quarried rocks, were prevalent to 1.5 m. below surface, which was the bottom of the raised railroad bed and the top of the underlying sand dune. Historic artifacts discovered included ceramic sherds, broken glass sherds throughout, iron spikes from the railroad, porcelain bowl sherds, and a bowl base (from 1.16 m B8), brass closure lips from a purse, an older metal bottle cap with raised chain-eye, and the previously mentioned intact glass bottle, embossed with "Kickapoo Indian Oil, Healy and Bigelow".

Beach pebbles, broken shells, and packed stones (rounded and angular) on the lowest stratum, all in a matrix of sand and randomly deposited, strongly imply the material was in fact intentionally deposited as part of the building of the railroad bed.

SUMMARY AND CONCLUSION

Archaeological research work performed by the authors on the property adjacent to the A & B parcel discussed here, the Nisei Veterans Memorial Center (TMK: 3-8-07: 123), produced three significant sites (Fredericksen, October 1992). The Hawaii State
Preservation Division assigned site numbers to them: 3112 (Kahului Railroad Bed), 3119 (Historic Refuse deposition) and 3120 (Subsurface Site). A tentative date of 1790 +/-70 years ROM BP was recovered from subsurface charcoal samples. The occurrence of these sites in such close proximity increased expectations for further archaeological discoveries on the CWA Subdivision parcel. This expectation was only partly sustained by the on-site work.

Results from the test trench and manual excavations throughout the parcel indicate that some historic artifacts affiliated with the Kahului Railroad trackbed/complex are present. In fact, site 3112, Kahului Railroad bed, extends across the subject parcel from its south through its north border, continuing through the Nisei Veterans Memorial Center site parcel. No clearly pre-contact Hawaiian artifacts were discovered. Additionally, no identifiable Hawaiian cultural layers, indicating either permanent or temporary land use, were discovered in any of the test trenches.

Initial Significance Assessment

Site 3112 (Kahului Railroad bed) presents the potential for recovery of useful information on 19th and 20th century railroad construction in Hawaii. Also, the presence of related historic artifacts are of interest. We recommend that Criterion D be used to assess the significance of this site.

The developer has stated that portions of Site 3135 (concrete pillars) will be preserved. However, the concrete chute mauka will be removed along with the railroad bed. Sizeable portions of this parcel had been previously disturbed by various construction projects, as outlined in the narrative introducing this report. Whether or not existing possible sites were destroyed during this process will probably never be known. Since major grubbing and land sculpting are planned as preliminary tasks to actual on-site construction of the housing development, we recommend that monitoring be required by archaeological personnel. This will enable observation for possible archaeological materials (including human burial sites) to take place during land removal.
<table>
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<th>Author</th>
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<th>Publisher/Details</th>
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<tr>
<td>Connolly, Robert D.</td>
<td>State Historic Registration Survey, Identification Number 50-4-1172.</td>
<td>November 1973</td>
<td></td>
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<tr>
<td>Fredericksen, Walter M., and Demaris L.</td>
<td>AN INVENTORY SURVEY OF A PARCEL AT JUNCTION OF LOWER MAIN AND MILL STREETS, WAILIUKU, MAUI, MAUI, HAWAII (TMK 3-4-39: 82), Prepared for Grant Chun, Attorney, Wailuku, by Xamanek Researches, Pukalani, Hawaii.</td>
<td>January 1992</td>
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<tr>
<td>Fredericksen, Demaris L., and Walter M.</td>
<td>AN INVENTORY SURVEY OF A PARCEL OF LAND (TMK 3-6-07: 123), KAHULUI, MAUI, HAWAII, Prepared for Nisei Veterans Memorial Center, Kahului, Hawaii, Prepared by Xamanek</td>
<td>October 1992</td>
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Researches, Pukalani, Hawaii.

Foote, Donald E., et. al.
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Kirch, Patrick V.
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PRATHERED GOODS AND FISHHOOKS: AN INTRODUCTION TO HAWAIIAN ARCHAEOLOGY AND PREHISTORY, University of Hawaii Press, Honolulu, Hawaii.

University of Hawaii, Geography Department
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ATLAS OF HAWAII, University of Hawaii Press, Honolulu, Hawaii.
Map 3 - Topographic Survey Map, showing locations of Sites 3112, 3135, and test excavations.
Map 4 - Topographic Map, U.S.G.S., Wailuku Quadrangle, Scale 1:24,000, 1955, showing railroad line.
Figure 1: East Profile - Railroad Bed

Figure 1 - East face profile of Backhoe Trench #13, cross-section of railroad bed (Site 3112).

Figure 3 - Southeast face profile of Backhoe Trench #11.
FIGURE 2: NORTH FACE BACKHOE TRENCH #2

Figure 2 - North face profile of Backhoe Trench #2.
Photo 2 - View of Site 3135 from the railroad bed, showing concrete pillars, buttresses and chute.
Photo 3 - Backhoe testing amidst dense vegetation.
Photo 5 - View of Makawel rock crushe mill taken in 1946, showing various structures associated with it. Furniture in foreground salvaged from tidal wave damaged buildings. (Mahl Historical Society)
APPENDIX B

TRAFFIC IMPACT ASSESSMENT
FOR
OWA SUBDIVISION

Kahului, Maui

Prepared for:
A & B Properties

Prepared by:
Parsons Brinckerhoff Quade & Douglas, Inc.

November 1992
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Existing Traffic Conditions .............................................................................................. 1
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INTRODUCTION

A & B Properties has proposed to develop 28 single-family residential lots in the Kahului area on the Island of Maui. This traffic assessment evaluates roadway conditions at the intersections of Kahului Beach Road/Kanaloa Avenue, Kahului Beach Road/Proposed Subdivision Road, Kahului Beach Road/Lower Main Street/Waiehu Beach Road, and Kanaloa Avenue/Proposed Subdivision Road.

EXISTING ROADWAYS

The proposed project site is located on Kahului Beach Road north of Kanaloa Avenue as shown in Figure 1. Public access is not currently provided to the project site.

Kahului Beach Road is a two-lane highway which provides access from Kahului towards Waiehu. Kahului Beach Road terminates on its northern end at its intersection with Waiehu Beach Road. West of Waiehu Beach Road, Kahului Beach Road becomes Lower Main Street. All approaches at the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection provide separate lanes for turn movements. The posted speed limit on all approaches to the intersection is 30 miles per hour.

Kanaloa Avenue is a two-lane roadway that provides access to residential neighborhoods. It intersects Kahului Beach Road on its eastern (makai) terminus forming the stem of a signalized T-intersection. All approaches at the Kahului Beach Road/Kanaloa Avenue intersection provide separate lanes for turn movements. The posted speed limit on Kanaloa Avenue is 30 miles per hour.

EXISTING TRAFFIC CONDITIONS

Descriptions of existing conditions are based on manual turn movement counts and field observations taken on an average weekday at the Kahului Beach Road/Kanaloa Avenue intersection on August 18 and 19, 1992, and on an average weekday at the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection on June 24 and 25, 1992. Figure 2 shows the existing morning (a.m.) and afternoon (p.m.) peak hour traffic volumes. The count data are summarized in Appendix A.
The analyses presented in this traffic assessment follow the procedures outlined in the 1985 *Highway Capacity Manual* (HCM). Capacities were evaluated at the critical intersections of Kahului Beach Road/Kanaloa Avenue, Kahului Beach Road/Proposed Subdivision Road, Kahului Beach Road/Lower Main Street/Waiehu Beach Road, and Kanaloa Avenue/Proposed Subdivision Road using the HCM - "Unsignalized Intersection Methodology" and "Signalized Intersection Methodology". Operating conditions at an intersection are expressed as a qualitative measure known as Level-of-Service (LOS). These Levels-of-Service are expressed as letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst conditions (over-capacity). Level-of-Service criteria is described in Appendix B.

Signalized intersection capacity analysis conducted at the Kahului Beach Road/Kanaloa Avenue intersection revealed that this intersection currently operates at LOS B during both the a.m. and p.m. peak hours. Analysis also revealed that the signalized Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection currently operates at LOS C during the a.m. peak hour and at LOS D during the p.m. peak hour.

**BASE YEAR TRAFFIC CONDITIONS**

The proposed project is anticipated to be completed in 1994. Review of historic traffic data collected at the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection by the State Department of Transportation (SDOT) indicates an average annual growth rate of approximately five percent per year. The 1992 turn movement counts taken at the Kahului Beach Road/Kanaloa Avenue intersection and the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection were factored by this growth rate to forecast year 1994 traffic volumes.

Other developments, in the vicinity of the proposed project area, expected to be completed by the base year 1994 are the proposed Nisei Veterans' Memorial Center, located along Kahului Beach Road, across Waiehu Beach Road, and the Shell Oil Service Station expansion, located at the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection. Access to the Memorial Center will be provided by the Kahului Beach Road/Proposed Nisei Veterans' Memorial Center Access Road intersection. Traffic generated by these developments were, therefore, included in the base year conditions. The forecast 1994 traffic volumes are shown in Figure 3.
For base year 1994 traffic conditions, the signalized Kahului Beach Road/Kanaloa Avenue intersection would operate at LOS B during the a.m. peak hour and at LOS C during the p.m. peak hour. The signalized Kahului Beach Road/Lower Main Street/Waiehu Beach Road Intersection would operate at LOS D during both the a.m. and p.m. peak hours.

At the unsignalized Kahului Beach Road/Proposed Nisei Veterans' Memorial Center Access Road, the left-turn movement from Kahului Beach Road onto the Proposed Nisei Veterans' Memorial Center Access Road would operate at LOS B during the a.m. peak hour and at LOS C during the p.m. peak hour. The shared left-turn and right-turn lane from the Proposed Nisei Veterans' Memorial Center Access Road onto Kahului Beach Road would operate at LOS D during both the a.m. and p.m. peak hours. Providing separate turn lanes on the Proposed Nisei Veterans' Memorial Center Access Road would minimize delay for the right-turn movement and would improve overall operations. The right-turn movement from the Proposed Nisei Veterans' Memorial Center Access Road onto Kahului Beach Road would operate at LOS C during the a.m. peak hour and at LOS D during the p.m. peak hour. The left-turn movement would operate at LOS E during both the a.m. and p.m. peak hours.

FUTURE YEAR WITH PROJECT CONDITIONS

Proposed for development are 28 single-family residential units. The project site would be served by a new two-lane subdivision road that would connect to the Proposed Nisei Veterans' Memorial Center Access Road on its eastern end and terminate at Kanaloa Avenue forming the south stem of a T-intersection.

Trip Generation

Trip generation determines the vehicular trip ends generated by the proposed project. Trip generation rates published by the Institute of Transportation Engineers (ITE) in Trip Generation, Fifth Edition were used to estimate the trips generated by the proposed subdivision. The vehicular trip generation rates were based on the number of proposed dwelling units (DU). The trip generation rates and the number of trips generated by the proposed project are presented in Table 1.

Owa Subdivision
TABLE 1
TRIP GENERATION

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<tr>
<th>Single-family</th>
<th>Units</th>
<th>Number</th>
<th>Rate In</th>
<th>Rate Out</th>
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DU = dwelling unit

Trip Distribution/Traffic Assignment

Trip distribution factors were derived from existing turn-movement traffic count data. The study assumed that traffic to/from Wailuku would be served by Lower Main Street and traffic to/from Kahului would be served by Kahului Beach Road. The assignment of project generated traffic onto the surrounding roadway system is shown in Figure 4.

Project Impacts

The proposed project is estimated to increase base year traffic volumes by approximately 21 vehicles during the a.m. peak hour and 28 vehicles during the p.m. peak hour. Project generated traffic would increase traffic volumes at the Kahului Beach Road/Kanaloa Avenue intersection and the Kahului Beach Road/Lowes Main Street/Wailehu Beach Road intersection by less than one percent during both the a.m. and p.m. peak hours. Traffic impacts to the surrounding roadway network were assessed by re-evaluating intersection capacities at each of the critical intersections within the study area for both the a.m. and p.m. peak hours. Future year 1994 traffic volumes with project traffic are shown in Figure 5.

In the future year 1994 with project conditions, the Kahului Beach Road/Kanaloa Avenue intersection would continue to operate at LOS B during the a.m. peak hour and at LOS C during the p.m. peak hour. The Kahului Beach Road/Lower Main Street/Wailehu Beach Road intersection would also continue to operate at LOS D conditions during both the a.m. and p.m. peak hours.
LOWERT MAIN ST.

PROPOSED NISEI VETERANS' MEMORIAL CENTER

PROPOSED SUBDIVISION RD.

KANALOA AVE.

LEGEND

000 AM Peak Hour
(000) PM Peak Hour

Parsons Brinckerhoff

PROJECT GENERATED TRAFFIC

Figure 4
At the unsignalized Kahului Beach Road/Project Subdivision Road intersection, the
left-turn movement from Kahului Beach Road onto the Project Subdivision Road would
continue to operate at LOS B during the a.m. peak hour and at LOS C during the p.m.
peak hour. As previously stated, providing separate turn lanes on the Proposed
Subdivision Road would improve overall intersection operations. The right-turn movement
from the Proposed Subdivision Road onto Kahului Beach Road would continue to operate
at LOS C during the a.m. peak hour and at LOS D during the p.m. peak hour. The left-turn
movement would also continue to operate at LOS E during both the a.m. and p.m. peak
hours.

The unsignalized intersection capacity analyses revealed that the left-turn
movement from Kanaloa Avenue onto the Proposed Subdivision Road would operate at
LOS A during both the a.m. and p.m. peak hours. Separate left-turn and right-turn lanes
should also be considered at this intersection to minimize delay for the right-turning
vehicles. With separate turn lanes, the right-turn movement from the Proposed
Subdivision Road onto Kanaloa Avenue would operate at LOS A during both the a.m. and
p.m. peak hours. The left-turn movement would operate at LOS B during the a.m. peak
hour and at LOS C during the p.m. peak hour. The results of the analyses are
summarized in Table 2.
### Abbreviations

LT = left-turn
RT = right-turn

### Table

**Signaled Intersection**

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**Kahului Beach Rd/Keahole Ave**

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CONCLUSIONS AND RECOMMENDATIONS

Traffic on the local roadways and regional highway system would nominally increase with the proposed project. Project generated traffic would increase volumes at the Kahului Beach Road/Kanaloa Avenue intersection and the Kahului Beach Road/Lower Main Street/Waiehu Beach Road intersection by less than one percent during both the a.m. and p.m. peak hours.

The unsignalized intersections formed by the Proposed Subdivision Road at Kahului Beach Road and at Kanaloa Avenue would experience acceptable Levels-of-Service with the proposed project. The signalized intersections along Kahului Beach Road at Kanaloa Avenue and at Lower Main Street/Waiehu Beach Road would also experience acceptable Levels-of-Service during both the a.m. and p.m. peak hours with the proposed project.

It is recommended that dedicated left-turn and right-turn lanes be provided on the Proposed Subdivision Road at its intersections with Kahului Beach Road and Kanaloa Avenue. Separate turn lanes would minimize delay for the right-turn movement and would improve overall intersection operations.
REFERENCES


APPENDIX A

MANUAL TRAFFIC COUNTS
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APPENDIX B

The Highway Capacity Manual defines six Levels of Service, labelled A through F, from best to worst conditions. Levels of Service for signalized and unsignalized intersections are defined in terms of average user delays. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

Unsignalized Intersections

For unsignalized intersections, the Highway Capacity Manual evaluates gaps in the major street traffic flow and calculates available gaps for left turns across oncoming traffic and for the left and right turns onto the major roadway from the minor street.

LEVEL OF SERVICE A: Little or no delay.
LEVEL OF SERVICE B: Short traffic delays.
LEVEL OF SERVICE C: Average traffic delays.
LEVEL OF SERVICE D: Long traffic delays.
LEVEL OF SERVICE E: Very long traffic delays.
LEVEL OF SERVICE F: Demand volume exceeds capacity, resulting in extreme delays with queuing that may cause severe congestion and affect other movements at the intersection.

Signalized Intersections

For signalized intersections, the Operational Analysis measures signal operations by two separate indicators, volume-to-capacity ratios (v/c) and Level of Service. The v/c ratios provide a comparison of the traffic demands to the theoretical capacity of the intersection while Levels of Service are determined from the estimated delay. These two indicators do not necessarily correlate to each other.

LEVEL OF SERVICE A: This level describes operation with very low delay, i.e., less than 5.0 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
LEVEL OF SERVICE B: This level describes operation with delays in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than at Level of Service A, causing higher delays.

LEVEL OF SERVICE C: This level describes operations with delays in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or cycle lengths. Individual cycle failures (queued vehicles do not clear in one cycle) may begin to appear as the number of vehicles stopping is significant; many vehicles, however, still pass through the intersection without stopping.

LEVEL OF SERVICE D: This level describes operations with delays in the range of 25.1 to 40.0 seconds per vehicle. At Level of Service D, the influence of congestion becomes more noticeable. Longer delays may result from a combination of unfavorable congestion, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LEVEL OF SERVICE E: This level describes operation with delays in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LEVEL OF SERVICE F: This level describes operation with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle length may also be major contributing causes to such delay levels.
APPENDIX C

Project No. 93-27

OWA SUBDIVISION
TRAFFIC NOISE IMPACT ASSESSMENT

BY DARBY & ASSOCIATES
ACOUSTICAL CONSULTANTS

August 1993

Prepared for
A&B PROPERTIES
Honolulu, Hawaii
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OWA SUBDIVISION
TRAFFIC NOISE IMPACT ASSESSMENT

1.0 PROJECT DESCRIPTION

The proposed Owa Subdivision includes approximately 28, single-family residential lots in Kahului, Maui, Hawaii. The project site is adjacent to and mauka of Kahului Beach Road, as shown in Figure 1. It is bordered to the south by Kanaloa Avenue, to the east by an existing residential area, and to the north by vacant land proposed for a future veterans center. Currently, the project site is vacant, undeveloped land.

2.0 EXISTING ACOUSTICAL ENVIRONMENT

Ambient sound level measurements were conducted on August 9, 1993 to assess the existing acoustical environment within and adjacent to the project site. Sound level measurements were taken using a Larson-Davis Laboratories, Model 700, sound level meter. The measured sound levels are expressed in terms of the 90-Percentile Exceedence Sound Level, $L_{eq}$, which represents a measure of the residual or background noise minimally influenced by nearby discrete events. A brief description of statistical sound levels commonly used to describe environmental noise is presented in Appendix A.

The project site and vicinity experience ambient sound levels ($L_{eq}$) of approximately 51 to 62 dBA, which is typical of urban areas. The higher ambient noise levels were measured near Kahului Beach Road and can be attributed to traffic noise.

3.0 NOISE STANDARDS

Various federal agencies specify guidelines and standards in assessing environmental noise and set noise limits as a function of land use. A brief explanatory description of acoustic terminology is presented in Appendix A.

3.1 U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) has established Environmental Criteria and Standards for interior and exterior noise impacting housing sites [Reference 1]. These standards are based on day-night average sound levels, $L_{dn}$, and identify the need for noise abatement, either at the property line or in the building construction. HUD's Site Acceptability Standards rank exterior environmental noise within either the Acceptable Noise Zone, Normally
Unacceptable Noise Zone, or Unacceptable Noise Zone. The Acceptable Noise Zone includes housing sites exposed to exterior noise levels not exceeding Ldn of 65 dBA and, therefore, do not require additional noise attenuation other than that provided in customary building techniques. The Normally Unacceptable Noise Zone includes housing sites exposed to exterior noise levels greater than Ldn of 65 dBA, but not exceeding Ldn of 75 dBA. Housing within the Normally Unacceptable Noise Zone requires some means of noise abatement, either at the property line or in the building construction, to assure the interior noise levels are acceptable. Finally, the Unacceptable Noise Zone includes housing sites exposed to exterior noise levels greater than Ldn of 75 dBA. Housing within this zone requires more sophisticated noise abatement measures with approval on a case-by-case basis.

Noise exposure at the residence may become a factor influencing eligibility for HUD/FHA financing. HUD assistance for the construction of housing is prohibited generally for projects within the Unacceptable Noise Zone and is discouraged for projects within the Normally Unacceptable Noise Zone [Reference 1]. Also, environmental noise is a marketability factor which HUD will consider in determining the amount of insurance or other assistance that may be given for the resale and purchase of existing buildings.

3.2 U.S. Federal Highway Administration

The Federal Highway Administration (FHWA) has established a set of design goals for traffic noise exposure [Reference 2]. The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, Leq. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior Leq of 67 dBA and a maximum interior Leq of 52 dBA. These limits are viewed as design goals, and all projects which are developed to meet these limits are deemed in conformance with the FHWA noise standards.

3.3 U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) has identified a range of yearly day-night average sound levels, Ldn, sufficient to protect public health and welfare from the effects of environmental noise [Reference 3]. The EPA has established a goal to reduce exterior environmental noise to an Ldn not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an Ldn not exceeding 55 dBA. The EPA has also established a long-range goal to reduce interior noise to an Ldn not exceeding 45 dBA. Additionally, the EPA states that to protect against hearing damage, a person's 24-hour equivalent sound level exposure, Leq, at the ear should not exceed 70 dBA. The
EPA emphasizes that these goals are not intended as regulations as they have no authority to regulate noise levels, but rather these goals are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

4.0 TRAFFIC NOISE IMPACT ON PROJECT

Measured traffic noise levels and predicted traffic volumes [Reference 4] were used in conjunction with the Federal Highway Administration (FHWA) Traffic Noise Prediction Model [Reference 5] to estimate future traffic noise levels along Kahului Beach Road. Future traffic noise levels along Kahului Beach Road were based on the predicted peak hour traffic volumes [Reference 4] with a 3.5% medium truck and 1.1% heavy truck mix, and a 30 mph posted speed limit. The day-night average sound levels, $L_{dn}$, were estimated from the peak hour equivalent-continuous noise levels, $Leq$, as specified by HUD [Reference 1]. The proposed site plan, see Figure 2, indicates that the homes nearest Kahului Beach Road will be approximately 90 feet from the center line of the road. Results indicate that the residences at distances of approximately 90 feet and greater from the center line of Kahului Beach Road will be exposed to $L_{dn}$ levels of less than 65 dBA.

As previously discussed in Section 3.1, this corresponds to HUD's Acceptable Noise Zone for housing areas. Housing within HUD's Acceptable Noise Zone does not require additional noise attenuation other than that provided in customary building techniques. However, if plans are changed and housing does occur less than 90 feet from the center line of Kahului Beach Road, noise mitigation measures should be implemented to reduce traffic noise exposure and meet HUD Site Acceptability Standards. Noise mitigation measures would include properly constructing a sound barrier along the roadway, such as a noise barrier wall or a landscaped earth berm, which clearly blocks the line-of-sight to the traffic from the homes.

Similar results indicate that the single residence proposed approximately 45 feet from the center line of Kanaloa Avenue will be exposed to an $L_{dn}$ level of approximately 65 dBA which similarly corresponds to HUD's Acceptable Noise Zone.

5.0 CONCLUSION

The proposed Owa Subdivision is bordered on its makai side by Kahului Beach Road. A 90-foot minimum setback of the homes from the center line of Kahului Beach Road should limit the traffic noise level exposure at these homes adequately to meet the standards and guidelines established by HUD, FHWA, and EPA.
REFERENCES


APPENDIX A

ACOUSTICAL TERMINOLOGY

Sound (Noise) Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured using precision instruments known as sound level meters, in terms of decibels (dB). Sound Level or Sound Pressure Level is defined as:

\[ SPL = 20 \log \left( \frac{P}{P_{ref}} \right) \text{ dB} \]

where \( P \) is the sound pressure fluctuation (above or below atmospheric pressure) and \( P_{ref} \) is 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. For example, if \( P \) is 20 micropascals, then \( SPL = 0 \text{ dB} \), or if \( P \) is 200 micropascals, then \( SPL = 20 \text{ dB} \). The relation between sound pressure in micropascals and sound pressure level in decibels (dB) is shown in Figure A-1.

The sound level that results from a combination of noise sources is not the sum of the individual sound levels, but rather the result is the logarithmic sum. For example, two sound levels of 50 \text{ dB} produce a combined level of 53 \text{ dB}, not 100 \text{ dB}; two sound levels of 40 and 50 \text{ dB} produce a combined level of 50.4 \text{ dB}.

Human sensitivity to changes in sound level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotion and expectations. However, in general, a change of 1 or 2 \text{ dB} in the level of a sound is difficult for most people to detect, a 3 to 5 \text{ dB} change corresponds to a small but noticeable change in loudness, and a 10 \text{ dB} change corresponds to an approximate doubling or halving in loudness.

A-Weighted Sound Level

The human ear is more sensitive to sound with frequencies above 1000 Hertz (Hz), than with frequencies below 125 Hz. Due to this type of frequency response, a weighting system, A-weight, was developed to approximate the frequency response of the human ear. A-weighted sound level (dBA) de-emphasizes the low frequency portion of the spectrum of a signal. The A-weighted (dBA) level of a sound is a good measure of the loudness of that sound, and so different sounds having the same A-weighted level sound about equally as loud. Typical values of the A-weighted sound level of various noise sources are listed in Figure A-1.
Appendix A
Acoustical Terminology
(Continued)

Statistical Sound (Noise) Levels

The sound levels of long-term noise producing activities, such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, several statistical noise levels have been developed and instrumentation are available to measure them. Common statistical sound levels include Equivalent Continuous Noise Level, Leq, and Percentile Exceedence Level, Lx.

The Equivalent Continuous Noise Level, Leq, represents a constant level with the same amount of total acoustic energy as that contained in the actual time-varying sound being measured over a specific time period. Leq is commonly used to describe community noise, traffic noise, and hearing damage potential.

A Percentile Exceedence Level, Lx, represents the sound level which is exceeded for x% of the measured time period. For example, L10 = 60 dBA describes that over the measured time period, the measured noise exceeded 60 dBA for 10% of the time. Common Percentile Exceedence Levels include L1, L10, L50, and L90, which are widely used to assess community and environmental noise.

Day Night Average Sound Level

The Day Night Average Sound Level, Ldn, is essentially the Equivalent Continuous Noise Level measured over a 24-hour period. However, in calculating the Ldn, 10 dBA is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night. The Ldn is a commonly used noise descriptor in assessing land use compatibility, and is used by federal and local agencies and standards organizations.
FIGURE A-1  The relation between sound pressure, P, and sound pressure level, SPL. Also shown are typical values of A-weighted sound levels of various noise sources.
APPENDIX D

STORM DRAINAGE REPORT

FOR

OWA SUBDIVISION

Kahului, Maui, Hawaii

TMR: 3-8-07:38

Prepared By:

A&B Properties, Inc.
P.O. Box 156
Kahului, Maui, Hawaii 96732

June 1994
STORM DRAINAGE REPORT
FOR
OWA SUBDIVISION

I. PURPOSE AND SCOPE

This report estimates the amount of storm water runoff from the project site and studies the method for handling the additional runoff generated after development.

II. LOCATION

The project site is situated at Kahului, Maui, Hawaii, TMK: 3-8-07:38 containing an area of about 4.0 acres. The site is bordered on the north by Kahului Beach Road, on the south by single family residential homes, on the east by Kanaloa Avenue, and on the west by undeveloped land. See FIGURE 1 and LOCATION MAP.

III. EXISTING CONDITIONS

The ground adjacent to the developed residential area along the south side of the site slopes down at about 15% from 40 feet elevation to a depressed area at about 6 feet elevation. This depressed area collects runoff from the site and adjacent areas then deposits it into the Pacific Ocean through an existing 36-inch pipe. Estimated runoff from the project site under present conditions is approximately 4.5 cfs. (see "STORM WATER RUNOFF - EXISTING CONDITIONS" and FIGURE 2). From the depressed area, the ground slopes up on the north side of the project to Kahului Beach Road at an elevation of 10 to 12 feet.

The site is presently covered with grass and brush. The soil is generally Puuone Sand (PZUE) and is characterized by rapid permeability and low runoff potential. It is subject to moderate to severe erosion if not protected.

IV. PROPOSED IMPROVEMENTS

The project will consist of twenty-eight zero-lot line residential lots, each with areas of 3,000 square feet or greater, and one road lot for access purposes. Improvements will include water, sewer, storm drainage, electrical, telephone and cable television systems. Storm water runoff from the developed site will be about 5.9 cfs. (see "STORM WATER RUNOFF - DEVELOPED CONDITIONS" and FIGURE 3), an increase of about 1.4 cfs. to the existing. The additional storm water generated from the site due to development will be collected by a drainage sump. The runoff amount presently being collected by the existing 36" drain pipe crossing Kahului Beach Road will continue to flow through this existing facility.
V. REFERENCES

The drainage report is based on applicable formulas, charts, and tables from:

B) "Interim Drainage Standards for County of Maui", January 1994.

VI. DESIGN CRITERIA

Run-off quantities were computed by the Rational Formula:

\[ Q = CIA \]

Where:

- \( Q \) = Run-off in cfs
- \( C \) = Run-off Coefficient
- \( I \) = Rainfall Intensity (from Nomograph)
- Recurrence Interval, \( T_m = 10 \) yr.
- \( A \) = Drainage Area in Acres

VII. CONCLUSION

A storm water collection system will be constructed to adequately contain the anticipated increase in runoff generated from the site due to development, with no adverse effects to adjacent and downstream properties. The existing storm drain facilities will continue to carry an equal or lesser amount of storm water runoff as it is presently handling.
STORM WATER RUNOFF

EXISTING CONDITIONS

I. Drainage Area = 4.0 acres

II. Runoff Coefficient, C:

  Open Areas
    Infiltration (high) = 0.00
    Relief (rolling) = 0.03
    Vegetal Cover (high) = 0.00
    Development Type (residential) = 0.40
    C = 0.43
    Area = 4.0 acres

  Coefficient, "C" = 0.43

III. Time of Concentration, tc:
    tc = 40 min.

IV. Rainfall Intensity, I:
    One Hour Rainfall, for t_m = 10 years, = 2 inches
    Therefore, I = 2.6 in./hr.

V. Runoff, Q:
    Q = CIA
    Q = 0.43 x 2.6 x 4 = 4.5
    Q = 4.5 cfs.
STORM WATER RUNOFF
DEVELOPED CONDITIONS

I. Drainage Area = 4.0 acres

II. Runoff Coefficient, C:
   a) Open Areas
      Infiltration (high) = 0.00
      Relief (rolling) = 0.03
      Vegetal Cover (high) = 0.00
      Development Type (residential) = 0.40
         C = 0.43
         Area = 2.59 acres
   b) Paved Areas
      Infiltration (negligible) = 0.20
      Relief (rolling) = 0.03
      Vegetal Cover (none) = 0.07
      Development Type (residential) = 0.40
         C = 0.70
         Area = 0.83 acres
   c) Roof Tops
      Infiltration (negligible) = 0.20
      Relief (steep) = 0.08
      Vegetal Cover (none) = 0.07
      Development Type (residential) = 0.40
         C = 0.75
         Area = 0.58 acres

      Determine Weighted Coefficient, "C":
      \[ \frac{0.43 \times 2.59}{4.0} + \frac{0.70 \times 0.83}{4.0} + \frac{0.75 \times 0.58}{4.0} \]
      Weighted Coefficient, "C", = 0.53

III. Time of Concentration, tc:
    tc = 30 min.

IV. Rainfall Intensity, i:
    One Hour Rainfall, for t_m = 10 years, = 2 inches
    Therefore, i = 2.8 in/hr.

V. Runoff, Q:
    \[ Q = CIA \]
    \[ Q = 0.53 \times 2.8 \times 4.0 \]
    \[ Q = 5.9 \text{ cfs.} \]
Mr. Brian J.J. Choy, Director
Office of Environmental Quality Control
220 S. King Street 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Draft Environmental Assessment (EA) for the Community Plan Amendment from Open Space to Single-Family Residential and Park for the Proposed Owa Subdivision at TMK: 3-6-07: 38, Kahului, Maui. (93/EA-003) (93/CPA-001)

We are submitting four (4) copies of the following:

1. Appendix A: An Archaeological Inventory Survey for Owa Subdivision prepared by Xamanek Researches (November 1992)

Please attach the above mentioned reports to the materials transmitted to you by letter dated April 19, 1994.

Thank you for your cooperation. Should you have any questions, please contact this office.

Very truly yours,

[Signature]
Brian Miske
Planning Director

Encl.

cc: Hideo Kawahara, A&B Properties
Hans Riecke, AIA
Gwen Ohashi, Deputy Director
Colleen Suyama
Clayton Yoshida, AICP
April 19, 1994

Mr. Brian J.J. Choy, Director
Office of Environmental Quality Control
220 S. King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Draft Environmental Assessment (EA) for the Community Plan Amendment from Open Space to Single-Family Residential and Park for the Proposed Owa Subdivision at TMK: 3-8-07:38, Kahului, Maui. (93/EA-003) (93/CPA-001)

The Maui Planning Department has reviewed the draft environmental assessment for the subject project, revised April 14, 1994, and anticipates a negative declareation determination. Please publish notice of availability for this project in the May 8, 1994 OEQC Bulletin.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the draft EA. Please contact Mr. Clayton Yoshida at 243-7735 if you have any questions.

Very truly yours,

Brian Miskae
Planning Director

Encl.

cc: Hideo Kawahara, A&B Properties
Hans Riecke, AIA
Gwen Ohashi, Deputy Director
Colleen Suyama
Clayton Yoshida, AICP
Mr. Brian Miskae
Planning Director
County of Maui
250 S. High Street
Wailuku, Hawaii 96793

Attention: Mr. Clayton Yoshida

Dear Mr. Miskae:

Subject: Draft Environmental Assessment for the Proposed Owa Subdivision, Kahului, Maui

Thank you for the opportunity to review the subject document. We have the following comment.

Please consult with the State Historic Preservation Division with regard to the archaeological inventory survey prepared for the project. Also, please list all the agencies consulted during the preparation of the environmental assessment.

If you have any questions, please contact Mr. Jayan Thirugnanam at 586-4185.

Sincerely,

[Signature]

BRUCE S. ANDERSON, Ph.D.
Interim Director

BSA/JT:kk

C: Mr. Robert Sasaki, A&B Hawaii, Inc.
Mr. Hans Riecke, Riecke Sunnland Kono Architects, Ltd.
TRANSMITTAL

TO: Mr. Brian Hiskaa, Director

ATTN.: Mr. Clayton Yoshida

SUBJECT: I.D. No.: 93/EA-003, 93/CPA-001, 93/CIZ-004
THK: 3-8-07:38
Project Name: Ow Subdivision
Applicant: A & B Properties, Inc.

REMARKS:

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations and Benchmarks are affected. Survey has no objections to the proposed project.
TRANSMITTAL:

TO: State Agencies:  
XX Dept of Health, Maui  
XX Dept of Health, Honolulu  
XX Dept of Transportation (2)  
XX Dept of Transportation, Harbors  
XX Dept of Transportation, Airports  
XX DLNR-Historic Preservation Div.  
XX DLNR (2 copies)  
XX DLNR, Maui Office  
XX Dept of Agriculture, Maui  
XX Dept of Agriculture, Honolulu  
XX DOE, Office of Business Services  
XX DAS (Survey Division)  
XX Hawaiian Home Lands  
XX Office of State Planning  
XX State Land Use Commission  
XX Office of Hawaiian Affairs  
XX Dept of Labor  
XX DHEDT  
XX Dept of Human Services, Maui  

County Agencies:  
XX DPW, LUCA (3 copies)  
XX Dept of Public Works  
XX Water Department  
XX Parks and Recreation  
XX Fire Dept  
XX Police Department  
XX Human Concerns  
XX Corporation Counsel  
XX County Clerk  
XX Mayor's Office  
XX Finance Dept  

Federal:  
XX Soil Conservation Service  
XX Army Corps of Engineers  
XX Fish & Wildlife Service  

Others:  
XX Maui Electric Company

SUBJECT: I.D. No.: 93/ERA-003, 93/CPA-001, 93/CIZ-004

THK: 3-8-97 13:38
Project Name: OWA SUBDIVISION
Applicant: A & B Properties, Inc.

TRANSMITTED TO YOU ARE THE FOLLOWING:

XX Application  
XX Traffic Report  
XX Project Plans  
XX Archaeological Report  
XX Environmental Assessment  
XX Infrastructure Report  
XX Revised EA dated 4/14/94  

THESE ARE TRANSMITTED AS CHECKED BELOW:

XX For Your Comment/Recommendation

Please Submit Your Comments/Recommendations By June 7, 1994
If additional clarification is required please contact me at 243-7735.

We urge Local Design as Recommended
in Appendix B - Traffic Impact Analysis
Be adopted

MC 1-14-94

CC: Gwen Ohashi, Deputy Planning Director
Colleen Suyama, Planning Dept.
Clayton Yoshida, AICP
Charles Jencks, DPW
A & B Properties, Applicant
Project File: aowa.subd.trans
Date: May 12, 1994

Mr. Brian Miskae, Planning Director
Maui Planning Department
250 S. High Street
Wailuku, Hawaii 96793

Dear Brian,

- RE: Owa Subdivision; 3-8-07:38
  I.D. No. 93/EA-003, 93/CPA-001, 93/CIZ-004

The drainage information within the infrastructure report was insufficient to comment on the project. The area, however, receives heavy runoff from Lower Main and Kahului Beach Road which ponds along Kahului Beach Road.

Does the existing runoff drain into Kahului Harbor as stated in the infrastructure report or outside the harbor jetty?

Sincerely,

[Signature]
Neal S. Fujiwara
District Conservationist
May 23, 1994

Mr. Brian Miske,  
Planning Director  
County of Maui  
Mau Planning Department,  
250 S. High Street  
Wailuku, HI 96793

Dear Mr. Miske:

Subject: Owa Subdivision  
Change in Zoning & Community Plan Amendment  
(TMKE: 3-8-7:38)

Thank you for allowing us to comment on the above subject.

In reviewing the information transmitted and our records, Maui Electric Company (MECO) at this time has no comments on the proposed project. MECO will require specific electrical data (load, voltage, etc.) to determine the probable impact to our electrical system. We encourage the project's consultant to meet with us as soon as practical to plan for the project's electrical requirements. MECO has electrical facilities near the project location.

If you have any questions or concerns, please call Fred Oshiro at 872-3202.

Sincerely,

Paul Smyth

Edward Reinhardt, Manager, Engineering

An HEI Company
May 23, 1994

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
PT. SHAWTER, HAWAII 96858-5440

ATTENTION OF

"94 MAY 25 A3:23"

Planning Division

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Mr. Clayton Yoshida, Project Planner
Maui Planning Department
County of Maui
250 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Yoshida:

Thank you for the opportunity to review and comment on the Environmental Assessment for the Owa Subdivision, Kahului, Maui (TRK: 3-8-7: 38). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

a. Review of the project does not indicate any anticipated impact to waters or wetlands under Corps jurisdiction; therefore, a DA permit will not be required.

b. The flood hazard information provided on page 3 is correct.

Sincerely,

[Signature]

Ray H. Jyo, P.E.
Director of Engineering
Mr. Brian W. Mickan, Director  
Maui County Planning Department  
250 South High Street  
Wailuku, HI 96793  

Dear Mr. Mickan,

Re: Proposed 28-lot, zero-lot-line residential subdivision and 1-acre park at TMR: 3-8-71;38, Kahului; Applications for Environmental Assessment, Community Plan Amendment and Change-In-Zoning Nos. 93/EA-3, 93/CPA-1, 93/CIZ-4 submitted by R.K. Sasaki on behalf of A & B Properties

The applicant should be advised that water for the construction and domestic purposes of the project may not be available until such time as new sources have been developed to service the Central Maui/Kihei area. No guarantee of water for the project is granted or implied as a result of these comments or the approval of the subject discretionary permits. The department would determine if water is available at such time as an application for water service is approved and the subject fee is paid.

Fire, domestic, cooling and irrigation calculations would be required during the building permit process. The applicant would be required to provide water system improvements, fire protection and water service in accordance with the standards. The county by Ordinance 2108 would require that the developer install low-flow fixtures, for example 1.6-gal. toilets.

The project site with low-rainfall warrants water-saving measures. The applicant and their mechanical engineer are advised to eliminate single-pass systems and provide recirculating ones where cooling is intended. Non-potable water should be used for the grading and construction of the project. Native strand and coastal species should be used wherever possible in the proposed xeriscapes to support the unique, natural history of the Kahului Beach neighborhood.

Sincerely,

David R. Craddick, Director

"R. Water All Things Find Life"
May 24, 1994

Mr. Brian Miskae
Director
Department of Planning
County of Maui
250 S. High Street
Wailuku, Hawaii  96793

Dear Mr. Miskae:

Subject:  93/EA-003, 93/CPA-001, 93/CIA-004, Owa Subdivision, TMK: 3-8-07: 38, Boundary of Kahului and Wailuku, Maui, Hawaii

Thank you for the opportunity to review and comment on the subject application. We have no comments to offer at this time.

Sincerely,

David H. Nakagawa
Chief Sanitarian, Maui
June 3, 1994

Mr. Brian Miskea, Director  
Maui Planning Department  
250 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Miskea:

SUBJECT: County of Maui, Historic Preservation Review of a Change in Zoning and Community Plan Amendment for the Owa Subdivision, Wailuku, Maui  
(T.D. Nos. 93/EA-003; 93/CPA-001; 93/CIZ-004)  
THK: 3-8-07; 38

Thank you for the opportunity to review this subdivision application, which requests rezoning to permit a zero lot line housing development on a 0.4 acre parcel. The development is located along Kahului Beach Road, near Kanaloa Avenue in Kahului.

An archaeological inventory survey was conducted of the project area (An Archaeological Inventory Survey for Owa Subdivision, A & B Properties, Inc., Kahului, Maui, Hawaii. W. M. Fredericksen and D. L. Fredericksen 1992). Two historic sites were identified within the project area, including the old Kahului Railroad bed (50-04-3112) and remains of the Makaweli Rock Crusher (50-04-3135). Subsurface testing was conducted, however, no evidence of buried cultural deposits or features was encountered.

The State Historic Preservation Division has reviewed the archaeological report and found it acceptable (letter to W. Fredericksen April 6, 1992). The Division has also concurred with the consultant’s recommendation that earthmoving within the project area be monitored by a qualified archaeologist.

According to the inventory survey report (p. 14), the applicant intends to preserve a portion of the Makaweli Rock Crusher site. The application document has not, however, been updated since the completion of the archaeological report. In order to clarify the applicant’s intentions regarding the Makaweli Rock Crusher, we request that a preservation plan regarding this site be submitted to the State Historic Preservation Division for review and
approval. Minimally, the plan should specify what portion of the site is to be preserved, and how the preserved area will be maintained and landscaped.

If the Owa Subdivision is given the approvals which will allow the project to proceed, we recommend that the following conditions be attached to approval to ensure "no adverse effect" to the significant historic site:

1) Prior to the initiation of vegetation grubbing, earthmoving, or excavation on the project site, a preservation plan for Site 50-04-3135 shall be submitted to the State Historic Preservation Division for review and approval.

2) Vegetation grubbing and all earthmoving activities on the project site shall be monitored by a qualified archaeologist. Should evidence of historic sites be located or uncovered during earthmoving or construction, activity in the area of the find will cease and the monitoring archaeologist will be provided sufficient time to assess the significance of the site and complete data recovery. At the completion of the monitoring, a report of findings and activities shall be submitted to the State Historic Preservation Division for review and approval.

Please contact Ms. Theresa Donham at 243-5169 if you have any questions.

Sincerely,

DON HIBBARD, Administrator
State Historic Preservation Division

c: Roger Evans, OCEA (File No.94-634)
Dear Mr. Yoshida:

Draft Environmental Assessment (EA)  
OWA Subdivision  
Wailuku, Maui

The applicant proposes to build 28 houses in a subdivision of approximately 4 acres area, with 1.05 acres set aside for a neighborhood park. The site is in the Special Management Area.

The Environmental Center has reviewed the Draft EA with the assistance of Eric Pearthree, Anthropology; and Huilin Dong, Environmental Center.

Our reviewers note that the Draft EA fails to meet content requirements specified in Title 11, Sections 200-9.10, DOH Administrative Rules. In addition, information provided in the Draft EA is inadequate to meet the express purpose of an EA, which is the reliable determination of the potential significance of impacts of a proposed project. For example, the proposed project is located in an archaeologically sensitive area; however, the archaeological survey appended to the document insufficiently addresses archaeological issues. Furthermore, the project area is within both the 100 year flood area and tsunami inundation zone. In light of the threats posed by flood and tsunami inundation, more consideration needs to be given to the desirability of rezoning the site in question from Open Space to Single Family Residential and Park. Even if such rezoning is desired, more consideration needs to be given to the housing design to better protect the future residents' welfare and safety.
Mr. Clayton Yoshida
June 6, 1994
Page 2

Natural Hazards

Since the proposed OWA Subdivision is located in the 100 year flood area, and a large area of the project is within the tsunami high hazard flood zone, data on the frequency of such events should be included in the EA. In the absence of such data, proposed mitigation, such as raising the elevation level of the living areas cannot be adequately evaluated. In the event of flood or tsunami inundation, how would emergency access to the area be secured? Has the subject site been in any hurricane path in the past? Will the "wood frame with cement finish" building design (page 1) withstand prospective hurricane winds?

Archaeology

Background Historical Research:

Although our reviewers felt that the appended archaeological study sufficiently covered the historical properties from the time of the lease to Claus Spreckles in 1878, we note that there is no mention of claims from the Native Testimonies on this parcel or adjacent parcels. Such claims, if recorded, may shed light on earlier uses of the land. There may be oral traditions that relate to land tenure among Maui families. No mention is made of attempts to contact families that may have had claims to this land.

The coverage of prehistoric land use was very cursory. The only discussion of prehistoric settlement patterns in the report is a citation of Kirch (1985). Much archaeological work relating to settlement patterns has been done on Maui and other analogous regions of Hawaii since Kirch's introductory synthesis.

Archaeological Field Survey:

This section appears to be vague and inadequate. No description of methodology or the scope of the coverage was given. Presumably 100% coverage would have been possible, but there is no way of knowing if this was done. The 3 manual test pits and 14 backhoe test trenches were all situated on dune areas (Appendix A, page 8). However, surface indications of sites on sand dunes are not always very evident. References to the heavy vegetation leads our reviewers to conclude that these areas did not receive adequate coverage.

Inventory Survey:

The heavy vegetation and the historic and recent disturbance of significant portions of the site would limit the likelihood that there would be surface indications of
archaeological sites. This disturbance and especially the fact that portions of the project area have been filled suggest that a serious effort at subsurface testing would be required to determine if there were intact subsurface deposits. One nearby subsurface site is mentioned (50-04-1172, page 15) which gave a very early radiocarbon date. A local informant also suggested that there "might well be human burials in the remaining dune area" (page 8). This also suggests that a concerted effort be made to discover buried deposits and pit features. Many other burials have been discovered in nearby dunes, but no mention of these findings accompanied this report. Indeed, the authors only cited their own reports and did not attempt to synthesize previous work in the area.

The filling of the lowlands that is mentioned from circa 1907 on pages 5 and 6 would have significantly impacted the parcel and may well have capped existing archaeological properties with sterile overburden.

Shallow test pits (0.5 m deep) like those discussed on page 9 would only be informative on the surface strata. If there were any buried occupation deposits, a shallow pit would be unlikely to discover them. Coring would have been a better method of discovering extensive buried deposits, but only extensive trenching has proven successful at discovering discontinuous and deeply buried deposits. The trenching program that was undertaken was extensive, but it appears that many of their short trenches did not extend deep enough to determine whether or not there were buried deposits. Trenches primarily are dug to determine stratigraphy. They can be used to determine the presence or absence of cultural layers and especially of pit features but are not very useful for the recovery of portable artifacts. In this light, the findings as reported ("Sterile, no artifacts") suggest that presence or absence of artifacts were criteria for assessing cultural content. No mention is made of survey methodology or criteria for assessment, and no mention is made of screening the excavated material.

Only three profiles are included with the report, one of which (Backhoe Trench #13, see Figure 1) doesn’t extend below modern disturbance. The descriptions of the others and the lack of explanation of the criteria used for judging presence of cultural remains are problematic.

In summary, the conclusions in the study are not very convincing in light of the deficiencies in reporting the historical documentation, the absence of survey methodology and criteria for assessment, and the limited area that was trenches to prehistoric sediment.

The recommendation that monitoring be conducted during grading is proper. Numerous other construction projects in the area have encountered human burials, sometimes many burials. It is quite likely that there are also burials on this parcel. It would be much better to find them before construction starts than by monitoring during grading. A synthetic look at spatial patterning of burials in the region and more extensive test
trenching would allow a more valid assessment of the probability of inadvertent discovery of burials during construction work.

Other Inadequacies

The EA conclusively asserts that there are no rare or endangered fauna or flora in the subject area. However, the basis of such assertions is not given. More information is needed to satisfactorily address the safety concerns. Furthermore, no substantive description of even general aspects of the project's social and economic characteristics is provided, other than vague and self-serving references to tax base increment and "quality housing project" satisfaction of local housing needs. A "suitable and adequate location and site map" (Section 11-2—10(5), HAR) is not included. Technical project information (e.g., water, sewage, etc.) is incorporated by reference only; the EA thus is not a self-contained document.

Summary

The purpose of an EA is to evaluate the significance of potential environmental impacts of a proposed projects. Because of the many inadequacies of content and detail noted relative to this draft EA, a reliable determination of significance based upon the information provided cannot be made.

Furthermore, our reviewers have identified areas of high probability of significant impacts (i.e., archaeology and natural hazards) which this proposed project will engender. Consequently, we strongly suggest that the EA be revised and that the approving agency take the identified concerns into consideration in determining the potential significance of the proposed projects impacts.

Thank you for the opportunity to review and comment on the document.

Sincerely,

[Signature]

John T. Harrison, Ph.D.
Environmental Coordinator

cc: OEQC
A & B Hawaii, Inc.
Riecke Sunnland Kono Architects Ltd.
Roger Fujioka
Eric Pearthree
HuiLin Dong
June 14, 1994

Mr. Brian Miskae
Planning Director
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Miskae:

SUBJECT: Owa Subdivision
I.D. No. 93/EA-003, 93/CPA-001, 93/CIZ-004
TWK: 3-8-07; 28

We have reviewed the subject application and have determined that the proposed 28-unit residential subdivision will have a minor enrollment impact on the schools in the area.

Thank you for the opportunity to comment.

Sincerely,

Herman M. Aizawa, Ph.D.
Superintendent

cc: A. Suga
    R. Murakami
June 15, 1994

Mr. Brian Miskae, Director
Planning Department
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Miskae:

Subject: Application for Change in Zoning and Community Plan Amendment for Owa Subdivision, Kahului, Maui
ID No. 93/EA-003, 93/CPA-001, 93/CIZ-004
TMK: 3-8-07: 38

We support the roadway improvements recommended by the Traffic Impact Assessment Report that dedicated left-turn and right-turn lanes be provided on the proposed subdivision access road where it intersects Kahului Beach Road. The developer must coordinate the access plans for this intersection with our Highways Division. In addition, construction plans must be submitted for our review and approval for all work within our State highway right-of-way. Roadway improvements will be provided at no cost to the State.

For safety reasons, left turns onto Kahului Beach Road from the proposed subdivision access road will not be allowed.

We appreciate the opportunity to provide comments.

Sincerely,

Rex D. Johnson
Director of Transportation
MEMO TO:  Brian W. Miskea, Planning Director
FROM:  George N. Kaya, Public Works & Waste Management Director

SUBJECT:  Environmental Assessment, Community Plan Amendment and Change in Zoning Applications
OWA SUBDIVISION
TIN:  1-6-7:38
93/ZA-003, 93/CPA-001, 93/CIZ-004

We reviewed the subject application and have the following comments:

1.  Comments from the Engineering Division:
   a.  The architect and owner are advised that the project is subject to possible tsunami and flood inundation. As such, said project must conform to Section 19.62 of the Maui County Code pertaining to flood hazard districts.
   b.  Road widening lots be provided for the adjoining halves of Kanaloa Road and Lower Main Street to provide for future right-of-way and improved to County standards, to include but not be limited to, pavement widening construction of curb, gutter and sidewalk, and relocation of utilities underground. Said lot shall be dedicated to the County upon completion of the improvements.
   c.  All structures, such as walls, trees, etc., shall be removed or relocated from the road widening strip. The rear boundaries of the road widening strip shall be clearly marked to determine if said structures have been properly removed and relocated.
   d.  A 30' radius be provided at the intersection of Kanaloa Road and the proposed subdivision road.
e. The existing Lower Main Street and Kanaloa Road do not meet County standards based on roads located in "urban" zoning.

f. A final detailed drainage and erosion control plan including, but not limited to, hydrologic and hydraulic calculations and scheme for controlling erosion and disposal of runoff water be submitted to the Department of Public Works, Engineering Division for our review and approval. The plan shall provide verification that the grading and runoff water generated by the project will not have an adverse effect of the adjacent and downstream properties. In addition, the developer shall contribute his pro-rata share to drainage improvements to be determined by the County and the drainage master plan. An agreement to the above prepared for filing with the State's Bureau of Conveyances shall be submitted by the applicant.

g. The applicant construct road improvements at the intersection of Lower Main Street/Kahului Beach Road/Waiehu Beach Road to include, but not limited to modification of the existing traffic signals, widening of Lower Main Street and Kahului Beach Road, etc.

h. The applicant shall contribute his pro-rata share to traffic improvements to be determined by the County and traffic master plans. An agreement of conveyances shall be submitted by the developer.

i. A copy of the approved water quality report including project mitigation measures (acceptable to the State Department of Health) which evaluates the quality of the storm water discharging into the ocean receiving waters be provided to the County of Maui, Department of Public Works and Waste Management. The report should include a discussion on sediment and nutrient loadings at all drainage outlets.

j. All existing features, such as, structures, dirveways, drainageways, edge of pavement, etc. shall be shown on the project site plan.

k. Site plan and a "sight distance" report to determine required sight distance and available sight distance at existing and proposed street intersections be provided for our review and approval (i.e. Kanaloa Road and Lower Main Street).
1. The applicant obtain street name approvals from the Street Naming Commission and show street names on map.

2. The 100-year flood inundation limits, if applicable, be shown on the project site plans.

3. In accordance with Section 12.24A.070 of the Maui County Code, submit three (3) sets of the street tree planting and irrigation plan and a completed "Maui County Arborist Committee Plans Review Form".

4. An updated Traffic Impact Analysis Report be submitted for our review and approval. This existing report reflects 1992 traffic counts and estimated subdivision construction to be completed by 1994. These assumptions and traffic counts are no longer valid.

The applicant is requested to contact the Engineering Division at 243-7745 for additional information.

2. Comments from the Wastewater Reclamation Division:

a. The developer should be informed that Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.

b. Wastewater contribution calculations are required before building permit is issued.

c. Developer shall pay assessment fees for treatment plant expansion costs in accordance with the ordinance setting forth such fees. As the present time, wastewater assessment fees are only utilized in Kihei. Other areas may be subject to fees at a later time.

d. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.

e. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.

The applicant is requested to contact the Wastewater Reclamation Division at 243-7417 for additional information.
3. Comments from the Solid Waste Division:
   a. The owners and their contractors shall implement solid waste reduction, re-use and recycling programs to reduce the amount of solid waste to be disposed of at the County landfills.
   b. Alternative means of disposal of grubbed material and rock shall be utilized other than disposed of at the County landfills.

   The applicant is requested to contact the Solid Waste Division at 243-7875 for additional information.

4. Comments from the Land Use and Codes Administration:
   a. A site plan prepared for recording with the Bureau of Conveyances shall be part of the change in zoning application and shall include all information required to show compliance with Maui County Zoning Ordinance Chapter 19.09 in regards to lot area, lot width, setback line and yard requirements and design standards.

   The applicant is requested to contact the Land Use and Codes Administration at 243-7373 for additional information.

RMN: ey
xc: Engineering Division
Solid Waste Division
Wastewater Reclamation Division

a:owa
APPENDIX F

RESPONSES
June 3, 1994

Mr. Bruce Anderson, Ph.D.
State of Hawaii
Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RE: Draft Environmental Assessment for the Proposed Owa Subdivision, Kahului, Maui

Dear Mr. Anderson:

This is written in reference to your letter of May 6, 1994, in which you requested additional information regarding the Environmental Assessment prepared for the proposed Owa Subdivision.

The State Historic Preservation Division has been contacted by A & B Properties with regard to the archaeological inventory survey prepared for the project. A & B will follow up on any recommendations made by that office.

The draft Environmental Assessment was prepared in September of 1992 by Riecke Sunnland Kono Architects and updated at the suggestion of the Maui County Planning Department in April, 1993 and again in April 1994.

The Environmental Assessment was based on information obtained from the following sources:

2. U.S. Department of Commerce Bureau of Census; population, rainfall and climate information.
3. Xamanek Research, Archaeological Inventory Survey.
7. Maui County Department of Water Supply, availability of water.
8. County of Maui, Wastewater Division, availability of sewer.

If you have any additional questions regarding preparation of the Environmental Assessment please contact this office.

Sincerely,

Marie Kimmey, AIA
MK/sgc

cc: Clayton Yoshida
    Hideo Kawahara
July 6, 1994

Mr. Brian Miskae, Planning Director
Planning Department
County of Maui
250 So. High Street
Wailuku, Maui, HI 96793

Dear Mr. Miskae:

Subject: Owa Subdivision; TMK: 3-8-07:38
         LD, No. 33/EA-003, 33/CPA-001, 33/CIZ-004

This is in response to the June 29, 1994 letter you received from Neal S. Fujitara of the Soil Conservation Service.

The storm drainage sump will be located in the park area near the intersection of Kahului Beach Road and Kanoa, as shown on the attached map. We have a preliminary drainage study for this project, with a conceptual drainage system described in Section IV, "Proposed Improvements," of the Storm Drainage Report for Owa Subdivision, dated June 1994. A copy of the report is enclosed for your information.

Since we will not be increasing the storm run off from this project to the existing 36-inch culvert crossing Kahului Beach Road, the size of the culvert should be adequate.

A final design of the drainage system will be submitted for review in the future when we do the engineering for the subdivision improvements. This will be done after our requests for the change in zoning and community plan amendment are approved.

Please contact us should you have any further questions.

Sincerely,

A&B PROPERTIES, INC.

[Signature]

H. Kawahara, Manager
Engineering & Construction

HK Inc
Enclosures

cc: Properties, Honolulu (w/map)
    Hans Riecke (w/o enclosures)
July 8, 1994

State of Hawaii
Department of Health
Environmental Management Division
Clean Water Branch
P.O. Box 3378
Honolulu, HI 96801

RE: Environmental Assessment,
Community Plan Amendment and Change in Zoning Applications
OWA SUBDIVISION
TMK: 3-8-738

Dear Sirs:

In a memo dated June 20, 1994, George Kaya, Public Works and Waste Management Director of Maui County, made a specific comment regarding an approved water quality report (acceptable to the State Department of Health) for the above referenced project.

The proposed OWA SUBDIVISION will consist of 28 affordable house lots and a small park. The total area of the site is 4.041 acres. Review of a fact sheet on the NPDES General Permit authorizing discharges of storm water associated with construction activities, indicates that site disturbances of less than five (5) acres of total land area, which are not part of a larger common plan of development or sale, are exempted from NPDES permit requirements.

We would appreciate written verification of this exemption and/or information on any State Health Department Clean Water Branch regulations which may be anticipated for the OWA SUBDIVISION.

Sincerely,

Marie Kimmey, AIA

cc: Hideo Kawahara, A & B Properties, Maui
July 11, 1994

John T. Harrison, Ph.D.
Environmental Coordinator
University of Hawaii at Manoa
Environmental Center
Crawford 317. 2550 Campus Road
Honolulu, Hawaii 96822

RE: Environmental Assessment (EA)
Owa Subdivision
Kahului, Maui
TMK: 3-8-07:38

Dear Dr. Harrison:

This is written in reply to your June 6, 1994 review of the Draft Environmental Assessment for the Owa Subdivision. We enclose a copy of the Final Environmental Assessment which will be submitted to the Maui County Planning Department on July 15, 1994.

A number of your concerns have been addressed in the Final EA document. We have followed the requirements for the EA as outlined in Title II, Sections 200 - 9, 10, DOH Administrative Rules.

Natural Hazards

Tsunami high hazard flood zone data on the site is shown in the Flood Zone Map included as EA/Fig. 3 and on Sheet Z-1, Site Plan. All living area floor elevations will be located above the 17 foot flood elevation. As indicated in the EA, the site has not been in any hurricane path in the past.

Archaeology

Your in-depth discussion of the Archaeological Inventory Survey prepared by Xamanek Researches has been reviewed. Upon consulting with County of Maui Planning Department personnel and our consultants, and reviewing other agency comments, we feel that the Survey is adequate for the purposes of the EA.
According to correspondence from Don Hibbard, Administrator of the State Historic Preservation Division of the Hawaii Department of Land and Natural Resources, addressed to Brian Miskae, Director of the Maui Planning Department and dated June 3, 1994, the State Historic Preservation Division had reviewed the Archaeological Survey report and found it acceptable (letter to W. Fredericksen, April 6, 1992).

The State Historic Preservation Division recommended that the following two conditions be placed upon the approval of the project to ensure "no adverse effect" to the significant historic site:

1. Prior to the initiation of vegetation grubbing, earthmoving, or excavation on the project site, a preservation plan for Site 50-04-3135 (Makaweli Rock Crusher) shall be submitted to the State Historic Preservation Division for review and approval.

2. Vegetation grubbing and all earthmoving activities on the project site shall be monitored by a qualified archaeologist. Should evidence of historic sites be located or uncovered during earthmoving or construction, activity in the area of the find will cease and the monitoring archaeologist will be provided sufficient time to assess the significance of the site and complete data recovery. At the completion of the monitoring, a report of findings and activities shall be submitted to the State Historic Preservation Division for review and approval.

The applicant has agreed to abide by these two requirements and will authorize Mr. Fredericksen to proceed with the preservation plan for Site 50-04-3135 and to be available to monitor all sitework activities.

Other Inadequacies

Comments from the many agencies involved in the review process of the Draft Environmental Assessment have been incorporated into the Final EA and bring to it the depth you felt was lacking in the Draft version. A Project Location map has also been included as EA/Fig. 1. This, in combination with other maps in the report provide a "suitable and adequate location and site map".
Summary

We feel that the Final Environmental Assessment document adequately evaluates the significance of potential environmental impacts of the proposed project and offers sufficient mitigative relief.

We appreciate your comments and trust that the revised EA will be satisfactory.

Sincerely,

Marie Kimmey, AIA

MK/sgc

cc: Hideo Kawahara