
**FINAL ENVIRONMENTAL ASSESSMENT &
FINDING OF NO SIGNIFICANT IMPACT**

CONSERVATION DISTRICT USE APPLICATION

Wailea, South Hilo District, Island of Hawai`i

January, 2008

Prepared For:

JAMES WILLIAM McCULLY & FRANCINE MORALES McCULLY

**40 KAMEHAMEHA AVENUE
HILO, HAWAII 96720**

Prepared By:

**R. BEN TSUKAZAKI, ATTORNEY
TSUKAZAKI YEH & MOORE**

**85 W. Lanikaula Street
Hilo, Hawai`i 96720**

TABLE OF CONTENTS

1.1 Purpose	1
1.2 Identification of Applicant	1
1.3 Identification of Approving Agency	1
1.4 Technical Description	1
1.5 Project Background	11
1.5.1 Project Concept	11
1.5.2 Land Use Designations	12
1.5.3 Listing of Permits and Approvals	17
1.6 Agency and Public Consultation	17
2. ENVIRONMENTAL SETTING	18
2.1 Physical Environment	18
2.1.1 Geology and Hazards	18
2.1.2 Soils	19
2.1.3 Climate	20
2.1.4 Hydrology and Drainage	24
2.1.5 Water Quality	25
2.1.6 Flora and Fauna	25
2.1.7 Air Quality	26
2.1.8 Noise	27
2.1.9 Scenic Resources	27
2.2 Social, Cultural and Economic Setting	28
2.2.1 Socio-Economic Characteristics	28
2.2.2 Adjacent Land Uses	29
2.3 Public Facilities and Services	30
2.3.1 Roads	30
2.3.2 Water System	30
2.3.3 Protective Services	30
2.3.4 Schools	31
2.3.5 Power and Communication Systems	31
2.3.6 Wastewater	31
2.3.7 Solid Waste	32
2.4 Archaeology, Historic and Cultural Resources	32
3. SUMMARY OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES	35
3.1 Short Term Impacts	35
3.2 Long Term Impacts	35
4. ALTERNATIVES	36
4.1 Alternative Actions Considered	36
5. DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION	37
5.1 Significance Criteria	37
5.2 Findings	39
5.3 Reasons Supporting Determination	39

APPENDIX A1 – COMMENTS RECEIVED DURING THE PRE-ASSESSMENT CONSULTATION PERIOD

APPENDIX A2 – COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD & APPLICANT
RESPONSES

APPENDIX B – SINGLE-FAMILY DWELLING PLANS & DRAWINGS

APPENDIX C – GEOTECHNICAL REPORT

APPENDIX D – BOTANICAL SURVEY

APPENDIX E – LANDSCAPE MASTER PLAN

APPENDIX F – ARCHAEOLOGICAL AND LIMITED CULTURAL ASSESSMENT

APPENDIX G – OPINION LETTER FROM YOGI KWONG ENGINEERS

1. Introduction

1.1 Purpose

James William McCully and Francine Morales McCully (“Applicant”) are the owners of a parcel of approximately 2.839 acres of land situated within the State Land Use Conservation District at Wailea, South Hilo, Hawai`i, Tax Map Key No.: (3) 2-9-003: 029 (“House Site” or “Project Site”). The subject property is one of three existing, contiguous lots of record and is adjacent to a contiguous segment of a former railroad right-of-way running along the mauka (western) boundary of all three parcels (“Combined Property” or “Property”.) Contiguous to the House Site are parcels identified by Tax Map Key Nos. (3) 2-9-03:013 and 060, consisting of 1.018 acres and .763 acres, respectively.

Applicant proposes to construct a single-family dwelling and related improvements (the “Proposed Project” or “Dwelling”) on TMK No.: (3) 2-9-003: 029. The purpose of this Environmental Assessment is to comply with the requirements of Chapter 343, Hawai`i Revised Statutes (“HRS”), which are triggered by the proposed Project due to its location within the Conservation District. The subject Environmental Assessment accompanies a Conservation District Use Application (“CDUA”) for an approval that will allow Applicant to construct the proposed dwelling.

1.2 Identification of Applicant

James William McCully and Francine Morales McCully, a married couple, are the owners of the House Site as well as the Applicant for the CDUA. The mailing address for Applicant is 40 Kamehameha Avenue; Hilo, Hawai`i 96720.

1.3 Identification of Approving Agency

In accordance with Chapter 343, HRS, the Department of Land and Natural Resources through its Office of Conservation and Coastal Lands (“DLNR-OCCL”) is the appropriate accepting authority of the subject Environmental Assessment.

1.4 Technical Description

The Combined Property is situated along the Hilo - Hāmākua Coast of the Island of Hawai`i, approximately 14.7 miles north of the City of Hilo. (Please see the attached Figure 1- Location Map and Figure 2 - Tax Plat Map.) Access to the property is provided by a 30-foot wide road and utility easement which runs a distance of approximately 360 feet east from the Hawai`i Belt Road. The Property is bounded on the makai (east) side by the edge of a high pali (ranging between 100 to 140 feet above mean sea level) which is characteristic of the Hilo - Hāmākua Coastline. The pali and the land to the high water mark belong to the State of Hawai`i. The center of Puahanui Stream serves as the northern boundary and TMK: (3) 2-9-003: 001 is situated to the south. The property is bounded on the west by four parcels, TMK: (3) 2-9-003: 048, 049, 050 and 051.

The Combined Property is currently vacant and was previously utilized for sugar cane cultivation. It has remained fallow since July of 1992 and is currently maintained in grass with scattered sections of landscape plantings. (Please see the attached Figure 3-photos of the property.) The former railroad right-of-way and the area previously utilized for sugar production are gently sloping towards the eastern end of the property and are well suited for the proposed use. The high shorefront pali and the steep gulch sloping down to Puahanui Stream render these areas virtually inaccessible from the Combined Property, and there is no evidence of any public access or use on the Combined Property.

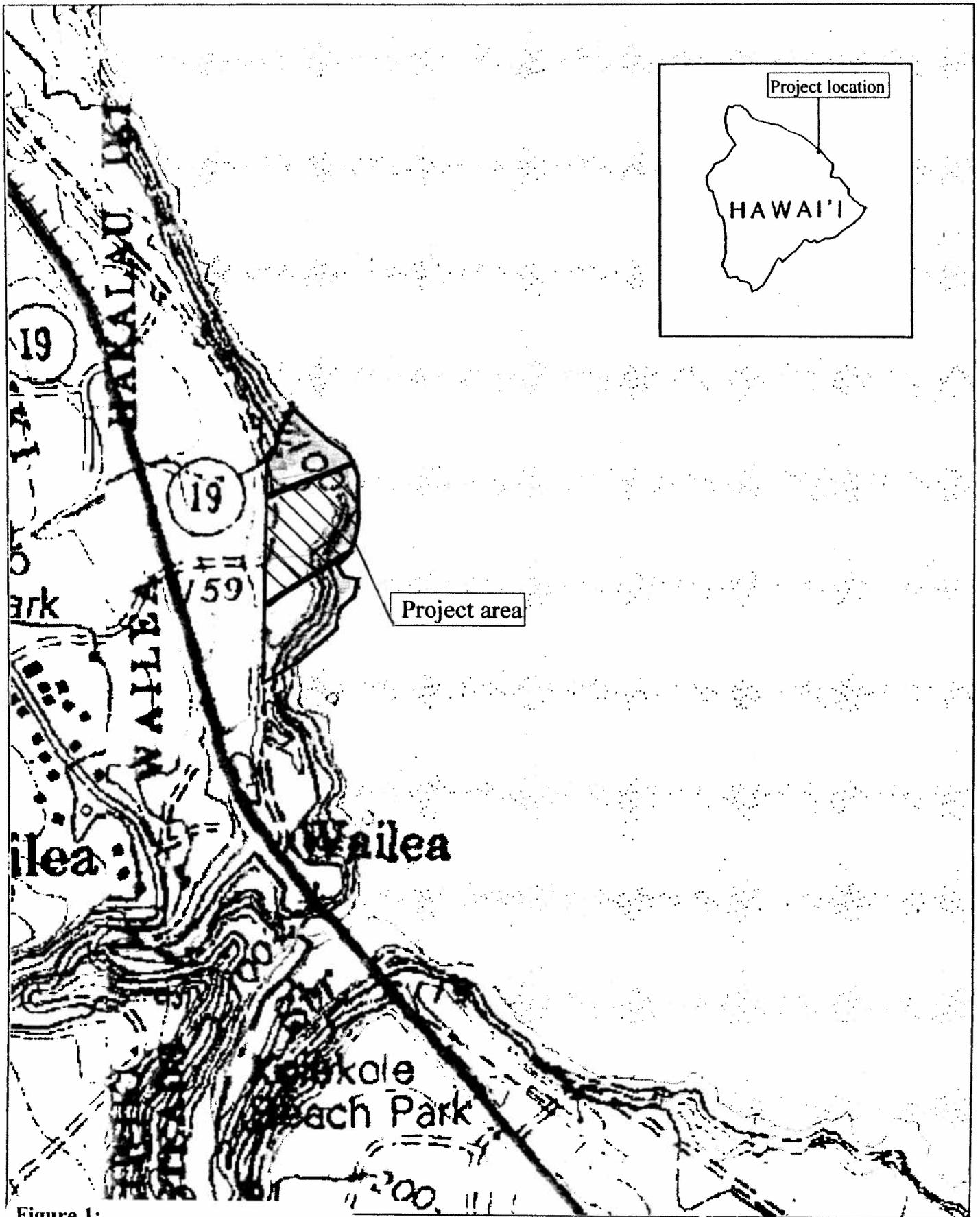
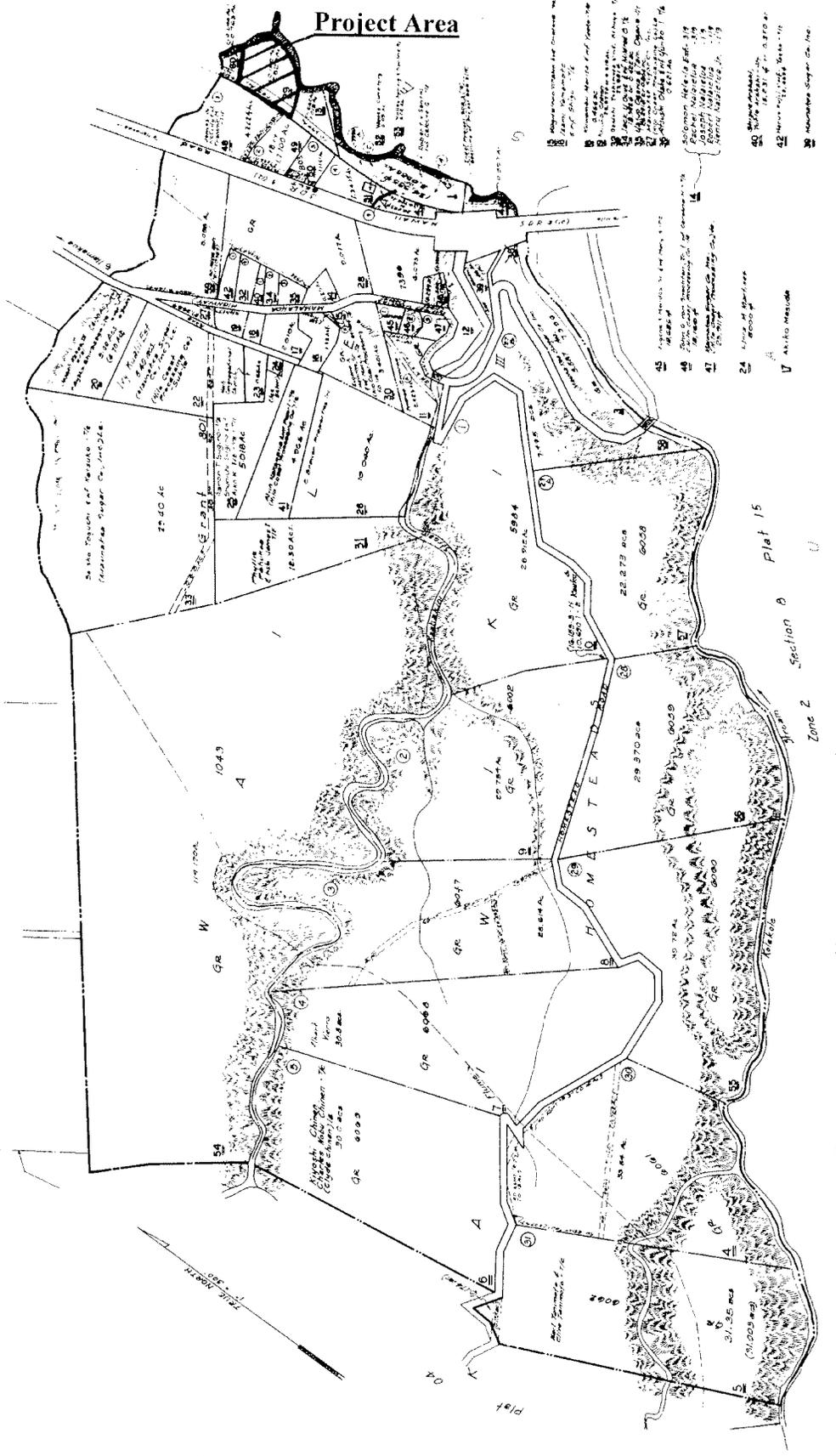


Figure 1:
Project Area & Location Map
(portion of USGS 7.5 minute series
Papaaloa and Papaikou quadrangles,
HI)

HAKALAU HOMESTEADS Plat 02



THIRD ZONE	DIVISION SEC	DIVISION PLAT
2	9	03

CONTAINING PARCELS
SCALE 1" = 100 FT
FIG. 02

WALDEA S. PAR. OF KAWIWI, 3RD HWSSTAD, SOUTH HILLO, HAWAII.

Figure 2: Tax Map Key (3) 2-9-003 (Showing Parcel 029)



Photo 1: Facing north into beginning of gulch area from TMK: (3) 2-9-003: 060.



Photo 2: Facing northwest into beginning of gulch area from TMK: (3) 2-9-003: 060.

Figure 3:
Photos of Property
(July 25, 2005)



Photo 3: Facing north, Puahanui Stream.



Photo 4: Facing west from makai end of TMK: (3) 2-9-003: 013.

**Figure 3:
Photos of Property
(July 25, 2005)**



Photo 5: Facing north from middle of TMK: (3) 2-9-003: 013.



Photo 6: Facing east from mauka side of TMK: (3) 2-9-003: 029.

Figure 3:
Photos of Property
(July 25, 2005)



Photo 7: Facing west from makai side of TMK: (3) 2-9-003: 029.



Photo 8: Facing south from northern side of TMK: (3) 2-9-003: 029.

Figure 3:
Photos of Property
(July 25, 2005)



Photo 9: Facing north from northern bamboo planting.



Photo 10: Facing east towards sea pali from makai edge of TMK: (3) 2-9-003: 029.

Figure 3:
Photos of Property
(July 25, 2005)



Photo 11: Facing south from northern boundary of TMK: (3) 2-9-003: 029.

Figure 3:
Photos of Property
(July 25, 2005)

The County of Hawai`i Planning Department has determined that the three parcels and the contiguous right-of-way, consist of the following land area:

- a. Parcel 13 – 0.662 acre + 0.356 acre = 1.018 acres
- b. Parcel 29 – 2.192 acres + 0.637 acre = 2.829 acres
- c. Parcel 60 – 0.544 acre + 0.219 acre = 0.763 acres

In the future, Applicant intends to consolidate and resubdivide the three existing lots with the former railroad right-of-way in order to eliminate the former railroad right-of-way and to provide a more useful configuration for the resulting three parcels.

1.5 Project Background

1.5.1 Project Concept

Applicant proposes to construct a 4,690 square foot single-family dwelling, and related improvements on the central mauka portion of TMK No.: (3) 2-9-003: 029.

The proposed single-family dwelling is a three-story structure consisting of a garage, a kitchen, a living/dining area, a study, an entryway, three bedrooms, three and a half bathrooms, lanai areas, a garden area and a hallway-type area situated around a central, landscaped garden area. The hallway area would be under the roof eaves, while the central, landscaped garden area would not be covered.

A paved driveway beginning at the terminus of the existing access easement and continuing north along the existing railroad right-of-way and turning east to the garage and entry lanai would also be constructed. The driveway and other improvements not included in the calculation for Maximum Developable Area allowed under Hawai`i Administrative Rules (“HAR”), Section 13-5, Exhibit 4, “Single Family Residential Standards”, total approximately 925 square feet. (See Appendix B for the Floor Plan.)

In order to construct the dwelling on a slab foundation, a certain amount of grading will be necessary. Applicant does not anticipate extensive grading. However, due to the existing slope and the necessity of siting all improvements as far from the edge of the pali as possible in order to incorporate a 70-foot setback for the dwelling structure, grading will be required for the housepad and related improvements. Applicant estimates that the grading will involve approximately 1,200 cubic yards of cut over a 14,500 square foot area and approximately 699 cubic yards of fill over an 11,140 square foot area for a grading area of 25,640 square feet (see Appendix B for the Site Plan and Grading Cut and Fill Plan). As TMK: (3) 2-9-003: 029 is approximately 2.83 acres or 123,274 square feet, a grading area of approximately 25,640 square feet would be 20.8% of the lot area and is not considered to be extensive. Per condition 3b of the County of Hawai`i’s June 19, 2007, determination that the proposed Project was excepted from the definition of development, as contained in the Hawai`i County Planning Commission Rule 9 (Special Management Area), no land alteration activities, including cut or placement of fill material, will be conducted within 40 feet of the top of the pali.

The dwelling is sited in a manner that is sensitive to the existing conditions on the Home Site, and the design has taken into consideration such items as wind exposure, salt exposure, rainfall, sun exposure and temperature, among others. The architectural objectives are to identify and utilize those materials which will weather well over time, require only moderate maintenance and blend into the subject and surrounding lands. It is the architect's practice to incorporate local materials such as `ohia, sand, lava and/or limestone and his intent design structures appropriate for Hawai'i, its people, vegetation, lifestyle and climate while utilizing modern, efficient and well-made materials, processes and building methods.

Applicant will incorporate landscaping improvements such as the following (see Appendix E for the Landscape Master Plan):

- Hawaiian tree ferns, ohia lehua, various ginger varieties, halekonia, gardenia and ti varieties in the entry courtyard;
- Small canopy flowering trees such as plumeria, pua kenikeni, Hong Kong orchid, dodnaea, etc. to supplement the existing bamboo plantings along the northern side of the dwelling;
- Tropical mass such as monstera, spider lily, ti varieties, halekonia, dwarf date palm, cycad, etc., along the existing bamboo plantings along the northern side of the dwelling;
- Pritchardia palm in various locations to the east of the dwelling;
- Various native plants along the makai edge of the Property to supplement the existing hala, ironwood and eucalyptus trees;
- A large canopy flowering tree such as an Amherstia nobilis along the existing bamboo plantings to the south of the dwelling;
- Multi-trunk palms, such as Areca or MacArthur palms along the existing bamboo plantings to the south of the dwelling;
- Gabadae palm makai of the existing hau plantings lining the existing access point; and
- Endemic specie garden to be installed in the uncovered area within the central portion of the dwelling.

Applicant believes that the proposed single family residential use is appropriate in light of the present residential and agricultural uses on much of the surrounding lands. Moreover, single-family residential use is allowed in Agriculturally-zoned areas. The historical use of the Combined Property was for sugar cane production that spanned nearly a hundred years before being terminated by the closure of the Hilo Coast Processing Company. Such historical use has virtually destroyed any natural resources that may have previously existed on the Combined Property.

1.5.2 Land Use Designations

The House Site and rest of the Combined Property are situated within the State Land Use Conservation District. (See attached Figure 4 – State Land Use Boundary Interpretation Map.) The County General Plan Land Use Pattern Allocation Guide Map (“LUPAG”) designation for the Combined Property is Open. The Northeast Hawai'i Community Development Plan recommendation for the area is also Open. (Please see attached Figure 5 –

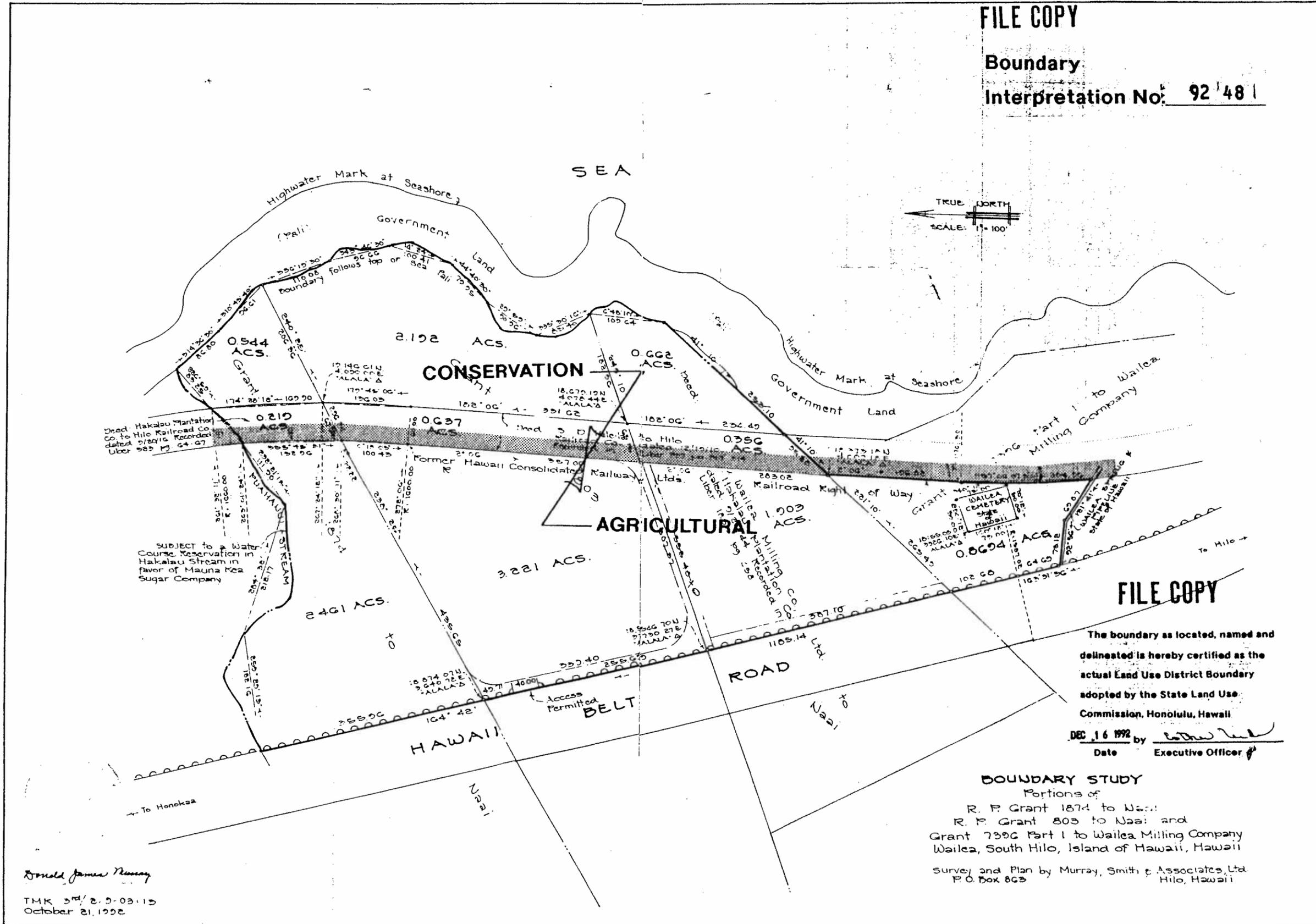
General Plan LUPAG Map.) The County zoning designation for the property is Agricultural (“A-20a”). The Project Area is entirely situated within the County's Special Management Area (“SMA”). Pursuant to Chapter 205A, HRS, and Planning Commission Rule 9, an SMA Assessment application relating to the proposed Project was submitted to the County Planning Department for processing. By letter dated June 19, 2007, the Planning Director found that the proposed Project was exempt from the definition of “development”, as contained in both Chapter 205A-22, HRS, and Planning Commission Rule 9. The Planning Director’s determination also waived the requirement for a shoreline certification survey in light of the 70-foot setback from the top of the pali.

The Northeast Hawai`i Community Development Plan and the County General Plan LUPAG Map Open designations relate to the State Land Use Conservation District designation for the Project Area. In addition, the Open designation appears to reflect the County of Hawai`i’s policy advocating that open space along the shoreline should be protected. The Subject Property is not visible from the Hawai`i Belt Road and, therefore, such policy is not anticipated to be adversely affected by the proposed Project.

FILE COPY

Boundary

Interpretation No: 92'481



The boundary as located, named and delineated is hereby certified as the actual Land Use District Boundary adopted by the State Land Use Commission, Honolulu, Hawaii

DEC 16 1992 by *[Signature]*
Date Executive Officer

BOUNDARY STUDY
Portions of
R. F. Grant 1874 to Naai
R. F. Grant 803 to Naai and
Grant 730C Part I to Wailea Milling Company
Wailea, South Hilo, Island of Hawaii, Hawaii
Survey and Plan by Murray, Smith & Associates Ltd
P.O. Box 803 Hilo, Hawaii

Donald James Murray
TMK 374 2-0-03115
October 21, 1992

F 3008-A **Figure 4:**
State Land Use Boundary
Interpretation Map
(December 16, 1992)

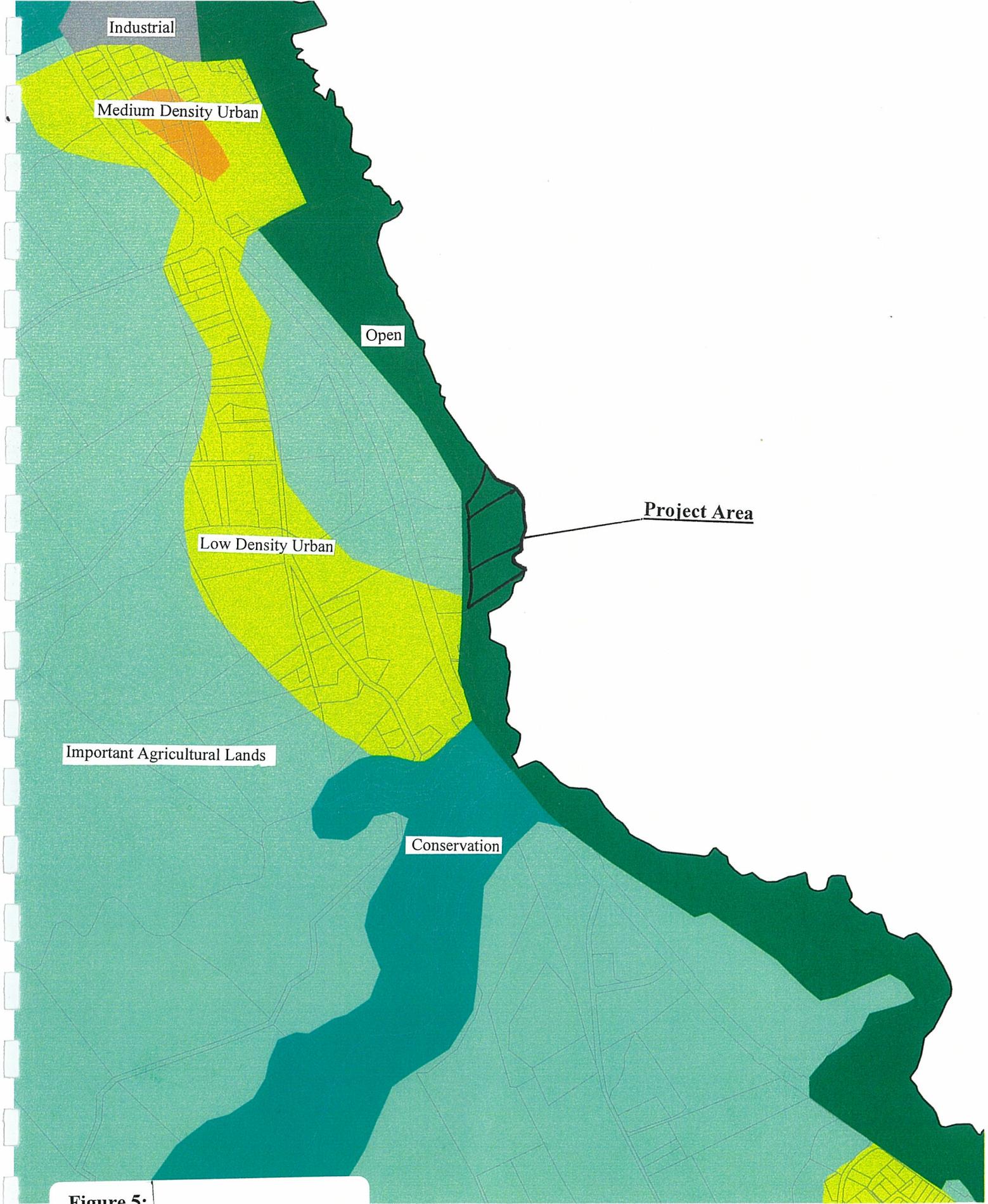


Figure 5:
Hawai'i County General Plan
Land Use Pattern Allocation
Guide (LUPAG) Map

1.5.3 Listing of Permits and Approvals

Federal:	None
State of Hawai`i: Department of Land and Natural Resources Department of Health	Approval of CDUA Approval of Individual Wastewater System; and Building Permit
County of Hawai`i Planning Department Department of Public Works	Approval of SMA Assessment Application; Plan Approvals; Building Permit; and Grading Permit Approval of Building Permit and Grading Permit.

1.6 Agency and Public Consultation

The following public and private organizations and individuals were consulted during the preparation of the subject Environmental Assessment:

United States Fish and Wildlife Services, Division of Ecological Services
State of Hawai`i, Department of Land and Natural Resources - Historic Preservation Division
State of Hawai`i, Department of Land and Natural Resources - Division of Forestry and
Wildlife
State of Hawai`i, Department of Health
State of Hawai`i, Department of Transportation
State of Hawai`i, Office of Hawaiian Affairs
State of Hawai`i, Department of Hawaiian Home Lands
State of Hawai`i, Department of Education
State of Hawai`i, Department of Business, Economic Development & Tourism, Office of
Planning
County of Hawai`i, Planning Department
County of Hawai`i, Department of Public Works
County of Hawai`i, Department of Environmental Management
County of Hawai`i, Department of Water Supply
County of Hawai`i, Police Department
County of Hawai`i, Fire Department

2. ENVIRONMENTAL SETTING

2.1 Physical Environment

2.1.1 Geology and Hazards

Environmental Setting

The Property is located on the lower eastern slopes of Mauna Kea and consists of the Hāmākua volcanic series. These lava flows are chiefly basaltic with layers of Pahala ash. (Stems and Macdonald, 1946.)

The Island of Hawai`i is susceptible to four main types of natural hazards including tsunami, volcanism, seismic activity and hurricanes. Volcanic hazard, as assessed by the United States Geological Survey, is "8" on a scale of ascending risk 9 to 1. The zone "8" designation includes the lower slopes of Mauna Kea, most of which have not been affected by lava flows for the past 10,000 years. (Heliker, 1990.)

The Island of Hawai`i is one of the most seismically active areas in the world and has experienced more than twenty large earthquakes (magnitude 6 or larger) over the past 166 years, the most recent occurring in October of 2006. (Wyss and Koyanagi, 1992.) Magnitude 6 earthquakes can be expected to cause structural damage to non-reinforced buildings. The Building Code rating for the entire Island of Hawai`i is seismic Zone 4, which has the highest risk for seismic activity.

Two significant hurricanes have affected the Island of Hawai`i over the past 50 years. Damage from hurricanes results from coastal waves/surge and high winds. The project site is not within a coastal hazard area for hurricanes or tsunami inundation. The hazards from hurricane winds are far more extensive and unpredictable than the water hazard. Winds may blow from variable directions and may be amplified by topographic conditions. (County of Hawai`i, 2003.)

Shoreline areas in Hawai`i, particularly those on the northeast side exposed to the prevailing winds and heaviest wave attack, are subject to shoreline retreat. The rate of retreat in Hawai`i has been estimated at an average rate of a couple of inches a year. (Macdonald and Abbott, 1977.) Some locations may experience sudden and rapid retreat due to landslides which may be associated with sea cliff collapse.

Helicopter and physical site reconnaissance was conducted by Yogi Kwong Engineers ("YKE") in November of 2005. Based on the reconnaissance, a review of various historical and topographic photos and maps and the height of the pali, YKE has concluded that a 70-foot setback from the top of the pali appears sufficient to protect the proposed improvements from potential coastal hazards caused by intensive or storm wave action, tsunami, and related coastal flooding (see Appendix G for Opinion Letter from YKE).

Potential Impacts and Mitigation Measures

The proposed Dwelling will not expose the Applicant or the general public to any additional hazard risk that does not already exist for the entire Hilo - Hāmākua Coast. The House Site is not situated within a tsunami inundation or storm wave zone and the volcanic hazard risk is relatively low. The Hawai'i County Building Code requires that all new structures be designed to resist forces to seismic Zone 4 standards. The Applicant has previously agreed that any improvements would be sited no less than 70 feet from the edge of the pali.

2.1.2 Soils

Environmental Setting

The soils of the project area are classified as Hilo silty clay loam with 0 to 10 percent slopes ("HoC") by the U.S. Department of Agriculture Soil Conservation Service ("SCS") Soil Survey. (U.S. Soil Conservation Service, 1973.) The Hilo soil series consists of well drained silty clay loams formed in a series of volcanic ash layers. The Agricultural Capability Subclass rating for this soil is IIIe, nonirrigated, which includes soils having severe limitations that reduce the choice of plants and may require special conservation practices due to the risk of erosion.

Under the Agricultural Lands of Importance to the State of Hawai'i ("ALISH") classification system, there are four categories: prime, unique, other important agricultural lands and unrated. The Property is designated prime agricultural lands under the ALISH system, as are other similar properties along the Hilo - Hāmākua Coast that were formerly utilized for sugar cane production. (Please see attached Figure 6 – Agricultural Lands of Importance to the State of Hawai'i, ALISH Map.)

In 1965, the Land Study Bureau assigned land in the State into one of five master productivity ratings: A – Very good; B – Good; C – Fair; D – Poor; and E – Very poor. The Land Study Bureau's overall master productivity rating of the Property for agricultural use is class C or Fair. (Land Study Bureau, 1965.) (Please see attached Figure 7 – Detailed Land Classification Island of Hawai'i, Map No. 605.)

A geotechnical study of TMK No.: (3) 2-9-003: 029 was conducted in April of 2007 by Paul C. Weidig, P.E., of Weidig Geoanalysts (see Appendix C for the Geotechnical Report). The study included a field reconnaissance of the area and mapping of the locations of five test borings which were drilled and sampled to a maximum depth of approximately 15 feet below the existing ground surface. Samples of earth materials drawn from selected vertical intervals in each boring were logged, classified and recovered by a field engineer. The samples were then tested and further classified at Weidig's laboratory. The principal conclusions and recommendations of the study are as follows:

- The borings indicate that the property is underlain by soft, weathered ash and semicompact, pumiceous cinders to a maximum depth of about 14 feet, below which is very dense, weathered basalt lava. The ash deposits can shrink irreversibly as they dry, but are not indicated to be expansive with moisture increases. The soils can be compacted satisfactorily, provided that the minimum

degree of compaction is lowered and moisture conditioning is elevated, as recommended in the report.

- The dwelling, garage and retaining walls should be supported upon conventional, reinforced concrete footings based at a comparatively shallow depth in undisturbed or recompacted soils, engineered fill, or a combination of those materials. Concrete slabs on grade, including the garage floor, walkways and lanais, also can be constructed directly upon such soils.
- Grading recommendations include provisions for benching, keying and subdrainage. These and other details should be carefully followed during site preparation and earthwork construction.

Potential Impacts and Mitigation Measures

The soils of the project area are suitable for agricultural use but may be susceptible to erosion. As such, careful conservation practices will be employed when conducting any land disturbing activities on the Property.

The proposed grading plan has been designed in conjunction with the dwelling in order to minimize cut and fill as well as to limit the use of retaining walls, although retaining walls are proposed for the driveway and the garage exterior wall. Placing retaining walls at the perimeter of the house may lessen fill, but counter the architect's and Applicant's primary goal of blending into the site. Mass grading was not considered, except for in the areas of the driveway and the actual housepad and immediately adjacent areas in order to achieve a smooth transition between natural and finished grades.

The amount of grading necessary to prepare the housepad is not expected to have any significant impacts to soils, although the contour of the land will be affected. The geotechnical study includes very specific recommendations in the areas of clearing and grading; subgrade preparation; benching and keying; subdrainage; fill material; fill placement and compaction; and finished slopes. In addition to adhering to the recommendations of the geotechnical study, all construction activities will comply with the applicable requirements of the Department of Public Works.

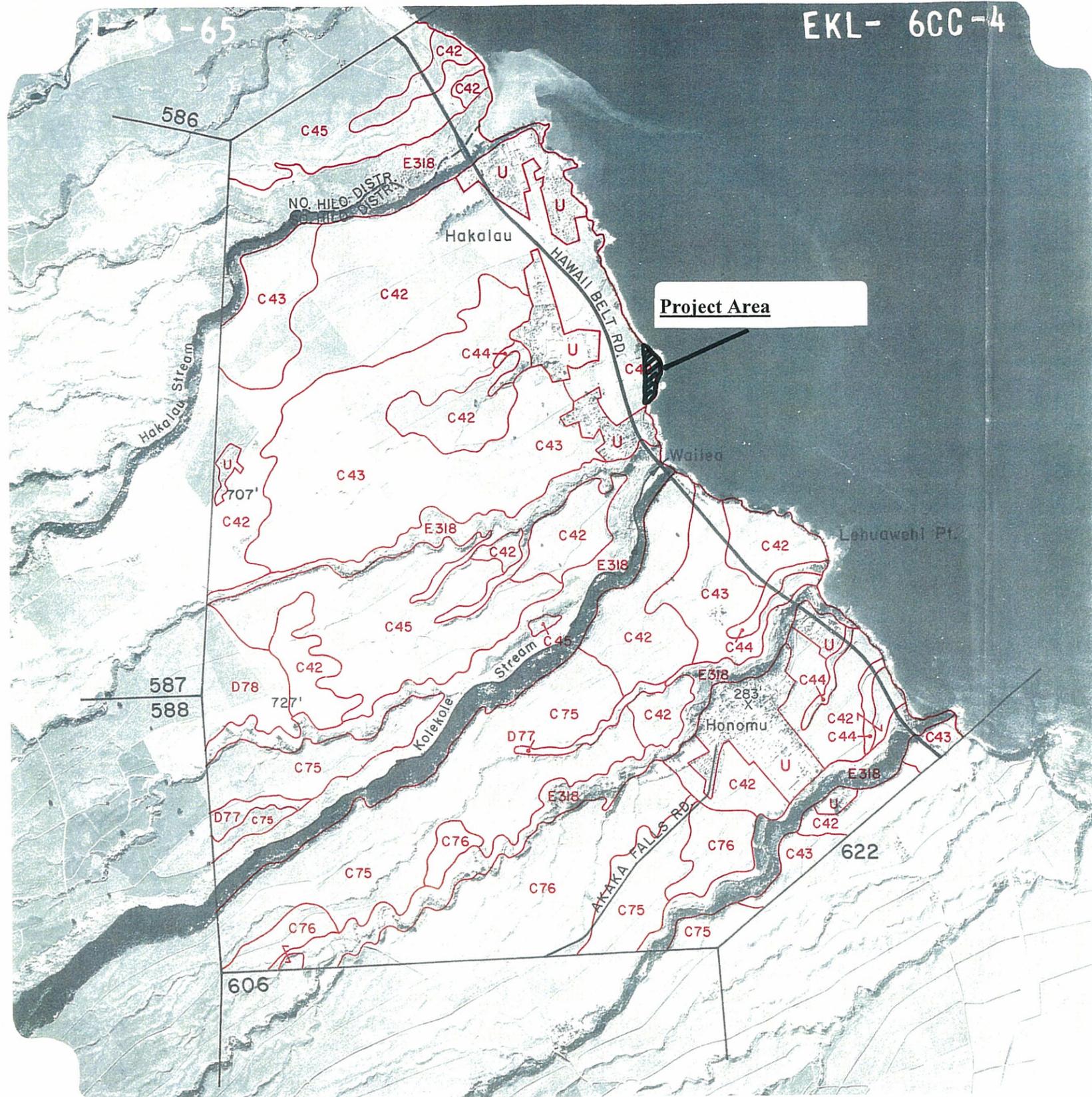
2.1.3 Climate

Environmental Setting

Hawai'i's climate is generally characterized as mild with uniform temperatures, moderate humidity, and two identifiable seasons. The "summer" season, between May and October, is generally warmer and drier. The "winter" season, between October and April, is cooler and wetter. The Combined Property is situated along the "windward" side of the Island of Hawai'i, which is exposed to northeasterly trade winds that cause relatively high rainfall (approximately 150 inches annually). The average monthly minimum temperature in this area of the Hilo - Hāmākua Coast ranges from the low to high 60s (degrees Fahrenheit) while the average monthly maximum temperature ranges from the high 70s to the high 80s. (University of Hawai'i Press, 1983.)

Potential Impacts and Mitigation Measures

The proposed Project will not have a significant impact on the climatic conditions of the Project Area.



Field mapped 1963-64

U.S.G.S. Quad. Reference: Honomu

Figure 7:
Detailed Land Classification -
Island of Hawai'i
Map No. 605

irrigated;
sections of
land rated by



Approx. Scale (ft./in.) = $\frac{13,600}{6}$ - Ground Elevation

Aerial Photographs: U.S. Dept. of Agric., A. S. C. S.

LAND STUDY BUREAU, University of Hawaii

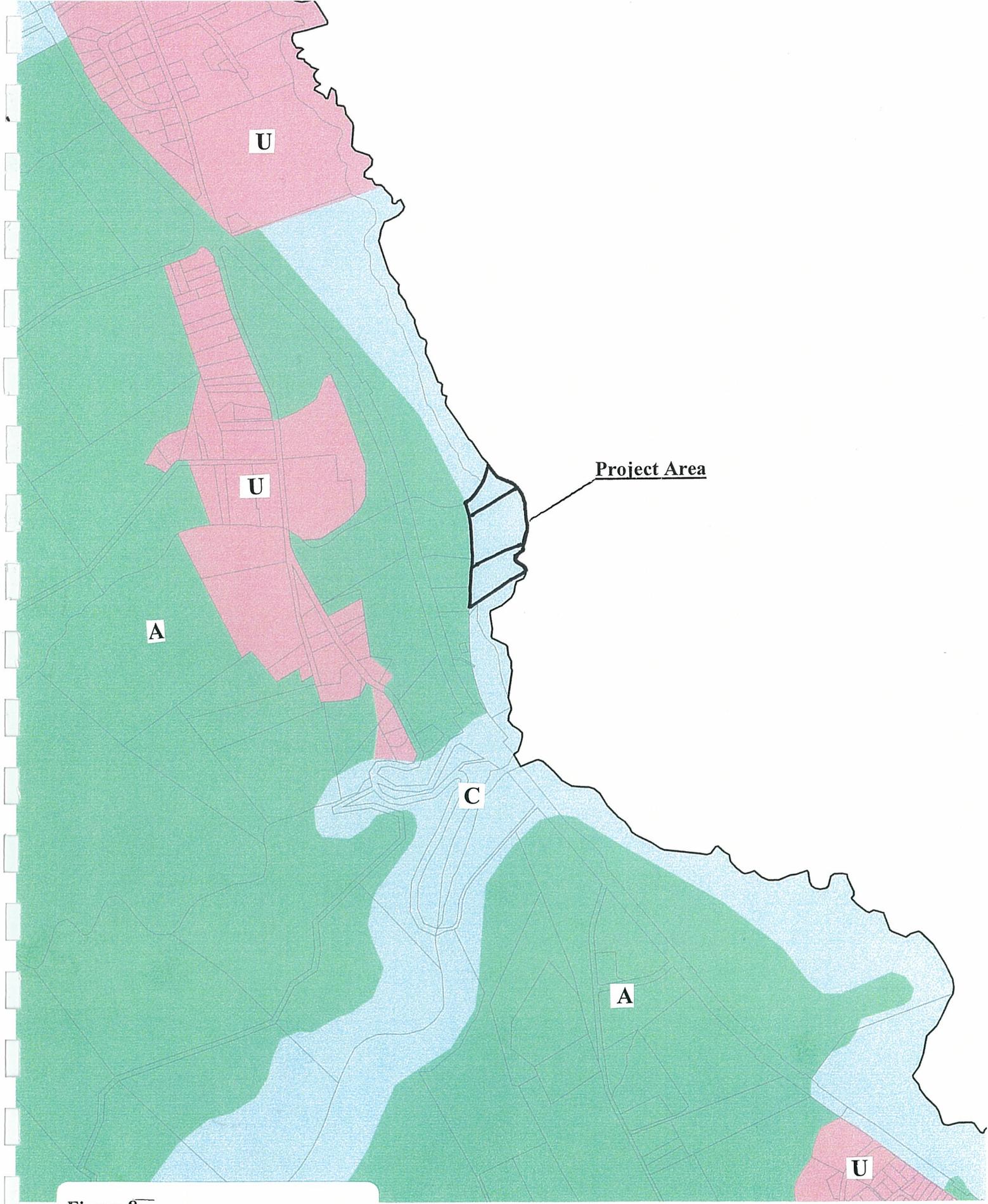


Figure 8:
Surrounding State Land Use
District Boundaries Map

2.1.4 Hydrology and Drainage

Environmental Setting

The Island of Hawai`i is generally characterized as having basal groundwater floating on salt water. The aquifer system underlying the project area has a sustainable yield of approximately 150 million gallons per day. (County of Hawai`i Department of Water Supply, 1991.)

According to the Flood Insurance Rate Map (“FIRM”) prepared by the Federal Emergency Management Agency dated September 16, 1988, the Project Area is situated within Flood Zone "X" (areas determined to be outside the 500 year flood plain). The center of Puahanui Stream serves as the northern boundary of the Combined Property, one parcel away from the House Site, and is encumbered with a watercourse easement.

Potential Impacts and Mitigation Measures

The proposed Dwelling is not anticipated to have any significant adverse impact on hydrology and drainage. However, due to the necessity of a certain amount of grading in order to prepare the housepad, the existing contour of the land will be altered somewhat. This alteration will undoubtedly have some effect on the drainage patterns of the property. The geotechnical study (see Appendix C for the Geotechnical Report) prepared for Applicant included the following recommendation in regard to surface drainage:

- Discharge from the building roof systems as well as runoff from the pavement and exterior flatwork areas should be directed away from the building lines. The new roof systems should be provided with flashing, gutters and downspouts to collect and divert runoff away from the foundations. The roofdrains must remain independent of any retaining wall drains or subdrains. All drainage systems should be maintained on a routine basis. Runoff onto areas where soils remain exposed should be dispersed to avoid points of concentrated flow and subsequent erosion.

The geotechnical study also included the following recommendations relating to subdrainage:

- A subdrain, consisting of perforate pipe surrounded by drain rock that is wrapped in geotextile fabric, should be provided in the keyway, on every other bench thereabove, and where the fill meets original ground outside the limits of the proposed residence.
- The upslope subdrains, consisting of a perforated pipe surrounded by drain rock in a trench that is lined with geotextile fabric, should be constructed along the daylight line between original ground (or cut) and fill.

In addition to following the recommendations of the geotechnical study, any potential impacts may be mitigated by complying with State and County regulations which mandate that any increase in runoff due to development of the project site must be disposed of on-site and may not be directed toward adjacent properties.

2.1.5 Water Quality

Environmental Setting

The center of Puahanui Stream serves as the northern boundary of TMK No.: (3) 2-9-003: 060. The Pacific Ocean lies immediately below the high pali, which serves as the eastern boundary of the Property. Puahanui Stream appears to be an unnamed intermittent stream on U.S. Geological Survey Maps and was not included in the Hawai'i Stream Assessment conducted from 1988-1990, which inventoried and assessed available information on Hawai'i's streams in four resource categories: aquatic resources, riparian resources, cultural resources and recreational resources.

The coastal waters fronting the subject property are classified "A" by the State of Hawai'i. These waters are to be protected for recreational purposes and aesthetic enjoyment.

Potential Impacts and Mitigation Measures

The proposed dwelling is not expected to have any direct impact on Puahanui Stream or marine waters inasmuch as any additional runoff generated will be disposed of on site in compliance with State and County regulations. No development is planned in the vicinity of Puahanui Stream or the gulch associated with it. The proposed single-family use will be serviced by an individual wastewater system approved by the Department of Health, which will limit the potential for the discharge of any wastewater into nearshore marine waters.

2.1.6 Flora and Fauna

Environmental Setting

The entire Combined Property, with the exception of the steep gulch leading to Puahanui Stream, has been extensively utilized for the growing of sugar cane for a period of approximately 100 years. This property has remained fallow since 1992 when the last sugar crop was harvested and has since been maintained as a grassed lawn.

A botanical survey of the Combined Property was conducted in June of 2004, by Evangeline J. Funk, Ph.D. Botanical Consultants. The botanical survey identified two vegetation types on the Property. The open, occasionally mowed grassed area include a mix of introduced grasses. The seaward edge of the grassed area includes scattered planting of green hala trees and a variety of hala with green and yellow striped leaves. The areas along the slopes of the pali were predominantly introduced ironwood trees. A variety of landscape plantings also found in the grassed area include several species of palm trees, some bamboo varieties, kukui trees, golden pothos and banana-type plantings. The stream bank vegetation included large introduced trees such as African tulip, ironwood, coconut, and hala as well as banana, oak leaf fern and sword fern.

In conclusion, the botanical survey report states the following:

“Aside from the Kukui and hala trees, which may be early Polynesian introductions, the only native plants found on this site were some popolo berry bushes (*Solanum*

americanum Mill). Otherwise, the vegetation of this site is all introduced plants and is found in many places in the Hawaiian Islands and will quickly regenerate if it is disturbed.”

“No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) are known from this site and none were found during this survey.”

The complete botanical survey report for the project site is included as an addendum to this Environmental Assessment as Appendix D.

Although a faunal survey was not conducted, it is highly unlikely that any candidate, proposed, or listed threatened or endangered species would be found on the Combined Property. This is due to the extensive agricultural use of the project site for sugar cane production for approximately 100 years. Applicant’s observations on site are consistent with this proposition.

Potential Impacts and Mitigation Measures

Based on the extensive prior disturbance of the project site, it is highly unlikely that any candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended, are present on the Property.

The proposed Master Landscape Plan incorporates a number of site appropriate native plants as well as various non-native but common landscaping plants. As the site has little existing native vegetation present, the proposed Project will not have any significant impact on any protected or native plant or animal species. (See Appendix E for the Landscape Master Plan.)

2.1.7 Air Quality

Environmental Setting

The air quality of the House Site and surrounding area is affected by pollutants derived from the volcanic emissions from the ongoing Kilauea eruption. Other sources of air pollutants to a limited degree include vehicle exhaust emissions along the Hawai`i Belt Road. In general, however, the ambient air quality of the Project Area meets all Federal and State standards as evidenced by its designation as an "attainment" area by the State Department of Health, Clean Air Branch.

Potential Impacts and Mitigation Measures

Short term impacts may result from construction activity relating to the proposed single-family dwelling, including dust and exhaust from machinery and vehicles. Given the temporary or intermittent nature of these activities, the potential impacts should be minimal and will dissipate after the dwelling has been completed. The resulting minor potential impacts resulting from the proposed single-family residential use are expected to be minimal.

As such, the proposed residential use will not have a significant impact on the air quality of the surrounding area.

2.1.8 Noise

Environmental Setting

Ambient noise levels at the project site are low to moderate and are typical for a rural agricultural area near the ocean. The primary noise generators in the area are the wind, ocean waves, vehicles on the Hawai`i Belt Road and vehicles entering the Property.

Potential Impacts and Mitigation Measures

Temporary noise impacts will occur from construction activity relating to the proposed single-family dwelling and are unavoidable. Construction noise will comply with Department of Health rules for “Community Noise Control”. Mitigation of construction noise to inaudible levels will not be practical due to the anticipated intensity of noise sources as well as the exterior nature of the work (excavation, grading, trenching, concrete pouring, hammering, etc.).

The resulting potential impacts resulting from the construction of the proposed dwelling are expected to be minimal. These activities will likely result in marginal increase in noise levels and will not have a significant impact on the ambient noise levels in the area.

2.1.9 Scenic Resources

Environmental Setting

The predominant scenic views in the vicinity of the House Site are of the Pacific Ocean, the high pali and the shoreline area. There are no views of the House Site from the Hawai`i Belt Road because the road is cut below grade along an embankment mauka of the Combined Property.

The Combined Property is situated between two sites listed as examples of natural beauty in the Hawai`i County General Plan: Kolekole Gulch and Hakalau Bay/Gulch. Hakalau Bay/Gulch is situated approximately 5,000 feet north of the Property and Kolekole Gulch is situated approximately 1,200 feet south of the Property.

Potential Impacts and Mitigation Measures

The open space and scenic resources in the vicinity of the Combined Property will not be adversely affected by the proposed Project. The House Site is not visible from the Hawai`i Belt Road, nor is it readily visible from Kolekole Gulch or Hakalau Bay/Gulch. There may be a very limited view of the southern makai section of TMK: (3) 2-9-003: 013 from Kolekole Gulch, however, no immediate improvements are planned for this area.

Applicant’s proposed dwelling has been designed to blend into the subject and surrounding lands as much as possible, which is the primary reason for Applicant’s plan to build on a slab

foundation, as opposed to post and pier. It is not presently clear whether a dwelling constructed on a post and pier foundation would be visible from the Hawai`i Belt Road or Kolekole Gulch. Considering the vegetation that is present along the top of the pali, which includes ironwood trees and hala clusters among other species, as well as the 70-foot structural setback from the top of the pali that the Applicant has already agreed to, it is highly unlikely that any of the proposed improvements would be visible from the Hawai`i Belt Road or Kolekole Gulch. It is also highly unlikely that any of the improvements proposed would be visible from Hakalau Bay/Gulch due to its significant distance from the Property. However, the dwelling will be visible from surrounding properties and from the ocean.

The Property has been well photographed and appears in the backdrop of many photographs of the scenic coastline of the Hilo-Hāmākua Heritage Corridor. Such photographs can be found readily on the internet. Several helicopter tour companies offer tours of the Hilo-Hāmākua Coast and would overfly the Property. Fishing boats, commercial barges and cruise ships sail by the Property frequently. A dwelling constructed on a slab foundation, such as the proposed residence, would significantly lessen the visual impacts to the surrounding areas and to the view of the coastline and mauka areas from the ocean.

Other alternatives such as a post and pier foundation, which would include less cut overall, would result in a dwelling that is more physically imposing on the land, causing greater visual impact to the surrounding area. The proposed dwelling has been designed and sited in such a way that it will meld into the existing conditions. As such, the dwelling is not expected to have any adverse impact on the sites listed as examples of natural beauty in the Hawai`i County General Plan.

2.2 Social, Cultural and Economic Setting

2.2.1 Socio-Economic Characteristics

Setting

Hawai`i County's population increased by more than 56,000 persons between 1980 and 2000. Between 1980 and 1990, Hawai`i Island's population increased by 30.7 percent, and increased by 23.6 percent between 1990 and 2000. The April 1, 2000 population figure for Hawai`i County was 148,677 according to census figures compiled by the County of Hawai`i, Department of Research and Development.

The South Hilo district had a population of 47,386 in 2000 which represented approximately 32 percent of the total population for Hawai`i Island. The City of Hilo is the largest population center on the island with the main offices of the County government, branch offices of Federal and State agencies located there. The island's major deep draft harbor and international airport are also located in Hilo. In addition to industrial, commercial and social service activities, the University of Hawai`i at Hilo and Hawai`i Community College and affiliated research programs play an important role in Hilo's economy.

Hilo and the rest of the East Hawai`i communities are adjusting to the loss of the sugar industry in the mid 1990's. The continuation of agriculture in the district has required a major shift from large-scale single-commodity production to smaller scale, multi-commodity

multi-market base. The shift to diversified agriculture is characterized by larger numbers of self-employed and smaller scale independent businesses.

Potential Impacts and Mitigation Measures

Other properties in the immediate vicinity of the House Site are utilized for a variety of diversified agricultural activities including a certified orchid nursery, the propagation of foliage stock and the cultivation of edible ginger and Chinese taro. The construction of a single-family dwelling on TMK No.: (3) 2-9-003: 029 or a future consolidation and resubdivision of lots will have any significant effect on the socio-economic characteristics of the area.

2.2.2 Adjacent Land Uses

Existing Setting

The areas immediately west (mauka) of the Combined Property are situated in the State Land Use Agricultural district. The areas immediately north, south, and east are designated Conservation. (See attached Figure 8 – State Land Use District Boundary Map.) The parcels immediately adjacent to the Project Area have the same general characteristics of the subject property. Of the five adjoining parcels, three are currently vacant and two have been developed with single-family dwellings. An orchid nursery business has also been established on TMK No.: (3) 2-9-003: 048 along with a single-family dwelling.

The adjoining communities of Hakalau and Honomu include a mixture of agriculture, residential and limited commercial uses. The majority of the residences in these communities are remnants of the former sugar plantation camps. A number of newer homes have been constructed on parcels formerly utilized for sugar production.

Potential Impacts and Mitigation Measures

The proposed Dwelling is consistent with the character of the parcels within the immediate vicinity of the House Site and Combined Property. It is also consistent with the character of the neighboring Hakalau and Honomu communities.

2.3 Public Facilities and Services

2.3.1 Roads

Existing Setting

Hawai'i Belt Road (Highway 19) is a State highway providing the major route for cross-island transportation. The State highway is situated approximately 360 feet west of the subject property. A 30-foot wide access and utility easement provides access to all three of the subject parcels. The easement is currently improved with a 12-foot wide pavement from the State highway down to the edge of the former railroad right-of-way.

Potential Impacts and Mitigation Measures

No additional lots are being created by the proposed Project. The additional traffic generated by the proposed single-family residential use will be minimal. As such, no significant impact on traffic or the highway system is anticipated.

2.3.2 Water System

Existing Setting

The County's Department of Water Supply has confirmed, by letter dated April 4, 2005, that water is available to the Project via an existing six-inch waterline along the Old Mamalahoa Highway, on the opposite side of the Hawai'i Belt Road. Applicant has previously installed the necessary service laterals to serve the Property, and a waterline has been constructed within the access and utility easement.

Potential Impacts and Mitigation Measures

The proposed single-family residential use will not have a significant adverse impact on the existing Department of Water Supply system.

2.3.3 Protective Services

Existing Setting

The closest fire and police stations to the House Site are the district stations situated in the community of Laupahoehoe approximately 9 miles northwest of the project site. The House Site Area is also situated within the service area of the main police and fire stations that are approximately 19 miles away in Hilo.

Potential Impacts and Mitigation Measures

The proposed single-family residential use will not have a substantial impact on the existing service providers.

2.3.4 Schools

Existing Setting

The Combined Property is served by Kalanianaʻole School and Hilo High School. Kalanianaʻole School is located approximately 9 miles southeast and Hilo High School is located approximately 19 miles south of the Combined Property.

Potential Impacts and Mitigation Measures

The proposed single family residential use will not have a significant impact on the existing public school system.

2.3.5 Power and Communication Systems

Setting

The House Site is served by Hawaii Electric Light Company and Hawaiian Telcom through underground utility lines that have been installed for the proposed Project.

Additionally, Applicant plans to utilize solar energy to the extent possible by installing photovoltaic cells on the roof of the proposed dwelling.

Potential Impacts and Mitigation Measures

The proposed single-family residential use will not have any significant adverse impact on the power and communication systems serving the region.

2.3.6 Wastewater

Setting

The Combined Project is not within the service limits of the County wastewater disposal system. All wastewater generated by the proposed single family residential use will be disposed of through individual wastewater systems approved by the State Department of Health.

Potential Impacts and Mitigation Measures

The proposed single family residential use will be required to utilize an individual wastewater system in accordance with the requirements of the State Department of Health. As such, the proposed use will not have any significant adverse impact with regard to wastewater disposal.

2.3.7 Solid Waste

Setting

There is no municipal collection system for solid waste in the County of Hawai'i. The County provides a solid waste transfer station near Honomu, approximately 1 mile from the House Site.

Potential Impacts and Mitigation Measures

The proposed single-family residential use will not have any significant adverse impact regarding solid waste. Applicant acknowledges that construction waste is not allowed to be disposed of at transfer stations.

2.4 Archaeology, Historic and Cultural Resources

Setting

An archaeological assessment of the Combined Property was conducted by Rechtman Consulting, LLC, in July of 2004. Such Property was systematically and intensively examined, and one site (SIHP Site 50-10-26-24212) (two historic-period railroad features) was discovered. These features were identified as a possible railroad grade section and a railroad trestle abutment.

In summarizing its findings, the archaeological consultant states the following:

“Systematic survey of three parcels (TMK 3-2-9-03: 13, 29 60) produced no evidence of traditional Hawaiian remains or evidence that the area was currently being accessed for the exercise of traditional and customary practices.

“One historic era site-SIHP Site 24212, was recorded. The site contains two features associated with the Hamakua Division of Hilo Railroad-Hawaii Consolidated Railway which were recorded in the northwestern portion of the project area. One is a possible section of railroad grade and the other is a railroad trestle abutment. The features were in active use by the railroad from 1911 to 1946. Their primary function was to facilitate the transport of raw sugar from the many mills along the Hilo and Hamakua Coasts to the harbor at Hilo Bay. In later years, they also served the secondary function of facilitating tourism.”

The archaeological consultant provided the following significance evaluation and treatment recommendations:

“Site 24212 is considered significant under Criteria D for the information it has yielded regarding early twentieth century sugar cane transportation infrastructure. As the current inventory survey project recorded Site 24212 in detail, however, no further work is recommended.

“In the unlikely event that archaeological resources are encountered during future development activities at TMK: 3-2-9-03: 13, 29, and 60, work in the immediate area of the

discovery should be halted and DLNR-SHPD contacted as outlined in Hawaii Administrative Rules 13§13-275-12.”

By letter dated December 22, 2004, DLNR-SHPD accepted and agreed with the archaeological consultant’s recommended treatment of Site 24212 and noted that the consultant’s report was adequate to meet the requirements of Section 13-276, HAR. The report was accepted as final.

Rechtman Consulting, LLC, also conducted a cultural assessment for the Combined Property. Archival and documentary information was reviewed, including Mahele Land Awards and Grants and historic maps. This research did not reveal any documentation of any previous or ongoing traditional or customary practices. The area was historically known as Hilo-pali-Ku (Hilo of the upright cliffs) and there are a few accounts that indicate this area, which encompasses the sheer cliffs stretching along the Hāmākua Coast from the Wailuku River to Waipi`o and beyond, once supported a large pre-contact Hawaiian population that subsisted on crops such as taro, sweet potato, banana, and coconut. Other agricultural resources such as ‘awa, bamboo and sugarcane were also cultivated on the kula lands that stretched from South Hilo to Hāmākua. In the second half of the nineteenth century, the transportation difficulties that had delayed the large-scale commercial exploitation of the kula lands were overcome and sugarcane plantations replaced the subsistence agriculture and grazing as the dominant land use.

In order to identify cultural resources and potential traditional cultural practices associated with the project site and this portion of the Wailea ahupua`a, the consultant contacted Ululani Sherlock of the Office of Hawaiian Affairs (OHA) and Kapa Maly of Kumu Pono Associates in June of 2004. Neither had any specific information relative to the Combined Property. However, OHA suggested contacting the Laupahoehoe Hawaiian Civic Club. Lucille Chung and Walter Victor were contacted, and they, in turn, referred the consultant to Jack or Waichi Ouye, Yukio Takeya and Lorraine Mendoza, who were contacted in June and July of 2004.

The interviewees recalled that the railway used to run across the property until the Kolekole Bridge was destroyed by the tsunami of 1946. On the adjacent property to the south, there used to be a pig farm that was used by camp residents and a trail that accessed the shore. This trail allowed the residents and local fisherman access to the shoreline below the pali that bounds the property to the east. This trail was not located on the Combined Property nor did it cross such property.

The consultant summarized its findings regarding cultural resources relating to the Combined Property (using the referenced “Petition Area”) as follows:

“None of the organizations or individuals that were contacted had any information relative to the existence of traditional cultural properties in the immediate vicinity of the Petition Area; nor did they provide any information indicating past or current use of the area for traditional and customary practices. It is unlikely that there are any traditional or customary practices occurring in the Petition Area as the lands were utilized for sugarcane cultivation and associated transportation for over 100 years. Any traditional Hawaiian features that may have been associated with former cultural practices that may have occurred in the Petition Area would have been destroyed by the sugarcane cultivation and related uses.”

A complete copy of the Archaeological Inventory Survey and Limited Cultural Assessment of TMKs: (3) 2-9-003: 013, 029, and 060 is provided as an addendum to this environmental assessment as Appendix F. The comment letter from the State Historic Preservation Division dated December 22, 2004 and a supplemental letter from the consultant Rechtman Consulting, LLC, dated January 24, 2005 are also included in Appendix F.

Potential Impacts

There were no cultural or historic properties, other than Site 24212, identified in the Combined Property Area. There were also no traditional or customary cultural practices found to be associated with such property. The proposed use is therefore anticipated to have “no effect” on significant historic sites or traditional and customary cultural practices.

3. SUMMARY OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

3.1 Short Term Impacts

Construction Activity

Impacts: Short term impacts will result from the construction of the proposed single-family dwelling, including increased noise levels, dust and exhaust from machinery.

Mitigation: Given the temporary or intermittent nature of these activities, the potential impacts from any construction activity should be minimal.

3.2 Long Term Impacts

Drainage

Impacts: County requirements mandate that, all development generated runoff be disposed on-site and cannot be directed toward any adjacent properties. Additional runoff will be generated by the alteration of the existing contours of the House Site, as well as the paving of driveway and the construction of the proposed dwelling.

Mitigation: Applicant will be required to obtain the necessary permits to comply with all applicable State and County drainage requirements.

4. ALTERNATIVES

4.1 Alternative Actions Considered

Under the no action alternative, the Applicant would not submit the CDUA for the proposed Project. The former railroad right-of-way would remain as an encumbrance to each of the three existing lots and the land would remain fallow. However, the Applicant believes that this alternative is neither financially viable nor would it allow highest and best use of the Property.

5. DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

5.1 Significance Criteria

According to the Department of Health Rules (11-200-12, HAR), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. The Rules establish “Significance Criteria” to be used as a basis for identifying whether a proposed action will have a significant environmental impact on the environment.

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

Applicant proposes to construct a single-family dwelling within the Conservation District. Applicant also has future plans to consolidate and resubdivide the three existing lots (including the proposed House Site) with the former railroad right-of-way. The subject property was previously utilized for sugar cane production for approximately 100 years and as a result does not contain any existing natural or cultural resources that will be destroyed or irrevocably lost by the proposed dwelling construction or a potential consolidation/resubdivision of Applicant’s three existing lots in the future..

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

Applicant’s proposed action will not curtail the range of beneficial uses of the environment. As the Property is presently within the Conservation District, the allowable uses are generally restricted and regulated by DLNR. The approval of the Project will not curtail the range of beneficial uses of the environment, rather, the approval of the Project will allow the Applicant to commence an allowable use within the Conservation District, R Subzone.

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

The proposed action is consistent with the Environmental Policies and Guidelines established in Chapter 344, HRS, and the National Environmental Policy Act.

4. Substantially affects the economic or social welfare of the community or state.

The proposed action will have little impact on the economic and social welfare of the community. Other properties in the immediate vicinity are utilized for both residential and agricultural purposes. The construction of a single-family dwelling on TMK No.: (3) 2-9-003: 029 will not have any significant effect on the socio-economic characteristics of the area.

5. Substantially affects public health.

The proposed action will not have any substantial impact on public health. Potential noise, air, water and drainage impacts associated with the construction of the proposed dwelling and the subsequent single-family residential use will be minimal and will be addressed by complying with Federal, State and County requirements.

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

The proposed action will not involve any increase in the number of existing lots and will not generate any substantial secondary impacts. The proposed action is consistent with the socio-economic transition that is occurring in the region.

7. Involves a substantial degradation of environmental quality.

The proposed dwelling and residential use will not result in a substantial degradation of environmental quality. Any significant environmental resources that might have previously existed on the Property were likely destroyed during the cultivation of sugar cane that spanned nearly one hundred years. The proposed residential use will be generally consistent with the character of the adjoining parcels as well as the neighboring Hakalau and Honomu communities. The Project will not add any new lots or increase the density of the Property.

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

The proposed action will not involve any increase in the number of existing lots and will not generate any substantial secondary impacts. As such, the approval of the proposed action does not involve a commitment for larger actions and will not induce other actions having a cumulative effect on the environment.

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

The project site has been extensively disturbed by earthmoving equipment and does not have any candidate, proposed, or listed threatened or endangered species on the Property. As such, the proposed action will not have any substantial adverse effect on any rare, threatened or endangered species or its habitat.

10. Detrimentially affects air or water quality or ambient noise levels.

Short term impacts will result from the proposed residential use including increased noise levels, dust and exhaust from machinery involved in the construction phase. Given the temporary or intermittent nature of these activities, the potential impacts from any construction should be minimal. Potential water quality impacts will be mitigated by

strict adherence to State and County rules and regulations, which mandate that all runoff be disposed of on site.

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

Applicant's property is not situated in an environmentally sensitive area such as a flood plain, tsunami zone, beach, geologically hazardous land, estuary, freshwater, or coastal waters. Shoreline areas in Hawai'i, particularly those on the northeast side exposed to the prevailing winds and heaviest wave attack, are subject to shoreline retreat. The rate of retreat in Hawai'i has been estimated at an average rate of a couple of inches a year. (Macdonald and Abbott, 1977.) Some locations may experience sudden and rapid retreat due to landslides which may be associated with sea cliff collapse. A 70-foot structural setback from the pali has been implemented in order to minimize the effects of potential shoreline retreat. In addition, a geotechnical study was conducted on behalf of Applicant, which found that the existing slope is grossly stable and can be expected to remain so under reasonably foreseeable conditions.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies.

The open space and scenic resources in the vicinity of the House Site will not be adversely affected by the proposed action. The House Site is not visible from the Hawai'i Belt Road and the Project will have no impact on the natural beauty of Kolekole Gulch and Hakalau Bay/Gulch, which are identified as examples of natural beauty in the Hawai'i County General Plan.

13. Requires substantial energy consumption.

The proposed residential use will not require substantial energy consumption. Applicant intends to utilize solar energy in relation to the single-family dwelling, which will lessen the dwelling's dependence on the existing service provider.

5.2 Findings

Based on the foregoing information presented, it is determined that the proposed construction of a single-family dwelling in the Conservation District will not have a significant effect. As such, a determination of a Finding of No Significant Impact for the proposed action is appropriate.

5.3 Reasons Supporting Determination

The nature and scale of the proposed action is such that no significant environmental effects are anticipated. Potential impacts, if any, can be mitigated through compliance with all governmental requirements including those of the State Department of Health and the County Department of Public Works.

REFERENCES

- County of Hawai'i, Interim Plan, *Hazard Mitigation Plan, Natural Hazards*, October, 2003
- Hawai'i Department of Water Supply, *Hawaii County Water Use and Development Plan*, December, 1991
- Hawai'i Island Economic Development Board (HIEDB), *Hilo-Hamakua Economic Development Plan*, March, 1994
- Heliker, C. 1990. *Volcano and Seismic Hazards on the Island of Hawaii*. Washington: GPO
- Land Study Bureau. 1965. *Detailed Land Classification – Island of Hawaii*. University of Hawai'i. Honolulu
- Nishimura, Brian. 2005. *Final Environmental Assessment and Finding of No Significant Impact; State Land Use Boundary Amendment Conservation to Agriculture*.
- Office of State Planning. 1994. *Waipio to Hilo – A Resource and Interim Planning Document*. Honolulu
- University of Hawai'i Department of Geography. 1983. *Atlas of Hawaii*. University of Hawai'i Press, Honolulu.
- U.S. Soil Conservation Service. 1973. *Soil Survey of the Island of Hawaii, State of Hawaii*. Washington: U.S.D. A.
- Stearns, H.T. and Macdonald G.A. 1946. *Geology and Ground-Water Resources of the Island of Hawaii*. Bulletin 9, Hawaii Division of Hydrography. Advertiser Publishing Co., Ltd. Honolulu.

APPENDIX A1 – COMMENTS RECEIVED DURING THE PRE-ASSESSMENT CONSULTATION PERIOD

1. State of Hawai`i, Department of Hawaiian Home Lands, March 2, 2007.
2. State of Hawai`i, Department of Land and Natural Resources, Division of Forestry and Wildlife, March 5, 2007.
3. State of Hawai`i, Department of Education, March 5, 2007.
4. State of Hawai`i, Department of Business, Economic Development & Tourism, Office of Planning, March 14, 2007.
5. State of Hawai`i, Department of Health, District Environmental Health Program Chief, March 16, 2007.
6. State of Hawai`i, Department of Transportation, Director of Transportation, March 27, 2007.
7. State of Hawai`i, Office of Hawaiian Affairs, April 6, 2007.
8. State of Hawai`i, Department of Business, Economic Development & Tourism, Office of Planning, April 11, 2007.
9. County of Hawaii, Police Department, February 27, 2007.
10. County of Hawai`i, Department of Environmental Management, February 28, 2007.
11. County of Hawai`i, Fire Department, March 19, 2007.
12. County of Hawai`i, Planning Department, March 28, 2007.

LINDA LINGLE
GOVERNOR
STATE OF HAWAII



MICAH A. KANE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

BEN HENDERSON
DEPUTY TO THE CHAIRMAN

KAULANA H. PARK
EXECUTIVE ASSISTANT

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879
HONOLULU, HAWAII 96805

March 2, 2007

R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
Attorneys at Law
A Limited Liability Law Company
85 W Lanikaula Street
Hilo, Hawaii 96720-4199

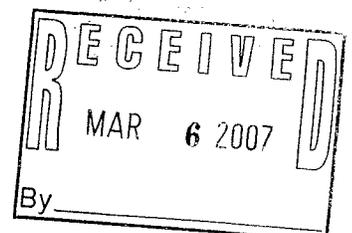
Dear Mr. Tsukazaki:

Thank you for the opportunity to participate in the early phase of an Environmental Assessment report for the proposed consolidation and resubdivision of existing parcels and construction of a single-family dwelling for property owners Mr. and Mrs. James W. McCully in South Hilo, Hawaii. The Department of Hawaiian Home Lands has no comments and future consultation on this project is not necessary.

Should you have any questions, please call the Planning Office at (808) 586-3836.

Aloha and mahalo,

Micah A. Kane
for Micah A. Kane, Chairman
Hawaiian Homes Commission



LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

ROBERT K. MASUDA
DEPUTY DIRECTOR FOR LAND

DEPUTY DIRECTOR FOR
THE COMMISSION ON
WATER RESOURCE MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE

1151 PUNCHBOWL STREET

HONOLULU, HAWAII 96813

March 5, 2007

ADULTIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND MANAGEMENT
STATE PARKS

Mr. R. Ben Tsukazaki
Tsukazaki Yeh & Moore
Attorneys at Law
85 W. Lanikaula Street
Hilo, Hawaii 96720-4199

Dear Mr. Tsukazaki:

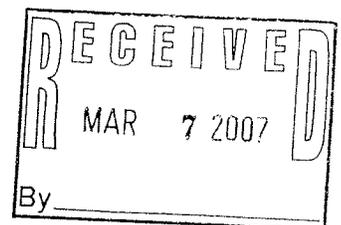
Subject: Pre-Environmental Assessment Consultation for Mr. And Mrs. James W. McCully,
applicant, proposed consolidation and re-subdivision of existing parcels and construction
of Single-Family Dwelling in Conservation District.

We appreciate the opportunity to comment on your subject request. DOFAW does not have any management areas near your proposed project. We do not anticipate seeing any endangered plants in former cultivated sugar lands. However, a botanical survey will be part of a required environmental assessment and it will be at the completion of this survey that DOFAW will be able to fully evaluate any presence of endangered plants on the property. Thank you for allowing us to review your project.

Sincerely yours,

Paul J. Conry
Administrator

C: DLNR, OCCL





STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

March 5, 2007

Mr. R. Ben Tsukazaki
Tsukazaki Yeh & Moore
Hilo, Hawai'i 96720-4221

Dear Mr. Tsukazaki:

Subject: Pre-Environmental Assessment Consultation for McCully Consolidation and Resubdivision, Wailea, South Hilo, Island of Hawai'i TMK: 2-9-3: 13, 29 and 60

The Department of Education (DOE) has reviewed your request for comments on the consolidation and reconfiguration of three different lots including a railroad right-of-way. The total area is 4.6 acres. The proposal is to reconfigure the three lots. The expected density is no more than one single-family house per lot.

The DOE has no comment or concern. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at (808) 733-4862.

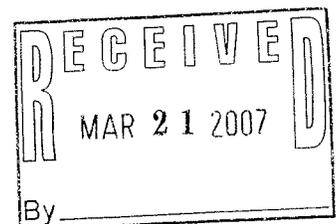
Very truly yours,

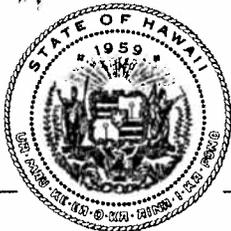
A handwritten signature in cursive script that reads "Patricia Hamamoto".

Patricia Hamamoto
Superintendent

PH:jmb

c: Randolph Moore, Acting Assistant Superintendent, OBS
Duane Kashiwai, Public Works Administrator, FDB





**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
LAURA H. THIELEN
DIRECTOR
OFFICE OF PLANNING

OFFICE OF PLANNING

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

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-11694

March 14, 2007

R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo, Hawaii 96720-4199

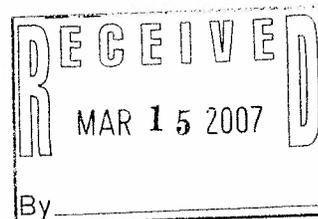
Dear Mr. Tsukazaki:

Subject: Pre-Environmental Assessment Consultation
Mr. and Mrs. James W. McCully
Consolidation and Resubdivision of Existing Parcels and
Construction of Single-Family Dwelling in Conservation District
TMK: (3)2-9-003: 013, 029 and 060, Wailea, South Hilo, Hawaii

We have reviewed your letter dated February 20, 2007, for a Pre-Environmental Assessment (EA) Consultation for a Conservation District Use Application to the State Department of Land and Natural Resources. Mr. and Mrs. James W. McCully are proposing to consolidate and resubdivide three existing parcels and to construct a single family dwelling on one of the lots in the State Conservation District.

We note that this proposed project was first reviewed under a Land Use Commission (LUC) boundary amendment, Docket No. A05-757. On May 9, 2006, the LUC denied the Petition to reclassify the 4.6 acres from the Conservation to the Agricultural District. At the public hearings conducted by the Land Use Commission, concern was expressed that approval of this petition may set a precedent to encourage residential use on lands within the Conservation District along the Hamakua coast. Therefore, this would be an issue that should be addressed in the EA.

The potential for landslides and appropriate setbacks from the cliff are additional issues to address.



R. Ben Tsukazaki, Esq.
Page 2
March 14, 2007

Thank you for the opportunity to comment. If you have any questions or comments, please contact Lorene Maki of our staff at 587-2888.

Sincerely,

Mary Lou Kobayashi for

Laura H. Thielen
Director

c: Sam Lemmo, DLNR
Anthony Ching, LUC

LINDA LINGLE
GOVERNOR OF HAWAII



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

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

In reply, please refer to:
EPO-7-049

March 16, 2007

Mr. R. Ben Tsukazaki
Tsukazaki Yeh & Moore
85 W. Lanilaula Street
Hilo, Hawaii 96720-4199

Dear Mr. Tsukazaki:

SUBJECT: Pre-Assessment Consultation for Consolidation and Re-subdivision of Existing
Parcels for Construction of Single-Family Dwelling in Conservation District,
Wailea, South Hilo, Island of Hawaii, Hawaii
TMK: (3) 2-9-003: 013, 029 and 060

Thank you for allowing us to review and comment on the subject documents. The documents were routed to the various branches of the Environmental Health Administration. We have the following Wastewater Branch, Hazardous Evaluation & Emergency Response Office (HEER), and General comments.

Wastewater Branch

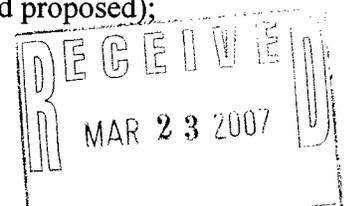
We have reviewed the document which proposes to consolidate and re-subdivide three (3) existing lots with a former railroad right-of-way into three (3) lots, thereby reconfiguring the lots and eliminating the former railroad right-of-way.

The project is located in the Non-Critical Wastewater Disposal Area (CWDA).

The Department of Health has records of existing cesspools located on TMK: (3) 2-9-003: 013. Furthermore, information available indicates that there is an existing dwelling and structures on parcel 013.

Before we can concur with the application for subdivision, the following items must be satisfactorily addressed:

- 1) All existing structure and wastewater disposal systems need to be shown on the final plot map;
- 2) A minimum horizontal distance of 9 feet must be maintained between existing wastewater disposal systems (cesspools) and property lines (existing and proposed);



Mr. Tsukazaki
March 16, 2007
Page 2

All wastewater plans must meet Department's Rules, HAR Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. If you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Hazardous Evaluation & Emergency Response Office

Lands formerly used for sugarcane production are now being developed into communities where residential home, schools and commercial businesses are being constructed. Chemicals associated with the sugarcane industry persist in soils today and may be a threat to public health and the environment. Elevated arsenic levels were discovered in soil at formerly sugarcane production areas on the islands. The HEER Office has identified former sugarcane production areas for assessment throughout the state and plans to work with property owners to conduct environmental assessment to identify and address elevated soil arsenic levels prior to finalizing development plans for the properties.

1. The three (3) parcels listed in the document were used for sugarcane production and should be assessed for arsenic. The Department of Health recommends multi-incremental sampling conducted by a qualified environmental professional, in consultation with the HEER Office for each residential lot. If total arsenic is detected above the background screening level of 20 mg/kg found in Hawaiian Soils, then additional assessment is needed to determine potential risks and the need for remedial action. Removal or remedial plans must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.
2. The historical use of the area by the railroad company may have impacted the area with petroleum products used to operate or maintain the trains. The historical use of the railroad easement should be investigated to determine if a release might have occurred. If railroad operation led to a release of petroleum, hazardous substances, pollutants or contaminants, the applicant should contact the HEER Office to determine if the release could impact public health and the environment.

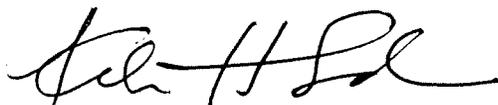
General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

Mr. Tsukazaki
March 16, 2007
Page 3

If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

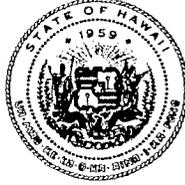
Sincerely,

A handwritten signature in black ink, appearing to read "Kelvin H. Sunada". The signature is fluid and cursive, with the first name "Kelvin" and last name "Sunada" clearly distinguishable.

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
WWB
HEER
EH-Hawaii

LINDA LINGLE
GOVERNOR



BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

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

IN REPLY REFER TO:

STP 8.2439

March 27, 2007

Mr. R. Ben Tsukazaki
Tsukazaki, Yeh & Moore
Attorney's at Law
85 W. Lanikaula Street
Hilo, Hawaii 96720-4109

Dear Mr. Tsukazaki:

Subject: Mr. & Mrs. James W. McCully
Pre-Environmental Assessment Consultation
TMK: (3) 2-9-003: 013, 029 and 060

Thank you for your recent early consultation letter regarding the proposal by the subject landowner to consolidate and re-subdivide land to build one single-family dwelling.

It appears that the proposed project is the same as, if not similar to, the project which we reviewed and provided comments on from June 2004 through April 2005 to the State Office of Planning, Hawaii County Planning Department and Mr. Brian Nishimura, Planning Consultant.

We understand the proposed project now only involves the consolidation and re-subdivision of land and one residential dwelling.

Our prior comments would be still applicable. Our earlier and current comments on the project, as now presented, are as follows:

1. Only one access and driveway to and from Hawaii Belt Road (State Highway Route 19) will be allowed.
2. The landowner will need to comply with the requirements and conditions determined by our Highways Division regarding the access to the highway and development plans, including construction plan review, for the property affecting the connection to the highway.



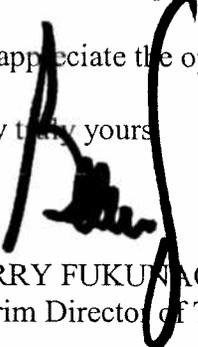
Mr. R. Ben Tsukazaki
Page 2
March 27, 2007

STP 8.2439

3. The submittal of any necessary environmental assessment (EA), with accompanying conservation district use application, should include a transmittal of at least four (4) copies to our Highways Division (ATTN: Highways Planning Branch). The Highways Planning Branch will coordinate divisional review with the other Highways offices that may need to examine the project. Based on the new plan for one dwelling, we anticipate no significant traffic volume impact from the one residential unit, but the EA should discuss any impacts (e.g. line-of-sight, turns, drainage, right-of-way and permitted access changes, etc.), including any mitigation measures and improvements required at and around the project's access to the highway.
4. For any on-site consultation on conditions and requirements, we recommend that our Highways Hawaii District Office be contacted for arrangements.
5. We reserve the right to require other and/or further conditions, as deemed necessary, if future expansion or greater development of the affected lands takes place.

We appreciate the opportunity to provide our initial comments on the proposed project.

Very truly yours,



BARRY FUKUNAGA
Interim Director of Transportation

c: Christopher Yuen, Hawaii Planning Department
Laura Thielen, Office of Planning DBEDT
Peter Young, Department of Land and Natural Resources



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD07/1414 C

April 6, 2007

R. Ben Tsukazaki
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo, HI 96720-4199

RE: Pre-Environmental Assessment (EA) Consultation for proposed consolidation and re-subdivision of existing parcels and construction of a single-family dwelling in the Conservation District, South Hilo, Hawai'i Island; TMKs: 2-9-003:013, 029 and 060

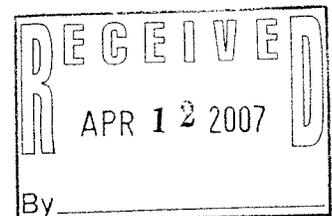
Dear Ben Tsukazaki,

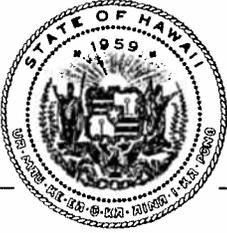
The Office of Hawaiian Affairs is in receipt of your February 20, 2007 request for comments on the above project, which would include allowing Mr. and Mrs. James W. McCully to consolidate and re-subdivide approximately 4.6 acres of land, which would, among other things, eliminate a currently existing railroad right-of-way. We apologize for our delayed response, and have no comments at this time. Thank you, however, for the opportunity to comment, and we look forward to the opportunity to review the forthcoming Draft EA. If you have further questions or concerns, please contact Heidi Guth at (808) 594-1962 or e-mail her at heidig@oha.org.

Sincerely,


Clyde W. Nāmu'o
Administrator

C: Lukela Ruddle
Community Resources Coordinator
OHA – Hilo Office
162 A Baker Ave.
Hilo, HI 96720-4869





**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
LAURA H. THIELEN
DIRECTOR
OFFICE OF PLANNING

OFFICE OF PLANNING

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

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-11711

April 11, 2007

R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo, Hawaii 96720-4199

Dear Mr. Tsukazaki:

Subject: Pre-Environmental Assessment Consultation
Mr. and Mrs. James W. McCully
Consolidation and Resubdivision of Existing Parcels and
Construction of Single-Family Dwelling in Conservation District
TMK: (3)2-9-003: 013, 029 and 060, Wailea, South Hilo, Hawaii

This will clarify our letter dated March 14, 2007 in which we incorrectly stated a concern expressed by the Land Use Commission (LUC). Our March 14, 2007 letter said the LUC was concerned about residential development. The LUC had not expressed concern about residential use per se, and recognized that residences are permitted uses in the Conservation District. The actual concern expressed related to redistricting land out of the Conservation District.

The potential for landslides and appropriate setbacks from the cliff for residential uses should be discussed in the Environmental Assessment.

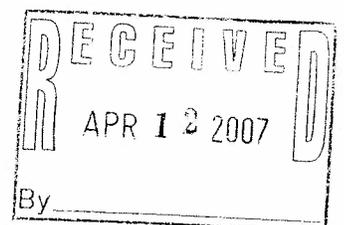
Thank you for allowing us the opportunity to comment on this environmental assessment. If you have any further questions or comments, please contact Lorene Maki of our staff at 587-2888.

Sincerely,



Laura H. Thielen
Director

c: Anthony Ching, LUC
Sam Lemmo, DLNR



Harry Kim
Mayor



Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

February 27, 2007

Mr. R. Ben Tsukazaki
Tsukazaki, Yeh & Moore
85 W. Lanikaula Street
Hilo, Hawaii 96720-4199

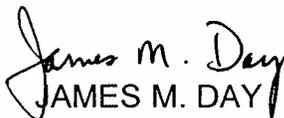
Dear Mr. Tsukazaki:

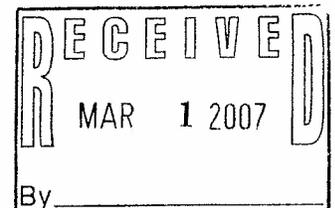
Re: Pre-Environmental Assessment Consultation
Tax Map Key No: (3) 2-9-003: 013, 029 and 060
Wailea, South Hilo, Hawaii

Staff, upon reviewing the provided documents and visiting the proposed site, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

Sincerely,


JAMES M. DAY
ASSISTANT POLICE CHIEF
AREA I OPERATIONS



Harry Kim
Mayor



Barbara Bell
Director

Nelson Ho
Deputy Director

County of Hawaii
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
25 Aupuni Street, Room 210 • Hilo, Hawai'i 96720-4252
(808) 961-8083 • Fax (808) 961-8086
[email: cohdem@co.hawaii.hi.us](mailto:cohdem@co.hawaii.hi.us)

February 28, 2007

Mr. R. Ben Tsukazaki
Tsukazaki Yeh & Moore
Attorneys at Law
85 W. Lanikaula Street
Hilo, HI 96720-4199

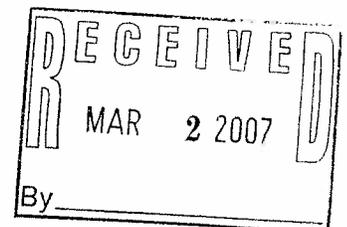
Re: Pre-Environmental Assessment Consultation
Mr. and Mrs. James W. McCully
Consolidation and Resubdivision of Existing Parcels and
Construction of Single-Family Dwelling in Conservation District
TMK:2-9-003:013, 029 and 060, Wailea, South Hilo, Hawai'i

Dear Mr. Tsukazaki,

Thank you for allowing us the opportunity to comment on the subject pre-environmental assessment.

There are no county sewers planned in this area. We have no additional comments to make.

Barbara Bell
DIRECTOR



9231A

Harry Kim
Mayor



Darryl J. Oliveira
Fire Chief

Glen P.I. Honda
Deputy Fire Chief

County of Hawai'i
HAWAII FIRE DEPARTMENT
25 Aupuni Street • Suite 103 • Hilo, Hawai'i 96720
(808) 981-8394 • Fax (808) 981-2037

March 19, 2007

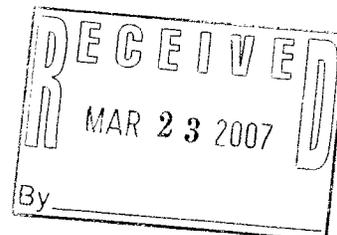
Mr. R. Ben Tsukazaki
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo, Hawaii 96720-4199

RE: PRE-ENVIRONMENTAL ASSESSMENT CONSULTATION
MR AND MRS JAMES MCCULLY
CONSOLIDATION AND RESUBDIVISION OF EXISTING PARCELS
AND CONSTRUCTION OF SINGLE-FAMILY DWELLING IN
CONSERVATION DISTRICT
TAX MAP KEY (3)2-9-003:013, 029 AND 060, WAILEA, SOUTH HILO,
HAWAII

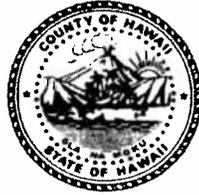
In that the catchment system will also be used for fire protection, it is recommended that the fire department connection to the tank be located in an area accessible by fire apparatus.


DARRYL OLIVEIRA
Fire Chief

PBE:lpc



Harry Kim
Mayor



Christopher J. Yuen
Director

Brad Kurokawa, ASLA
LEED® AP
Deputy Director

County of Hawaii
PLANNING DEPARTMENT

101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-3043
(808) 961-8288 • FAX (808) 961-8742

March 28, 2007

Mr. R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo HI 96720-4199

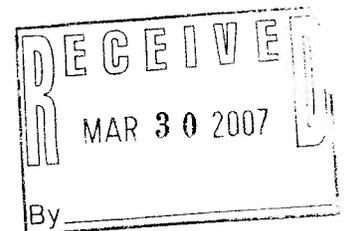
Dear Mr. Tsukazaki:

SUBJECT: Pre-Environmental Assessment Consultation
Applicant: Mr. & Mrs. James W. McCully
Project: Consolidation and Resubdivision of Existing Parcels and
Construction of a Single-Family Dwelling
Tax Map Key: 2-9-3:13, 29 & 60, Wailea, South Hilo, Hawaii

This is in response to your letter dated February 20, 2007 requesting our comments for a pre-environmental assessment consultation on the proposed consolidation and resubdivision of the former railroad right-of-ways with three existing lots of record as well as the construction of a single-family dwelling on Parcel 29.

In reference to your request for comments, we have the following to offer:

1. The total area (parcel and the contiguous railroad right-of-way) consists of:
 - a. Parcel 13 - 0.662 acre + 0.356 acre = 1.018 acres
 - b. Parcel 29 - 2.192 acres + 0.637 acre = 2.829 acres
 - c. Parcel 60 - 0.544 acre + 0.219 acre = 0.763 acre
2. The General Plan Land Use Pattern Allocation Guide (LUPAG) Map designation for the subject area appears to be Open.
3. According to the State Land Use Commission Boundary Interpretation No. 92 48, the railroad right-of-ways and area makai is designated Conservation.



Mr. R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
Page 2
March 28, 2007

4. County zoning for these areas is Agricultural (A-20a). However, for parcels that are designated Conservation by the State Land Use Commission, there is no County zoning per se.
5. All three parcels and the railroad right-of-ways are located within the County's Special Management Area (SMA). A Special Management Area Use Permit Assessment Application for the proposed consolidation and resubdivision is required to be submitted for our review. For your information, however, Planning Commission Rule 9-4(10)(b)(xiii) states that "development" does not include *"Subdivision of a parcel of land into four or fewer parcels when no associated construction activities are proposed, provided that any such land which is so subdivided shall not thereafter qualify for this exception with respect to any subsequent subdivision of any of the resulting parcels."*

In addition, please note the following:

1. The Draft EA should discuss the land use designations, including the General Plan, State Land Use District, and County Zoning District. It should also discuss the surrounding uses in the vicinity.
2. The proposed improvements are located within the Special Management Area (SMA) and, depending on the location of the single-family dwelling, may be within the Shoreline Setback Area. Therefore, the Draft EA should discuss the objectives and policies of Chapter 205A, Hawaii Revised Statutes, relating to Special Management Area (SMA) and Shoreline Setback, as well as the Planning Commission Rule No. 9 relating to SMA. The Draft EA should also address any impacts and mitigative measures relating to the coastal environment.
3. You have stated that a single-family dwelling will be constructed on Parcel 29. The Draft EA should clearly discuss this proposal and include a detailed map of the proposed site of said single-family dwelling and related improvements. Depending on the distance from the shoreline, a certified shoreline survey may be required for this dwelling.
4. Permits that will be required for the proposed project include Special Management Area Permit, Conservation District Use Permit, Subdivision approval by the Planning Department and possibly a Shoreline Setback Variance.
5. The Draft EA should include maps that can clearly identify all existing and proposed improvements relating to the subject project.

Mr. R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
Page 3
March 28, 2007

Please provide a copy of the draft Environmental Assessment for our review and file.

Thank you for the opportunity to provide comments for the Pre-Assessment Consultation.
If you have questions, please feel free to contact Esther Imamura of this office at
961-8288, extension 257.

Sincerely,



CHRISTOPHER J. YUEN
Planning Director

ETI:cd
P:\wpwin60\ETI\EA\draftPre-consul\Tsukazaki McCully 2-9-3-13-29-60.doc

xc: Miss Esther Imamura, Long Range Planning

**APPENDIX A2 – COMMENTS RECEIVED DURING THE PUBLIC COMMENT
PERIOD & APPLICANT RESPONSES**

1. State of Hawai`i, Office of Hawaiian Affairs, November 13, 2007.
2. County of Hawai`i, Planning Department, November 13, 2007.



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

November 13, 2007

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, Hawai'i 96809

2007 NOV 20 A 9 42
RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

RE: Conservation District Use Permit Application (CDUA) HA-3445, Single Family Residence, TMK (3) 2-9-003: 029, Wailea, South Hilo, Hawai'i

Dear Samuel J. Lemmo,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 26, 2007 request for comments concerning a Conservation District Use Application for a single-family residence in Wailea, South Hilo and offers the following comments:

The Draft Environmental Assessment (DEA) for the Conservation District Use Permit Application of the proposed project determined a Finding of No Significant Impact. The proposed project was found in compliance with the Hawaii Administrative Rules §13-5-24 for a single-family dwelling in the resources sub-zone.

The Archeological Assessment conducted by Rechtman Consulting, LLC and the subsequent acceptance letter by the Department of Land and Natural Resources - Historic Preservation Division pertaining to the further treatment of the State Historic Site found in the project area satisfies our immediate concerns for the protection of cultural resources.

The project description submitted to our office included ground disturbing activities. These activities included grading and fill for the construction of the foundation of the residence and the construction of a new driveway. These activities always have the potential to unearth subsurface cultural resources.

If the project moves forward, and if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division (SHPD/DLNR) shall be contacted. OHA would also like to be notified.

Samuel J. Lemmo
DLNR-OCCL
November 13, 2007
Page 2

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jason Jeremiah, Policy Advocate-Preservation, Native Rights, Land and Culture, at (808) 594-1816 or jasonj@oha.org.

Aloha,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o". The signature is fluid and cursive, with a long horizontal stroke at the end.

Clyde W. Nāmu'o
Administrator

C: Lukela Ruddle
OHA Community Affairs Coordinator (Hilo)
162 A Baker Avenue
Hilo, HI 96720-4869

Tsukazaki Yeh & Moore

ATTORNEYS AT LAW
A Limited Liability Law Company

85 W. Lanikaula Street Hilo, Hawaii 96720-4199
Telephone: (808) 961-0055 FAX (808) 969-1531

R. BEN TSUKAZAKI
rbt@lava.net
THOMAS L.H. YEH
tly@lava.net
MICHAEL W. MOORE
mmoore@lava.net
JAMAE K.K. KAWAUCHI
jkk@lava.net

January 18, 2008

Mr. Clyde W. Nāmu`o
Office of Hawaiian Affairs
State of Hawai`i
711 Kapi`olani Boulevard; Ste. 500
Honolulu, Hawai`i 96813

Re: Conservation District Use Application (CDUA HA-3445)
Draft Environmental Assessment
Applicant: James & Francine McCully
Request: Construction of Single-Family Residence
TMK No.: (3) 2-9-003: 029
Wailea, South Hilo District, County of Hawai`i

Dear Mr. Nāmu`o:

On behalf of the McCully's ("the Applicant"), this is to respond to comments provided by the Office of Hawaiian Affairs ("OHA") by letter dated November 13, 2007, in relation to the above-referenced Conservation District Use Application ("CDUA") and associated Draft Environmental Assessment ("DEA"). The proposed project involves the construction of a single-family residence and related improvements ("the Project") on an approximately 2.839-acre parcel, more specifically identified as Tax Map Key ("TMK") No.: (3) 2-9-003: 029, Wailea, South Hilo, Hawai`i ("the Property"). We appreciate your taking the time to review and comment on the subject CDUA and DEA.

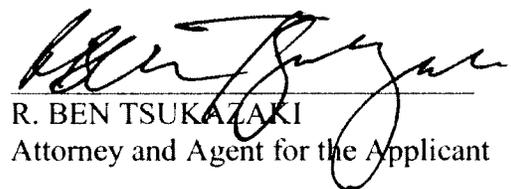
Please be assured that work will stop and that the State Historic Preservation Division and OHA will be contacted should any significant cultural deposits or human skeletal remains are encountered during the construction phase.

Mr. Clyde W. Nāmu'o
January 18, 2008
Page No. 2

Thank you again for your comments. Please do not hesitate to contact me should you require any additional information.

Very truly yours,

TSUKAZAKI YEH & MOORE
A Limited Liability Law Company.


R. BEN TSUKAZAKI
Attorney and Agent for the Applicant

RBT:mb

Cc: Jim & Francine McCully
Sid Snyder, Ossipoff, Snyder & Rowland Architects
Samuel Lemmo, Department of Land and Natural Resources - Office of Conservation &
Coastal Lands

Harry Kim
Mayor



County of Hawaii
PLANNING DEPARTMENT

101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-4224
(808) 961-8288 • FAX (808) 961-8742

Christopher J. Yuen
RECEIVED Director
OFFICE OF CONSERVATION
AND COASTAL LANDS
LEED AP
2007 NOV 21 1:59
Deputy Director

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

November 13, 2007

Mr. Samuel J. Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P. O. Box 621
Honolulu HI 96809

Dear Mr. Lemmo:

Subject: CDUA HA-3445
Owners: James W. & Francine M. McCully
Request: Single Family Residence
Tax Map Key: (3) 2-9-3:29, Wailea, South Hilo, Hawaii

This is in response to the above-referenced application for the proposed construction of a single family dwelling and related improvements on the subject parcel.

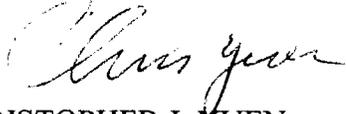
The project proposes extensive grading for the driveway, house pad and immediate adjacent areas. The application indicates the amount of grading is justified to construct the dwelling on a concrete slab foundation which will visually "blend the dwelling into the site", but does not specifically state whether a post and pier foundation would be visible from Hakalau Bay/Gulch, Kolekole Gulch or the Hawaii Belt Road. If no visual impacts from these areas would result, the dwelling could be constructed on a post and pier foundation in order to reduce the amount of grading.

On June 19, 2007 the Department determined the proposed construction was exempt from SMA rules and regulations subject to compliance with the condition that a construction barrier is erected 40 feet inland from the top of the pali, and that no land altering, grubbing, landscaping or construction activities shall occur seaward of this barrier. The Grading Cut and Fill Plan submitted with this CDUA application has not been modified to reflect this requirement, and it still shows that fill material will be placed approximately 10 feet seaward of the construction barrier, within 40 feet of the top of the pali. The applicants must revise their Grading Plan to comply with this condition.

Mr. Samuel J. Lemmo, Administrator
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
Page 2
November 13, 2007

Should you have questions, please feel free to contact Maija Cottle of our office at 961-8288, ext. 253.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris Yuen".

CHRISTOPHER J. YUEN
Planning Director

MJC:cd

P:\wpwin60\Maija\CDUA\LEMMO-MCCULLY 2-9-3-29.doc

Tsukazaki Yeh & Moore

ATTORNEYS AT LAW
A Limited Liability Law Company

85 W. Lanikaula Street Hilo, Hawaii 96720-4199
Telephone: (808) 961-0055 FAX (808) 969-1531

R. BEN TSUKAZAKI
rbt@lava.net
THOMAS L.H. YEH
tly@lava.net
MICHAEL W. MOORE
mmoore@lava.net
JAMAE K.K. KAWAUCHI
jkk@lava.net

January 18, 2008

Mr. Christopher J. Yuen, Director
Planning Department
County of Hawai'i
101 Pauahi Street
Hilo, Hawai'i 96720

Re: Conservation District Use Application (CDUA HA-3445)
Draft Environmental Assessment
Applicant: James & Francine McCully
Request: Construction of Single-Family Residence
TMK No.: (3) 2-9-003: 029
Wailea, South Hilo District, County of Hawai'i

Dear Mr. Yuen:

On behalf of the McCully's ("the Applicant"), this is to respond to comments provided by the Planning Department by letter dated November 13, 2007, in relation to the above-referenced Conservation District Use Application ("CDUA"). The proposed project involves the construction of a single-family residence and related improvements ("the Project") on an approximately 2.839-acre parcel, more specifically identified as Tax Map Key ("TMK") No.: (3) 2-9-003: 029, Wailea, South Hilo, Hawai'i ("the Property").

We note that the comments contained in your letter appear to pertain to the CDUA and not specifically the Draft Environmental Assessment ("DEA"). However, we appreciate your taking the time to review and comment on the subject CDUA. Our responses to your specific comments (indicated in italics) follow below.

Grading/Visual Impacts

The project proposes extensive grading for the driveway, house pad and immediate adjacent areas. The application indicates the amount of grading is justified to construct the dwelling on a concrete slab foundation which will visually "blend the dwelling into the site", but does not specifically state whether a post and pier foundation would be visible from Hakalau Bay/Gulch, Kolekole gulch or the Hawaii Belt Road. If no visual impacts from these areas would result, the dwelling could be constructed on a post and pier foundation in order to reduce the amount of grading.

The Project, as previously proposed, involved an estimated 1,200 cubic yards of cut and 750 cubic yards of fill, or a grading area of 26,250 square feet, approximately 21.3% of the land area of TMK No.: (3) 2-9-003: 029. As stated in the DEA, the Applicant does not consider the amount of grading proposed to be "extensive". However, based on the comments contained in

Mr. Christopher J. Yuen
January 18, 2008
Page No. 2

your letter, we have revised that portion of the DEA to clarify that no land alteration would occur seaward of the construction barrier to be placed 40 feet inland from the top of the pali. The revised Project involves an estimated 1,200 cubic yards of cut over 14,500 square feet and 699 cubic yards of fill over 11,140 square feet, or a grading area of 25,640 square feet, affecting approximately 20.8% of the land surface area of TMK No.: (3) 2-9-003: 029.

One of the architectural objectives of the Project is to construct the proposed dwelling in such a way that it blends into the subject and surrounding areas as much as possible. To that end, the Applicant plans to construct the dwelling on a slab foundation. There is presently no view of the Property from the Hawai`i Belt Road or from Hakalau Bay/Gulch. There may be a very limited view of TMK No.: (3) 2-9-005: 013 from Kolekole Gulch and Kolekole Bridge; however, no immediate improvements are planned for this area.

It is not presently clear whether a dwelling constructed on a post and pier foundation would be visible from the Hawai`i Belt Road or Kolekole Gulch. Considering the vegetation that is present along the top of the pali, which includes ironwood trees and hala clusters among other species, as well as the 70-foot structural setback from the top of the pali that the Applicant has already agreed to, it is highly unlikely that any of the proposed improvements would be visible from the Hawai`i Belt Road or Kolekole Gulch. It is also highly unlikely that any of the improvements proposed would be visible from Hakalau Bay/Gulch due to its significant distance from the Property. However, it is likely that such dwelling would be visible from surrounding properties as well as from the ocean, or makai, view inland.

The Property has been well photographed and appears in the backdrop of many photographs of the scenic coastline of the Hilo-Hāmākua Heritage Corridor. Such photographs can be found readily on the internet. Several helicopter tour companies offer tours of the Hilo-Hāmākua Coast and would overfly the Property. Fishing boats, commercial barges and cruise ships sail by the Property frequently. A dwelling constructed on a slab foundation, such as the proposed residence, would significantly lessen the visual impacts to the surrounding areas and to the view of the coastline and mauka areas from the ocean.

SMA Exemption Determination Conditions

On June 19, 2007 the Department determined the proposed construction was exempt from SMA rules and regulations subject to compliance with that a construction barrier is erected 40 feet inland from the top of the pali, and that no land altering, grubbing, landscaping or construction activities shall occur seaward of this barrier. The Grading Cut and Fill Plan submitted with this CDUA application has not been modified to reflect this requirement, and it still shows that fill material will be placed approximately 10 feet seaward of the construction barrier, within 40 feet of the top of the pali. The applicants must revise their Grading Plan to comply with this condition.

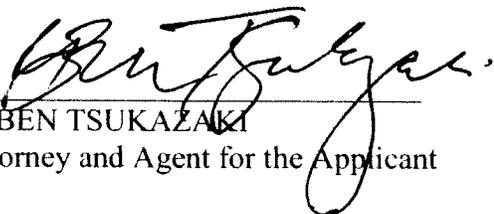
Mr. Christopher J. Yuen
January 18, 2008
Page No. 3

The Applicant acknowledges that due to an oversight, the Grading Cut and Fill Plan was not previously revised to eliminate grading seaward of the construction barrier to be placed 40 feet inland from the top of the pali. As mentioned above, the revised grading area, which does not involve land alteration seaward of the construction barrier to be placed 40 feet inland from the top of the pali, affecting 25,640 square feet of land area, which is approximately 20.8% of the land area of TMK No.: (3) 2-9-003: 029. Please see the enclosed Site Plan and Grading Cut and Fill Plan, both of which have been revised to eliminate land alteration within 40 feet from the top of the pali. The enclosed plans will be included in the Final Environmental Assessment ("FEA"), a copy of which will be transmitted to the Planning Department for review.

Thank you for your comments. Please do not hesitate to contact me should you require any additional information.

Very truly yours,

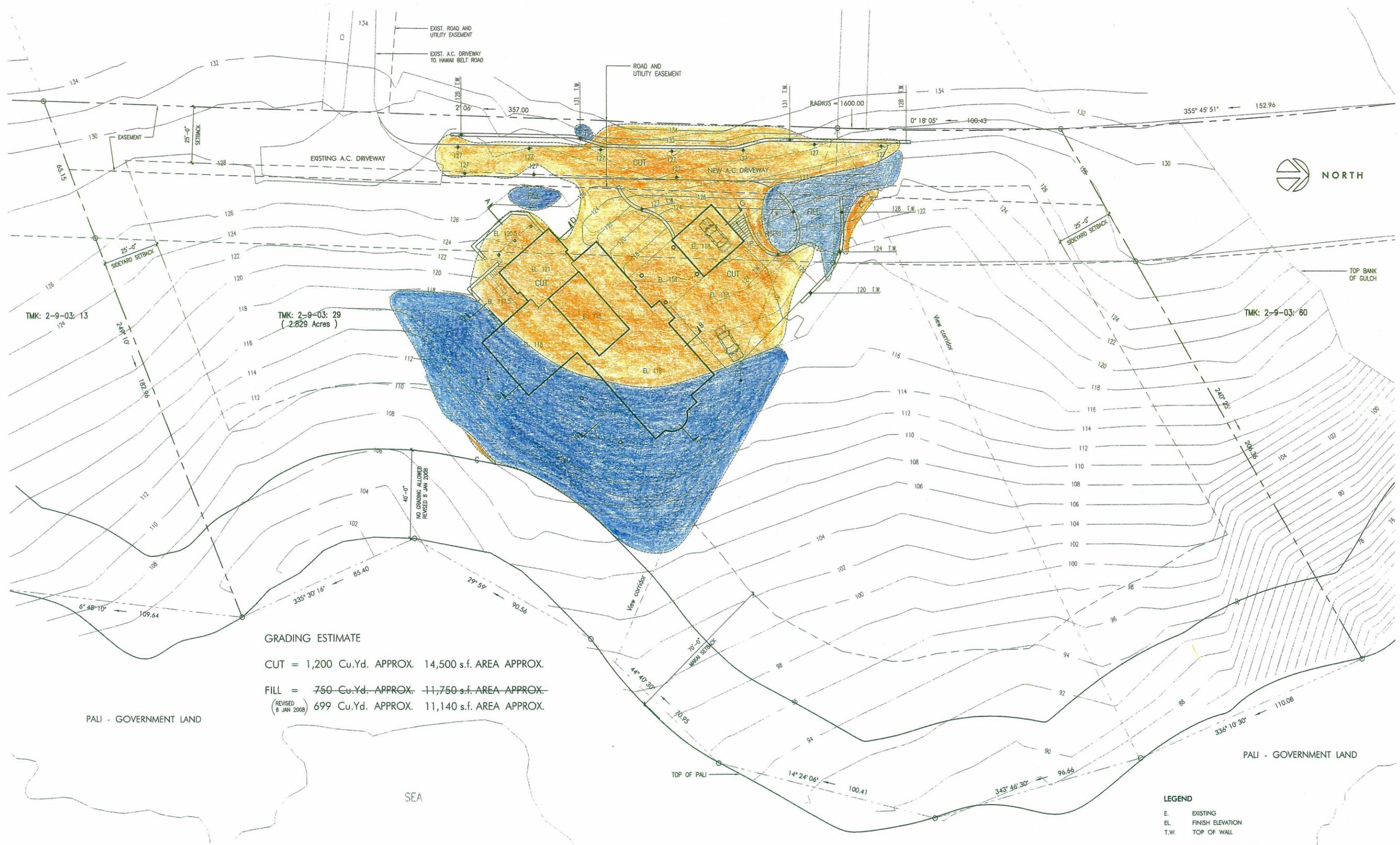
TSUKAZAKI YEH & MOORE
A Limited Liability Law Company.



R. BEN TSUKAZAKI
Attorney and Agent for the Applicant

RBT:mb

Cc: Jim & Francine McCully (w/o enclosure)
Sid Snyder, Ossipoff, Snyder & Rowland Architects (w/o enclosure)
Samuel Lemmo, Department of Land and Natural Resources - Office of Conservation &
Coastal Lands (w/o enclosure)



GRADING ESTIMATE
 CUT = 1,200 Cu.Yd. APPROX. 14,500 s.f. AREA APPROX.
 FILL = 750 Cu.Yd. APPROX. 11,750 s.f. AREA APPROX.
 (REVISED 8 JAN 2008) 699 Cu.Yd. APPROX. 11,140 s.f. AREA APPROX.

SITE PLAN - SHOWING AREAS OF CUT AND FILL

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAMALAOHA HIGHWAY WAILEA, HAWAII
 T.M.K. 2-9-03 : 29

OSSIPOFF, SNYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 2 OF 8

19 APRIL 2007
 REVISED 8 JAN 2008

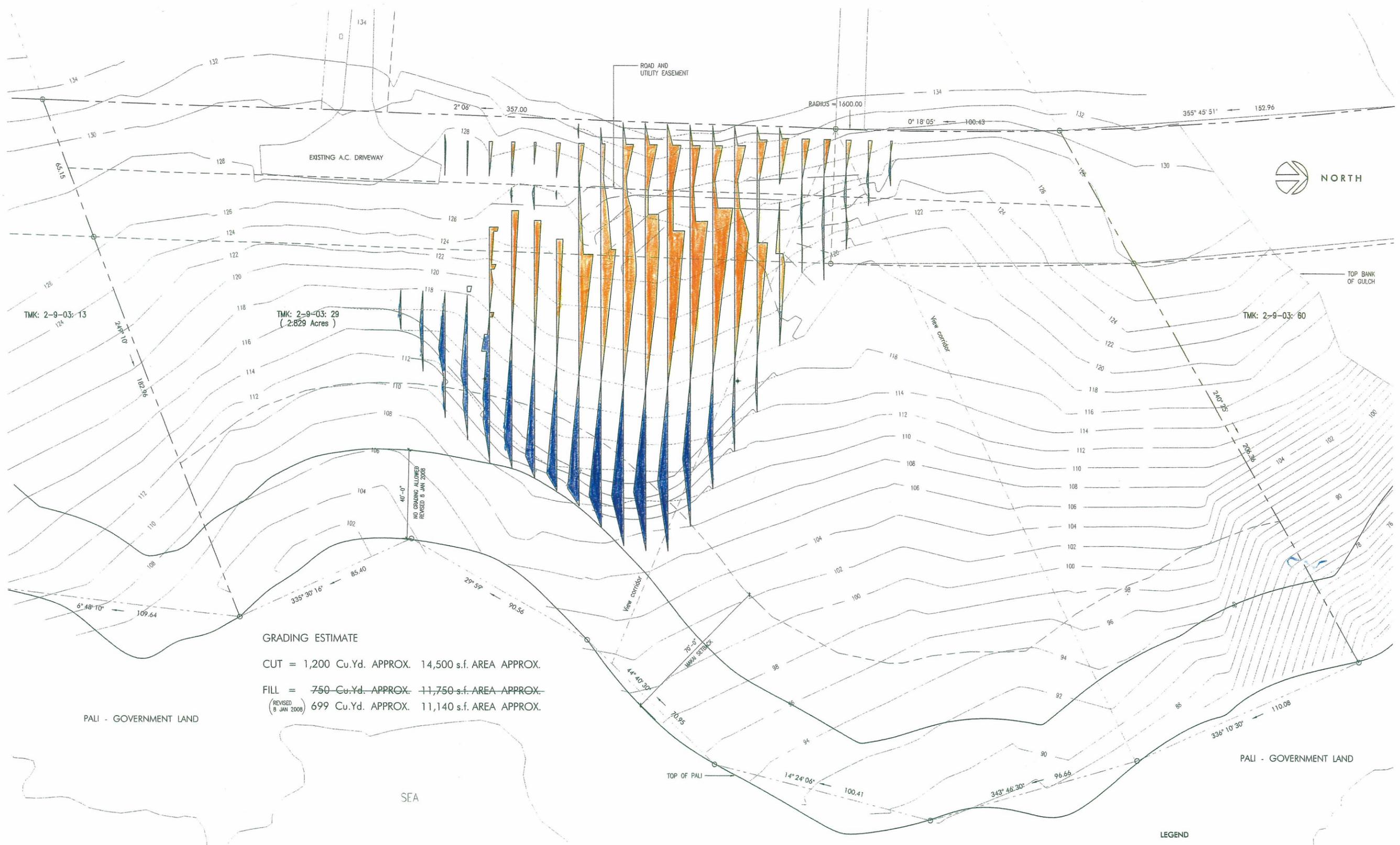
COLOR KEY LEGEND

- CUT
- FILL

LEGEND

- E. EXISTING
- EL. FINISH ELEVATION
- T.W. TOP OF WALL
- EXISTING GRADE - UNCHANGED
- - - EXISTING GRADE - MODIFIED
- NEW GRADE





GRADING ESTIMATE
 CUT = 1,200 Cu.Yd. APPROX. 14,500 s.f. AREA APPROX.
 FILL = 750 Cu.Yd. APPROX. 11,750 s.f. AREA APPROX.
 (REVISED 8 JAN 2008) 699 Cu.Yd. APPROX. 11,140 s.f. AREA APPROX.

GRADING CUT AND FILL

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAMALAOHA HIGHWAY WAILEA, HAWAII
 T.M.K. 2-9-03 : 29

OSSIPOFF, SNYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 3 OF 8

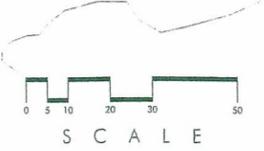
19 APRIL 2007
 REVISED 8 JAN 2008

COLOR KEY LEGEND

- CUT 
- FILL 

LEGEND

-  EXISTING GRADE - UNCHANGED
-  EXISTING GRADE - MODIFIED
-  NEW GRADE



APPENDIX B
SINGLE-FAMILY DWELLING PLANS & DRAWINGS



SITE PLAN OF T.M.K. 2-9-03 : 13, 29 & 60
 EXISTING TOPOGRAPHY SHOWN

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALAHOA HIGHWAY WAILA, HAWAII
 T.M.K. 2-9-03 : 13, 29 & 60

OSSIPOFF, SHYDER & ROWLAND ARCHITECTS HONOLULU

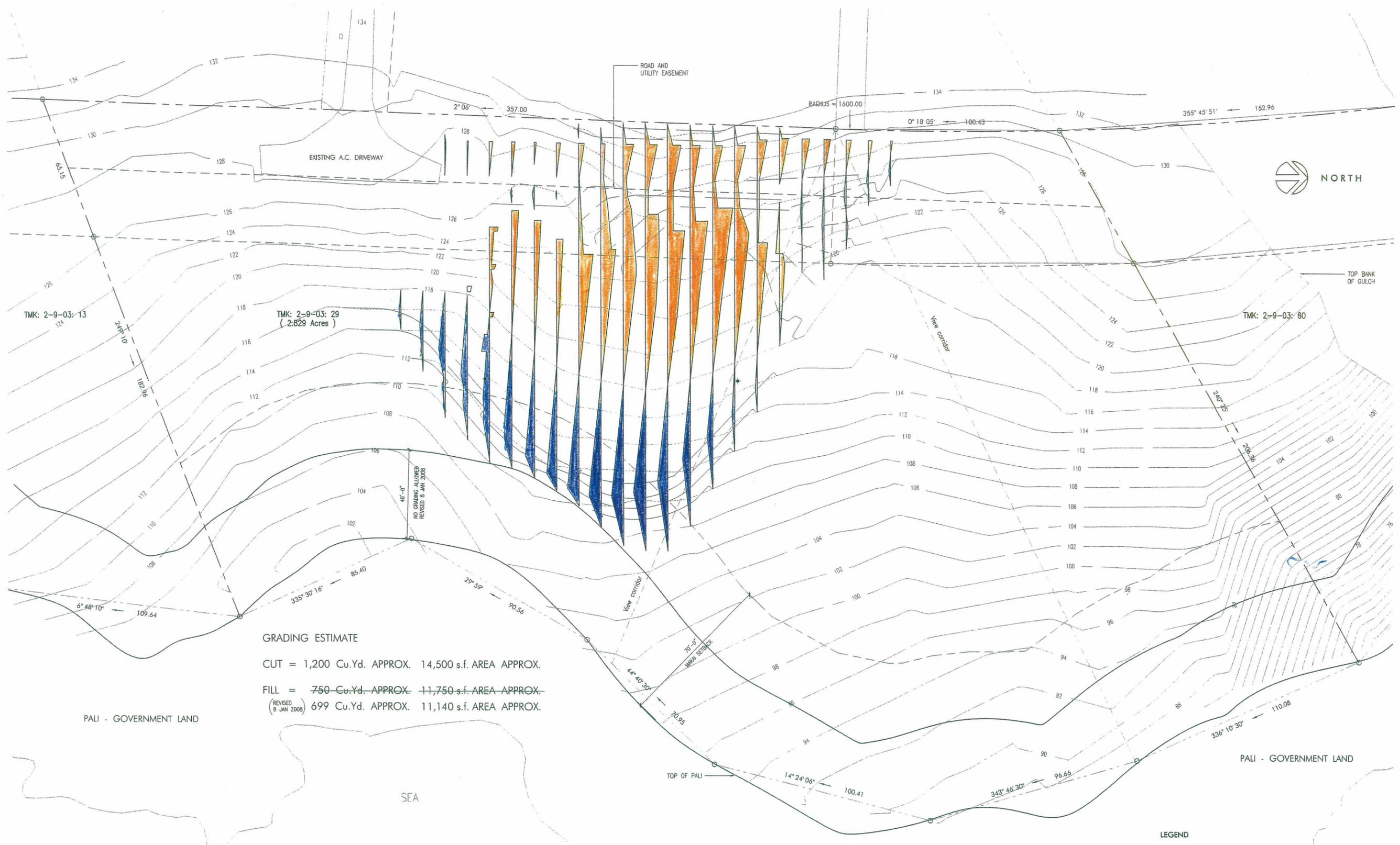
SHEET 1 OF 8

19 APRIL 2007

COLOR KEY LEGEND

Applied On T.M.K. 2-9-03: 29		PL	
Applied On Other Parcels		OCM	
Setting Boundary (Not Shaded)			





GRADING ESTIMATE
 CUT = 1,200 Cu.Yd. APPROX. 14,500 s.f. AREA APPROX.
 FILL = 750 Cu.Yd. APPROX. 11,750 s.f. AREA APPROX.
 (REVISED 8 JAN 2008) 699 Cu.Yd. APPROX. 11,140 s.f. AREA APPROX.

GRADING CUT AND FILL

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAMALAOHA HIGHWAY WAILEA, HAWAII
 T.M.K. 2-9-03 : 29

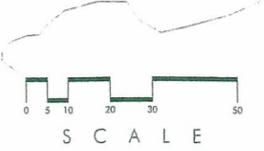
OSSIPOFF, SNYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 3 OF 8

19 APRIL 2007
 REVISED 8 JAN 2008

COLOR KEY LEGEND
 CUT [Orange Box]
 FILL [Blue Box]

LEGEND
 — EXISTING GRADE - UNCHANGED
 - - - EXISTING GRADE - MODIFIED
 — NEW GRADE





SITE AND FLOOR PLAN

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALANOA HIGHWAY MALEA, HAWAII
 T.M.R. 2-9-03-29

OSSIPOFF, SHYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 4 OF 8

19 APRIL 2007

COLOR KEY LEGEND

EXISTING		EXISTING / NEW PAU	
NEW		PAU	
Existing on Tax 2-9-03-29		SEA	
Existing on Other Rights			

LEGEND

- D. DRIVE
- R. ROAD
- S. SIDEWALK
- T.M. TOP OF MOUNTAIN
- EXISTING GRADE - UNCHANGED
- EXISTING GRADE - ADJUSTED
- NEW GRADE

SCALE



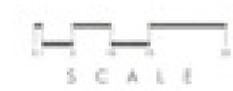
AREA CALCULATION

MAX DEVELOPABLE AREA PER	3000 SF
PROPOSED RESIDENCE AND GARAGE ENCLOSED AREA	4490 SF
ENCLOSED INC. EXTERIOR WALL	4142 SF
GARAGE	308 SF
TOTAL AREA EXCLUDED FROM ADA	4450 SF
LAWN LAWN	380 SF
PLANTED LAWN	128 SF
EXIST LAWN	438 SF

- LEGEND**
- BA BATH
 - D DOWN
 - EX EXTERIOR
 - LDY LAUNDRY
 - M MASTER
 - MOR MASTER BEDDING ROOM
 - UP UP

COLOR KEY LEGEND

ENCLOSED	[White Box]
LAWN	[Orange Box]
PLANTED	[Light Green Box]
FACTORY WALL	[Grey Box]



FLOOR PLAN

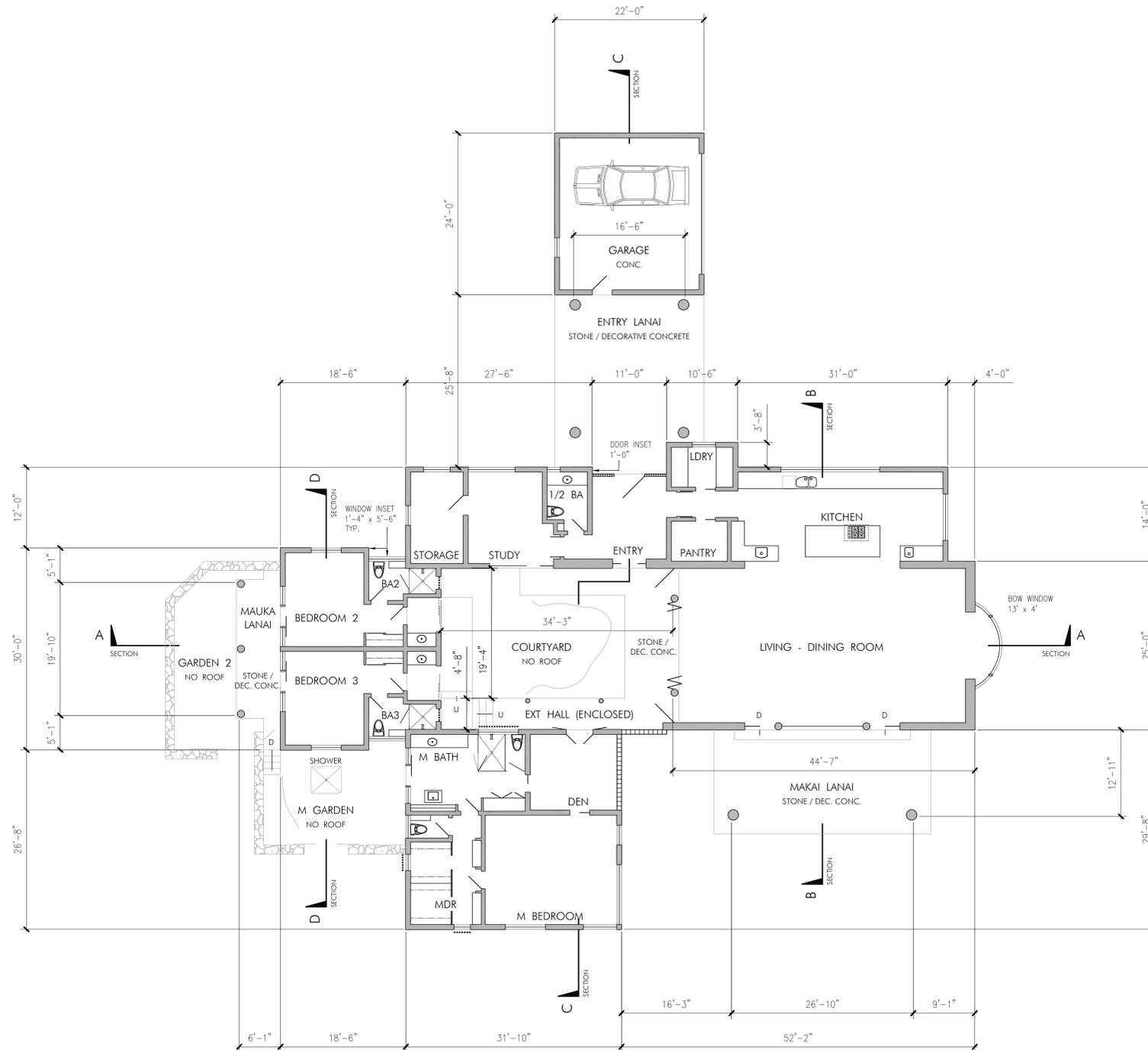
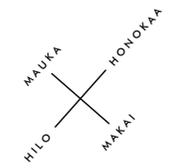
RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALAPOA HIGHWAY WALEA, HAWAII
T.A.K. 3-9-03 / 29

OSSIPOFF, SHYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 5 OF 8

19 APRIL 2007



AREA CALCULATION

MAX. DEVELOPABLE AREA (MDA)	5000 SF
PROPOSED RESIDENCE AND GARAGE ENCLOSED AREA	4690 SF
ENCLOSED INCL. EXTERIOR HALL	4162 SF
GARAGE	528 SF
TOTAL AREA EXCLUDED FROM MDA	925 SF
MAKAI LANAI	360 SF
MAUKA LANAI	129 SF
ENTRY LANAI	436 SF

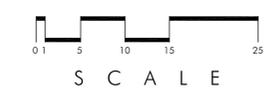
LEGEND

- BA BATH
- D DOWN
- EXT EXTERIOR
- LDRY LAUNDRY
- M MASTER
- MDR MASTER DRESSING ROOM
- U UP

COLOR KEY LEGEND, SEE SHEET 5 OF 8

- ENCLOSED
- LANAI
- PLANTED
- MASONRY WALLS

FL OOR PLAN WITH DIMENSIONS ADDED



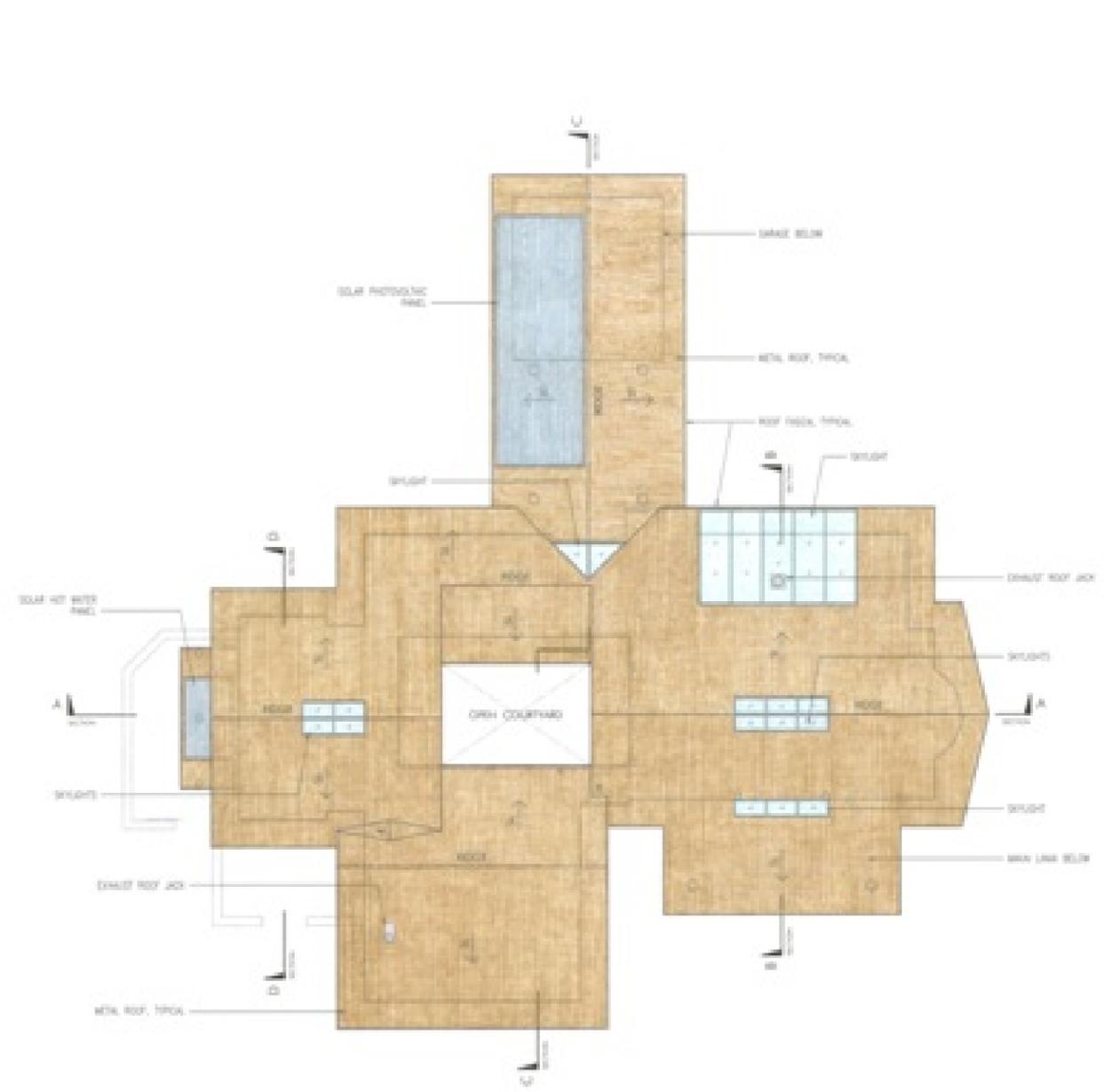
RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAMALAOA HIGHWAY WAILEA, HAWAII
T.M.K. 2-9-03 : 29

SHEET 5A OF 8

OSSIPOFF, SNYDER & ROWLAND ARCHITECTS HONOLULU

09 JULY 2007

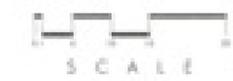


LEGEND

- R ROOF
- S SLOPE - 3-12
- Y TRAY

COLOR KEY LEGEND

- METAL ROOFING
- SHEDS
- SOLAR PANELS / PHOTOVOLTAIC
- WOODEN WALL



ROOF PLAN

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALAPOA HIGHWAY WALEA, HAWAII
 TALK. 3-9-02 / 39

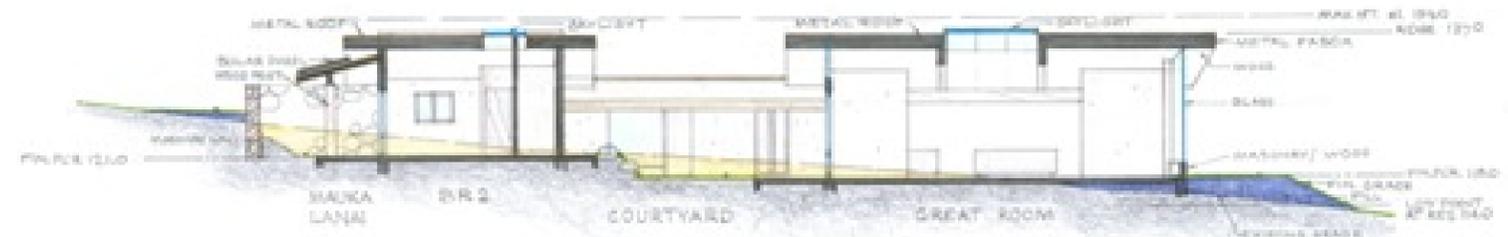
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SHEET 6 OF 8

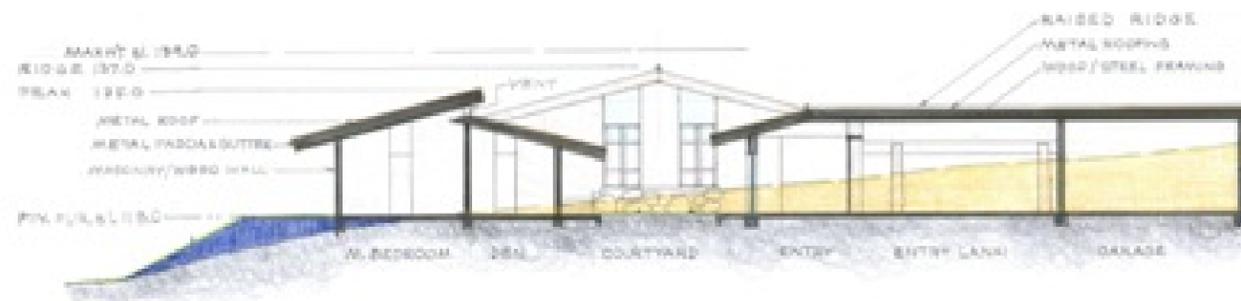
19 APRIL 2007



SECTION D



SECTION A



SECTION C



SECTION B

BUILDING CROSS SECTIONS

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALANUIA HIGHWAY WAILUA, HAWAII
TMK 2-9-00-29

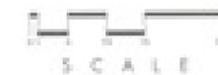
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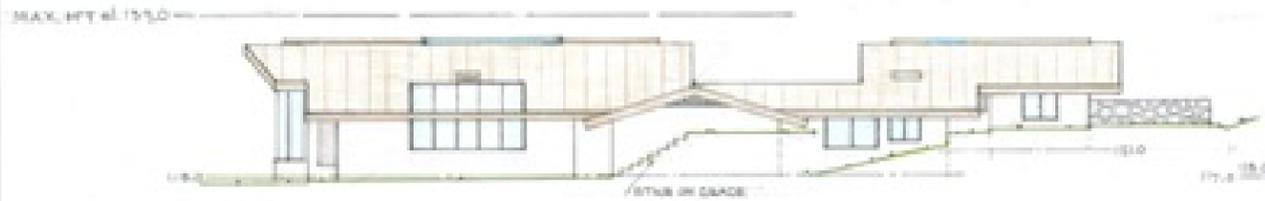
SHEET 7 OF 8

19 APRIL 2007

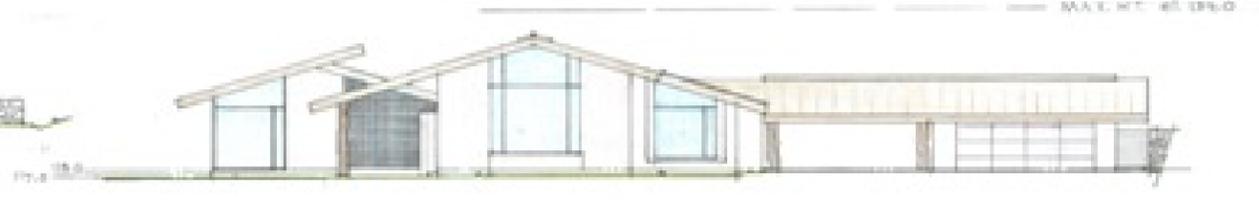
COLOR KEY LEGEND

FLATTED AREA		WALL	
ROOF		SOFFIT	
SKY-CELT		SLAB	
SKY-FIN			





NORTH WEST



NORTH EAST



SOUTH WEST



SOUTH EAST

EXTERIOR ELEVATIONS

RESIDENCE FOR JIM & FRAN McCULLY

29-3800 MAHALANOA HIGHWAY WAIKAI, HAWAII
 TAKE 3-9-03 / 29

OSSIPOFF, SNYDER & ROWLAND ARCHITECTS HONOLULU

SHEET 8 OF 8

19 APRIL 2007

COLOR KEY LEGEND

WOOD SIDING		ROOF	
"GREEN" WALL		FRONT ENTRY	
DOOR		GRILLE	
WOOD POST		GLASS	



APPENDIX C
GEO TECHNICAL REPORT

GEOTECHNICAL REPORT

**McCULLY RESIDENCE
29-3800 Māmalahoa Highway
Wailea, Big Island, Hawai'i**

Weidig Geotechnical Project No. 07-0033.001

**GEOTECHNICAL REPORT
McCULLY RESIDENCE
29-3800 MĀMALAHOA HIGHWAY
WAILEA, BIG ISLAND, HAWAI'I**

Project No: 07-0033.001

Date: May 16, 2007

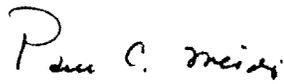
Prepared for:

James W. and Francine M. McCully
40 Kamehameha Avenue
Hilo, Hawai'i 96720

Prepared by:

Weidig Geoanalysts
1150 North Nimitz Highway, Suite 4
Honolulu, Hawai'i 96817

Authored by:



Paul C. Weidig
Licensed Professional Engineer No. 8,047-C



WEIDIG
Geoanalysts

May 16, 2007

Project No. 07-0033.001

To: James W. and Francine M. McCully
40 Kamehameha Avenue
Hilo, Hawai'i 96720

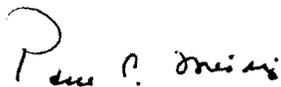
Subject: Geotechnical Report
McCully Residence
29-3800 Māmalahoa Highway
Wailea, Big Island, Hawai'i

Attached is our report of the geotechnical study we conducted for your new home on the Big Island. The principal conclusions and recommendations are as follow:

- ◆ The borings indicate that your property is underlain by soft, weathered ash and semicomcompact, pumiceous cinders to a maximum depth of about 14 feet, below which is very dense, weathered basalt lava. The ash deposits can shrink irreversibly as they dry, but are not indicated to be expansive with moisture increases. The soils can be compacted satisfactorily, provided that the minimum degree of compaction is lowered and moisture conditioning is elevated, as recommended in the report.
- ◆ Your home, garage and retaining walls should be supported upon conventional, reinforced concrete footings based at a comparatively shallow depth in undisturbed or recompacted soils, engineered fill, or a combination of those materials. Concrete slabs on grade, including the garage floor, walkways and lānais, also can be constructed directly upon such soils.
- ◆ Grading recommendations include provisions for benching, keying and subdrainage. These and other details should be carefully followed during site preparation and earthwork construction. We should be retained to review the final construction documents, to test and observed the earthwork, and to inspect the foundation excavations.

If you have any questions regarding this report, or if we can be of assistance to you in any other way, please do not hesitate to call. Mahalo for this opportunity to be of service.

Respectfully submitted,



Paul C. Weidig, P.E.
President

PCW:lr/07-0033.001

TABLE OF CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION Page 1
 Purpose 1
 Scope 1
 Project Description 2

FINDINGS 2
 Site Description 2
 Geologic Setting 2
 Earth Materials 3
 Ground Water 3

CONCLUSIONS 3
 Expansive Soils 3
 Bearing Capacity 4
 Settlement 4
 Slope Stability 4
 Foundation Conditions 5

RECOMMENDATIONS 5
 Site Preparation and Grading 5
 Clearing and Grubbing 5
 Subgrade Preparation 6
 Overexcavation 6
 Benching and Keying 6
 Subdrainage 6
 Fill Material 7
 Fill Placement and Compaction 7
 Finished Slopes 7
 Foundations 7
 Retaining Walls 8
 Surface Drainage 9
 Concrete Slabs 9
 Supplemental Services 10

LIMITATIONS 10

APPENDICES

 Appendix A - Field Exploration
 Vicinity Map Plate No. A1
 Site Plan A2
 Logs of Borings A3 - A7
 Unified Soil Classification System A8

 Appendix B - Laboratory Testing
 Atterberg Limits Test Data Plate No. B1
 Mechanical Sieve Analysis Test Data B2
 Direct Shear Test Data B3
 Unconfined Compressive Strength Test Data B4 - B6

 Appendix C - References

DISTRIBUTION



INTRODUCTION

Purpose

A geotechnical investigation has been conducted for the McCully residence, to be constructed in Wailea on the Big Island of Hawai'i. The purposes of this study have been to evaluate subsurface soil, ground water and other geologic conditions at the site, and to prepare specific recommendations for use in project design and construction.

Scope

The scope of this investigation is described in our proposal of March 27, 2007. On April 4, 2007, our field engineer conducted a reconnaissance of the property and mapped the locations of five test borings which were drilled and sampled to a maximum depth of about 15 feet below existing ground surface. Our engineer logged, classified and recovered relatively undisturbed samples of the earth materials drawn from selected vertical intervals in each boring. Ground water level observations were recorded during drilling and upon completion of the borings, which were backfilled with tamped soil following exploration.

The samples were transported to our office for laboratory testing and further classification. The laboratory testing program comprised determinations of natural moisture content, dry unit weight, gradation, plasticity, direct shear and unconfined compressive strength.

This report contains our findings regarding site soil, ground water and other geologic conditions; conclusions pertaining to expansive soils, bearing capacity, settlement, slope stability and foundation conditions; and, recommendations for site preparation and grading, foundations, floor support, retaining walls, drainage and erosion control.

In Appendix A, the location of the project site is shown in relationship to surrounding landmarks and cultural features on Plate No. A1, Vicinity Map. The approximate locations of the test borings are depicted in relationship to the proposed construction, existing and proposed ground surface elevation contours and the property lines on Plate No. A2, Site Plan. Geotechnical descriptions and related data recorded during the field exploration phase of our study are displayed on Plates No. A3 through A7, Logs of Borings. A key to the soil symbols and identification criteria used on the logs is presented on Plate No. A8, Unified Soil Classification System.

The results of the natural moisture content and dry unit weight tests are posted on the Logs of Borings, on which are also indicated the types of other laboratory tests conducted on corresponding samples. The remaining laboratory test data are contained in Appendix B. The results of the plasticity tests are illustrated on Plate No. B1, Atterberg Limits Test Data. The results of the gradation tests are portrayed on Plate No. B2, Mechanical Sieve Analysis Test Data. Summaries of the strength tests are presented on Plate No. B3, Direct Shear Test Data, and on Plates No. B4 through B6, Unconfined Compressive Strength Test Data.

References consulted during our investigation are listed in Appendix C.

Project Description

The proposed residence will be a one-storey, wood-frame, single-family dwelling with a separate, double-stall garage connected to the house by a porte-cochère and a paved, open motor court. The living quarters will be arranged around a central courtyard and loggia, and will be adjoined by gardens and sheltered lānais. The living areas will include the foyer; kitchen, pantry and laundry; a great room; a study and powder room; two guest bedrooms with connecting full bathrooms; and the master bedroom suite. The house floors will be wood diaphragms suspended on wood joists spanning to post-and-pier foundations. The garage floor will be a concrete slab on grade. Additional improvements will include an asphalt concrete paved driveway, exterior retaining walls and concrete walkways.

Grading is expected to require cuts and fills up to six feet deep. Approximately 1,200 cubic yards of excavation are to be undertaken over an area approaching 14,500 square feet, primarily confined to the proposed building site. About 750 cubic yards of fill are to be constructed over an area on the order of 11,750 square feet, principally restricted to the rear of the property (Ossipoff, Snyder & Rowland Architects, Inc., 2007).

FINDINGS

Site Description

The subject property is an irregularly-shaped parcel encompassing approximately 44,344 square feet of gently sloping terrain on the makai side of Māmalahoa Highway between 'Akaka Falls Road and Kula'iwi Road (State of Hawai'i, 1996). Access from the highway is afforded by a single-lane, paved driveway passing from the highway through Malika Orchids Nursery and an electrically-actuated gate.

The surface of the subject property generally slopes from approximate elevation 130 feet at the west parcel boundary to about elevation 88 feet along the crest of a sea cliff on the east and locally as low as elevation 60 feet at the northeast property corner. Stands of ironwood trees shield the site along the cliff crest and a windbreak of similar trees extends along the north property line. Open areas sustain a low, native grass cover punctuated by native shrubs.

Geologic Setting

The property lies on a wave-cut, ashy plain within the lower reaches of the Ka'ahakini drainage basin. The terrace is underlain by a secondary lava flow connected to Mauna Kea, one of the world's largest volcanoes and the highest mountain on earth. Mauna Kea is last believed to have been active less than 5,000 years ago (Wolfe and Morris, 1996). The subject property is indicated to be underlain at variable

depth by series of alkalic basalt flows assigned to the Hāmākua Volcanics Series. The lava flows are estimated at 65,000 years old. They are overlain by tephra falls, chiefly pumiceous ash with scattered basaltic bombs, assigned to the Hilo series. The equivalent soil is a silty clay loam with a very high shrinkage potential but a low expansion potential, and moderate corrosion potentials with respect to concrete and steel. The erosion hazard is considered moderate (Sato, *et al.*, 1973).

Earth Materials

Borings B-3 through B-5 revealed surficial soils consisting of a yellowish gray-brown, very moist, soft clayey silt (Unified Soil Classification: MH) extending from ground surface to a maximum depth of about 6.5 feet. These soils are identified as weathered volcanic ash assigned to the Hilo series described above. They are characterized by low dry unit weights and very high moisture contents.

Below the surficial ash deposit and extending from the ground surface in Borings No. B-1 and B-2, yellowish gray-brown, very moist, semicompact to dense, fine to coarse, slightly silty sand (SW) was discovered to a maximum depth approaching 14 feet. These soils are recognized as a mixture of weathered volcanic ash and pumiceous cinders, also a part of the Hilo series. They are characterized by somewhat higher dry unit weights and somewhat lower moisture contents than the less granular soils.

Below the soil mantle, every boring penetrated light gray, highly weathered and fractured, moderately strong basalt lava to the maximum depth explored, about 15 feet. Further subsurface information is presented on Plates No. A3 through A8.

Ground Water

Each test boring was checked for the presence of ground water during drilling and at intervals following completion. No free ground water was observed at any location. Nonetheless, over an extended period of time, seepage typically accumulates to form a stabilized free ground water surface at the contact between the soil mantle and underlying rock surface.

CONCLUSIONS

Expansive Soils

The results of the Atterberg limits tests, appearing on Plate No. B1, indicate that the volcanic ash deposit has moderate plasticity characteristics (plasticity index = 23 percent) and very high water retention properties (liquid limit = 108percent). The plasticity index is the range of water contents which a soil can

assume between saturated and dry states and is the difference between the liquid and plastic limits. The liquid limit is the maximum amount of water that a soil is capable of absorbing without becoming fluid. The plastic limit is the minimum amount of water a soil can hold without crumbling. The natural soil moisture contents were often found to be greater than the liquid limit, because of the presence of connate, or ionically bonded, water. These data indicate that the soils can shrink irreversibly with reductions in moisture content, but that they will not expand appreciably with further increases in moisture content.

Gradation tests performed on selected samples of the more granular soils indicate that, on average, they are composed of about 10 percent gravel, 82 percent sand and 8 percent silt, as portrayed on Plate No. B2.

Bearing Capacity

The results of this investigation indicate that the surficial soil can sustain directly-applied loads of light magnitude. Direct shear strength tests conducted on selected samples of these soils yielded an internal friction angle of about 18° and about 415 pounds per square foot in cohesion, as depicted on Plate No. B3. The internal friction angle is a measure of soil grittiness, while the cohesion component is a measure of soil stickiness.

Unconfined compressive strength tests conducted on many selected samples of the surficial soils reached an average undrained strength approaching 885 pounds per square foot, as shown on Plates No. B4 through B6.

Settlement

Laboratory test data for the surficial soil indicate that its minimum modulus of vertical subgrade reaction, which is fixed for a particular range of loading conditions, is on the order of 19.4 pounds per cubic inch. This means that the soils could be expected to compress about one inch under a uniform load on the order of 2,800 pounds per square foot.

If new foundations are designed in accordance with the recommendations of this report, we expect a maximum total foundation settlement of less than 0.5 inch, and a maximum differential settlement of less than 0.25 inch between any two adjacent foundations.

Slope Stability

A series of limit equilibrium slope stability analyses was conducted for the existing slope within and below the proposed building site. These analyses are based on the results of laboratory tests, stratigraphic

relationships implied by the test boring encounters and topographic information. The analyses are predicated upon Bishop's Method, in which the potential failure surfaces are rotational and arcuate; therefore, these surfaces are called "slip circles."

A safety factor, defined as the ratio of driving forces to resisting forces, is computed for each trial slip circle. Driving forces include foundation loads, soil weight, earthquake effects and hydrostatic pressures due to ground water. Resisting forces, acting along the potential slip circles, primarily consist of the strength properties of the soils. If the sum of the resisting forces is greater than the sum of the driving forces, a safety factor greater than unity results. Conversely, a safety factor less than unity is computed when the sum of the driving forces is greater than that of the resisting forces. Ratios greater than unity represent relative states of stability, while those less than unity represent relative states of instability. The slip circle associated with the minimum calculated safety factor is called the "critical circle."

Through the assistance of appropriate computer programs, we completed numerous analytical trials to search for the minimum possible safety factor, given prevailing subsurface conditions and slope geometry. The results of those trials indicate a minimum safety factor of about 3.2, which is well above the threshold value of 1.5 considered the minimum acceptable. This indicates that the existing slope is grossly stable and can be expected to remain so under reasonably foreseeable conditions.

Foundation Conditions

We have concluded that the new home and ancillary structural elements, including the proposed retaining walls, can be supported upon conventional, reinforced concrete footings based at comparatively shallow depths in undisturbed soils, recompacted soils, newly constructed engineered fill placed processed and compacted as recommended below, or any combination of those materials. Concrete slabs on grade, including the garage floor, walkways and lānais, also can be constructed directly upon such soils.

RECOMMENDATIONS

Site Preparation and Grading

Clearing and Grubbing - All surface vegetation, including unwanted trees and brush along with all roots greater than half an inch in diameter, should be removed from the construction areas. Excavations and depressions resulting from clearing and grubbing operations should be dug out to firm soil and backfilled with suitable materials in accordance with the following recommendations.

Subgrade Preparation - Because of the ashy nature of the native soils, the minimum degree of compaction must be lowered in favor of increased moisture conditioning to attain a favorable balance between density and water content. Exposed soil surfaces should be scarified to a depth of six inches, brought to at least three percent over the optimum moisture content, and compacted to not less than 88 percent relative compaction, in accordance with ASTM Designation D 1557-91. This recommendation applies to both cut areas and those which will receive engineered fill.

Overexcavation - Inability to achieve the stipulated minimum level of compaction should be used as a field criterion to identify areas of loose or disturbed soils that should be overexcavated and replaced with engineered fill, processed, placed and compacted as described below; or, stabilized in accordance with the recommendations of the project geotechnical engineer.

Benching and Keying - Where unretained fills are to be constructed, benches consisting of level terraces should be cut into the original slope as the filling operations proceed. Each bench should not be wider than eight feet, and the vertical distance between adjacent benches should not be more than two feet. A keyway should be provided in addition to the benches. The keyway should consist of a trench along the toe line of the fill. It should have a level bottom at least four feet wide and should be excavated at least three feet below original grade. The keyway side slopes should not exceed an inclination of 100 percent (1.0 horizontal to 1.0 vertical). Scarification and moisture conditioning of the keyway and bench surfaces are not required.

Subdrainage - A subdrain should be provided in the keyway, on every other bench thereabove, and where fill meets original ground outside the limits of the proposed residence. Each keyway and bench subdrain should consist of a perforated pipe surrounded by drain rock that is wrapped in geotextile fabric. For every lineal foot of subdrain, one cubic foot of drain rock conforming to "3B fine" per ASTM C33-90, No.67 gradation should be placed around a four-inch diameter, perforated PVC collector pipe. The drain rock envelope should be wrapped with Mirafi® 140N geotextile fabric, or equivalent. The entire assembly should be placed against the backcut of the keyway or bench and sloped to drain by gravity. Extensions beyond the limits of the fill should consist of solid pipe and their ends should be screened over with galvanized, No. 10 gauge steel wire mesh.

The upslope subdrains should be constructed along the daylight line between original ground (or cut) and fill. Each subdrain should consist of a perforated pipe surrounded by drain rock in a trench that is lined with geotextile fabric. The trench should be at least 12 inches wide and should extend to a depth of at least 24 inches. To prevent fine soil particles from impregnating the drain rock section, a geotextile barrier, such as Mirafi® 140N, should be installed between the drain rock section and any exposed soil surfaces. The drain rock section should conform to "3B fine" per ASTM C33-90, No.67 gradation. The drain rock should extend to within eight inches of finished grade, and should be capped with engineered fill, processed, placed and compacted as recommended previously. The collector pipe should be perforated, four inches in diameter, and of PVC composition. It should be positioned along the centerline of the trench, not more than two inches above the trench bottom, and should be sloped to drain by gravity.

to appropriate outlets. Extensions beyond the limits of the fill should consist of solid pipe and their ends should be screened over with galvanized, No. 10 gauge steel wire mesh.

Fill Material - Prior to use, all intended fill materials should be approved by the project geotechnical engineer. On-site soils may be reused as such fill material, if they are processed to remove rubble, rubbish, vegetation, rock fragments or hard, irreducible lumps exceeding four inches in largest dimension, and other unsuitable or perishable substances.

Fill Placement and Compaction - All fill material should be placed in horizontal lifts not exceeding eight inches in loose thickness. Each lift should be brought to at least three percent over the optimum moisture content and compacted to not less than 88 percent relative compaction, per ASTM Designation D 1557-91. All earthwork operations should be observed and the soils tested by the project geotechnical engineer or his representative. The further recommendations of this report are contingent upon adherence to this and the previous recommendations.

Finished Slopes - Finished cut and fill slopes should not exceed an inclination of 2:1. All cut and fill slopes should be protected from progressive erosion by planting with environmentally-compatible ground cover or shrubs.

Foundations

The new home, retaining walls and other structural elements should be supported upon conventional continuous and isolated, reinforced concrete footings based in undisturbed soils, recompacted soils, new engineered fill constructed as recommended previously, or a combination of those materials. All foundations should have a minimum width of 18 inches and should be based at a minimum depth of 24 inches below lowest adjacent finished pad grade. Soils exposed in the footing excavations should not be permitted to dry out. Where necessary, especially under windy conditions, soil moisture should be maintained by sprinkling. Foundation concrete should be placed neat, without forming, against trimmed, undisturbed earth. Footings constructed on slopes should be stepped as necessary to achieve the recommended minimum foundation depth, but in no case should the effective slope between steps exceed an inclination of 3:1. The lateral clearance between the outermost edge of any foundation and a subjacent slope should be at least six feet.

Foundations so established may be designed for maximum allowable soil pressures of 800 pounds per square foot for dead load, 1,200 pounds per square foot for dead plus permanently-applied live ("real") load, or 1,600 pounds per square foot for total load, including the effect of seismic or wind forces. These values carry safety factors of 3.0, 2.0 and 1.5, respectively. Half the weight of structural steel and concrete extending below grade should be added to the net loads at ground line to account for the difference in weight between foundations and soil.

Resistance to horizontal foundation displacement will be provided by passive earth pressure and friction. Passive pressures should be assumed equal to those exerted by a fluid weighing 115 pounds per cubic foot plus a uniform pressure of 185 pounds per square foot combined to form a trapezoidal distribution exerted against any appropriate vertical foundation face. Passive pressures should be disregarded within the uppermost eight inches of foundation embedment, unless the foundation under consideration is protected by an adjoining concrete slab. Frictional resistance acting along the contact between any horizontal foundation base and the supporting soils may be calculated at 0.15 times the net applied dead load plus an adhesion value of 160 pounds per square foot. If passive pressures and friction are combined, the larger component should be reduced by half. The passive pressure and friction values carry a safety factor of 1.5.

All foundation excavations should be clean and the exposed soils should be moist immediately prior to placement of reinforcing steel and concrete, and should be inspected by our geotechnical engineer to determine whether the intended bearing materials have been engaged. The foregoing recommendations are contingent upon adherence to this provision.

Retaining Walls

Walls that are capable of deflecting at least one percent of their height at top-of-wall grade should be designed to resist active lateral earth pressures equivalent to those exerted by a fluid weighing 48 pounds per cubic foot. Unyielding walls incapable of such deflection should be designed to resist at-rest lateral earth pressures equivalent to those exerted by a fluid weighing 63 pounds per cubic foot. These lateral earth pressures do not include additional external influences, such as surcharge pressures. All walls should be fully drained and backfilled in accordance with the following recommendations.

Exterior retaining walls may be drained by means of weep holes, while building retaining walls may be drained by means of an aggregate drainage system, or a prefabricated drainage system. Weep holes for exterior retaining walls should be four inches in diameter and spaced on six-foot centers in a single line not more than eight inches above the lower exterior grade. Behind each weep hole, one cubic foot of "3B fine" drain rock conforming ASTM C33-90, No.67 gradation should be wrapped in geotextile fabric conforming to Mirafi® 140N, or equivalent.

If an aggregate drainage system is chosen, it should consist of a perforated collector pipe surrounded and overlain by drain rock conforming ASTM C33-90, No.67 gradation. The collector pipe should be of PVC composition and at least four inches in diameter. The spring line should be positioned along, and no more than eight inches above, the heel of the wall, should be centered within the blanket of drain rock, and should be sloped to drain by gravity to an appropriate discharge point. The drainage blanket itself should be at least 12 inches wide, and should extend to within eight inches of finished grade behind the wall. The drain rock should be capped with engineered fill, placed processed and compacted as described above. To prevent fine soil particles from penetrating the drain rock section, a geotextile barrier, such

as Mirafi® 140N, should be installed between the drain rock section and any exposed soil surfaces. Alternatively, a prefabricated drainage system, such as Miradrain® could also be used, pending our review and approval.

Wall backfill may consist of on-site or imported soils that are processed as recommended above. Wall backfill should be placed in a zone defined by the rear surface of the wall or aggregate drain (whichever applies); the top elevation of the wall footing, a plane sloping upward at an inclination no steeper than 400 percent (4.0 vertical to 1.0 horizontal); and a plane that is eight inches below finished grade behind the wall. Wall backfill should be placed in level lifts not exceeding 12 inches in loose thickness, brought to at least three percent over the optimum moisture content, and compacted to not less than 88 percent relative density, as stipulated by ASTM Designation D 1557-91.

Surface Drainage

Discharge from the building roof systems as well as runoff from the pavement and exterior flatwork areas should be directed away from the building lines. The new roof systems should be provided with flashing, gutters and downspouts to collect and divert runoff away from the foundations. The roof drains must remain independent of any retaining wall drains or subdrains. All drainage systems should be maintained on a routine basis. Runoff onto areas where soils remain exposed should be dispersed to avoid points of concentrated flow and subsequent erosion.

Concrete Slabs

Concrete slabs on grade should be at least 4.5 inches thick. The minimum recommended thickness is critical and must be stringently maintained. Each slab should be underlain by a capillary break consisting of a blanket of crushed rock at least four inches thick. This material should drain rock conforming to "3B fine" per ASTM C33-90, No.67 gradation. If greater protection against slab moisture penetration and termite invasion is desired, a four-inch thick blanket of basaltic termite barrier ("BTB") sand could be installed in lieu of the capillary break. In either case, it is suggested that an impervious membrane at least six mils thick be installed above the capillary break zone. A course of damp, clean sand about two inches thick over the membrane is suggested to assist in protecting the membrane from punctures during construction, and to enhance curing of the overlying slab concrete.

All slabs should be reinforced with galvanized welded wire mesh conforming to 6" x 6"/WF1.6 x WF1.6 gauge or higher; or, No. 3 reinforcing bars set on 18-inch centers in each direction. All reinforcing should be positioned at slab middepth. Construction joints consisting of ruled notches spaced no farther apart than ten feet on centers in each direction are recommended for the garage and motor court slabs, and no farther apart than five feet on centers for the walkways and lānais.

Supplemental Services

Weidig Geoanalysts should be retained to review the construction plans and specifications to determine whether the recommendations contained in this report are adequately reflected in those documents. The results of our review would be described in writing. Weidig Geoanalysts also should be retained to inspect the foundation excavations as well as to test and observe any earthwork construction.

LIMITATIONS

This report has been prepared for the exclusive use of James W. and Francine M. McCully, and their designated agents. The information contained in this report is intended only for the project described. If any part of the project concept is altered, or if subsurface conditions different from those described in this report are discovered during construction, then the information presented herein shall be considered invalid, unless the changes are reviewed, and any supplemental or revised recommendations issued in writing by Weidig Geoanalysts.

Site conditions and cultural features described in the text are those existing at the time of our field reconnaissance and exploration on April 4, 2007, and may not necessarily be representative of such conditions at other places and times. Similarly, the test borings represent subsurface conditions at the times and locations indicated; it is not warranted that they are representative of such conditions at other locations and times. Boring locations and elevations are referenced to a document titled: *Site Plan Showing Areas of Cut and Fill, Residence for Jim & Fran McCully, 29-3800 Mamalahoa Highway, Wailea, Hawaii, T.M.K. 2-9-03-29* (scale: 1" = 20'), Sheet 2 of 8, dated April 19, 2007, by Ossipoff, Snyder & Rowland Architects, Inc. Test boring locations and elevations are to be considered approximate only.

Services performed by Weidig Geoanalysts conform to generally accepted practices of other consultants who undertake similar studies at the same time and in the same geographical area as does our firm. No other warranty is expressed or implied.

APPENDIX A

Field Exploration

APPENDIX A

Field Exploration

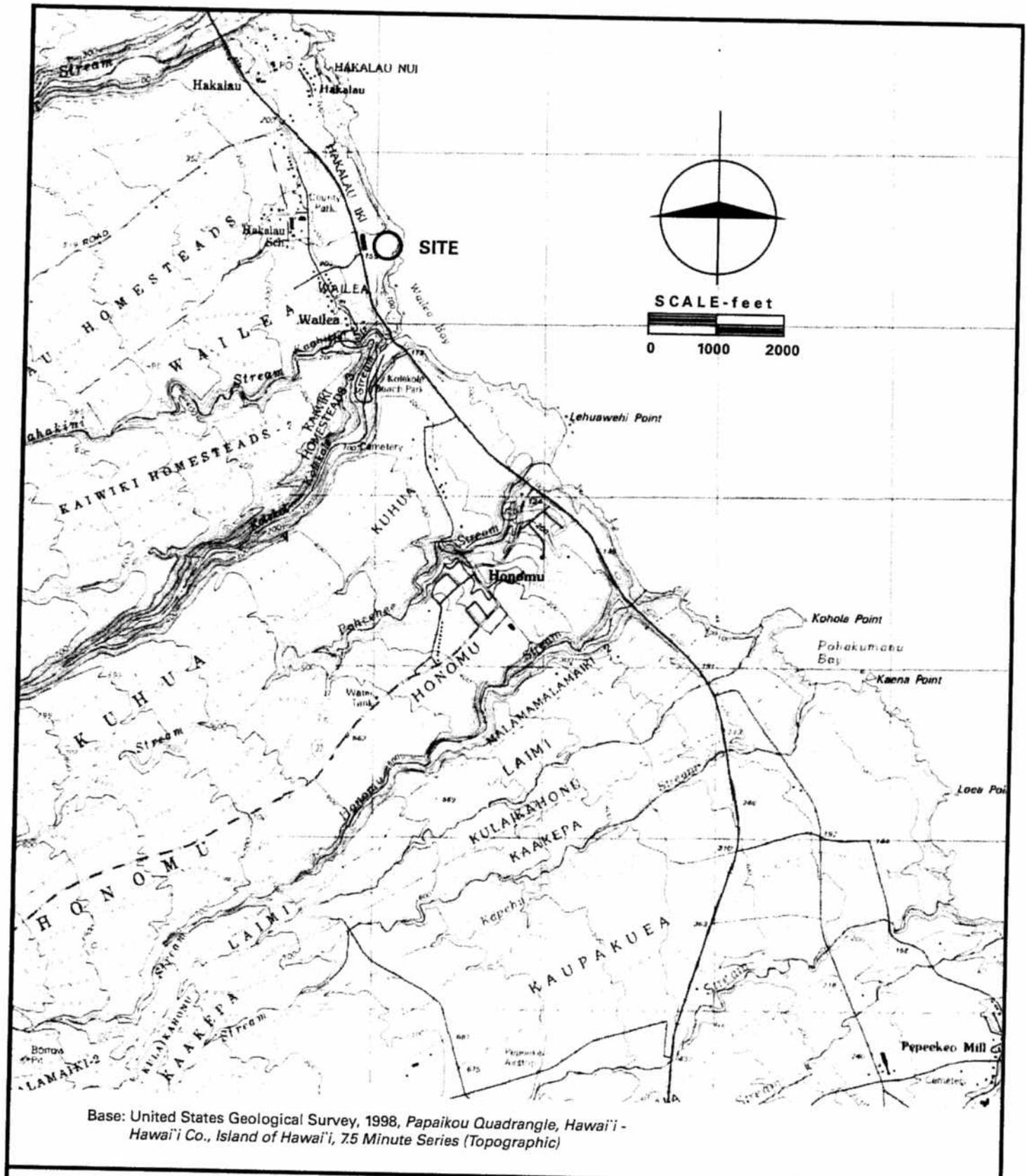
On April 4, 2007, our field engineer conducted a reconnaissance of the site and surrounding vicinity. The location of the project is shown in relationship to surrounding landmarks and cultural features on Plate No. A1, Vicinity Map.

The geotechnical exploration program of the same date was conducted under the supervision of our field engineer, who logged, classified, and recovered relatively undisturbed samples of the earth materials drawn from selected vertical intervals in each of five test borings. The approximate locations of the test borings are depicted in relationship to the proposed construction, existing and proposed ground surface elevation contours and the property lines on Plate No. A2, Site Plan.

The borings were advanced to a maximum depth of approximately 15 feet below existing ground surface, by means of a Mobile B60 drilling rig equipped with 6.0-inch-O.D. (3.5-inch-I.D.) hollow-stem, continuous flight augers. At selected vertical intervals in each boring, relatively undisturbed samples of the earth materials were obtained by means of a 3.0-inch-O.D. (2.5-inch-I.D.) split-barrel sampler containing thin-walled, brass rings, each one inch long. The sampler was advanced by hammer blows produced by a 140-pound hammer freely falling 30 inches, in accordance with ASTM Designation D 1586-84. The number of blows required to drive the sampler a total distance of 18 inches was recorded, and the sum of the hammer blows for the second and third six-inch increments, or blow count, was recorded for each drive. The blow counts recorded for the split-barrel sampler are approximately twice those of the corresponding "Standard Penetration" blow counts. The samples were sealed in moisture-proof containers and transported in shock-resistant cases to our laboratory for further classification and testing.

The earth materials were classified by color, texture, consistency, tactile moisture, and other relevant characteristics. The field classifications were recorded on the field boring logs, which were edited for final presentation. Ground water level observations were made during drilling and upon completion of the borings. The borings were backfilled with tamped soil following exploration.

The Logs of Borings are depicted on Plates No. A3 through A7. A key to the soils symbols and identification criteria used on the logs is presented on Plate No. A8, Unified Soil Classification System.



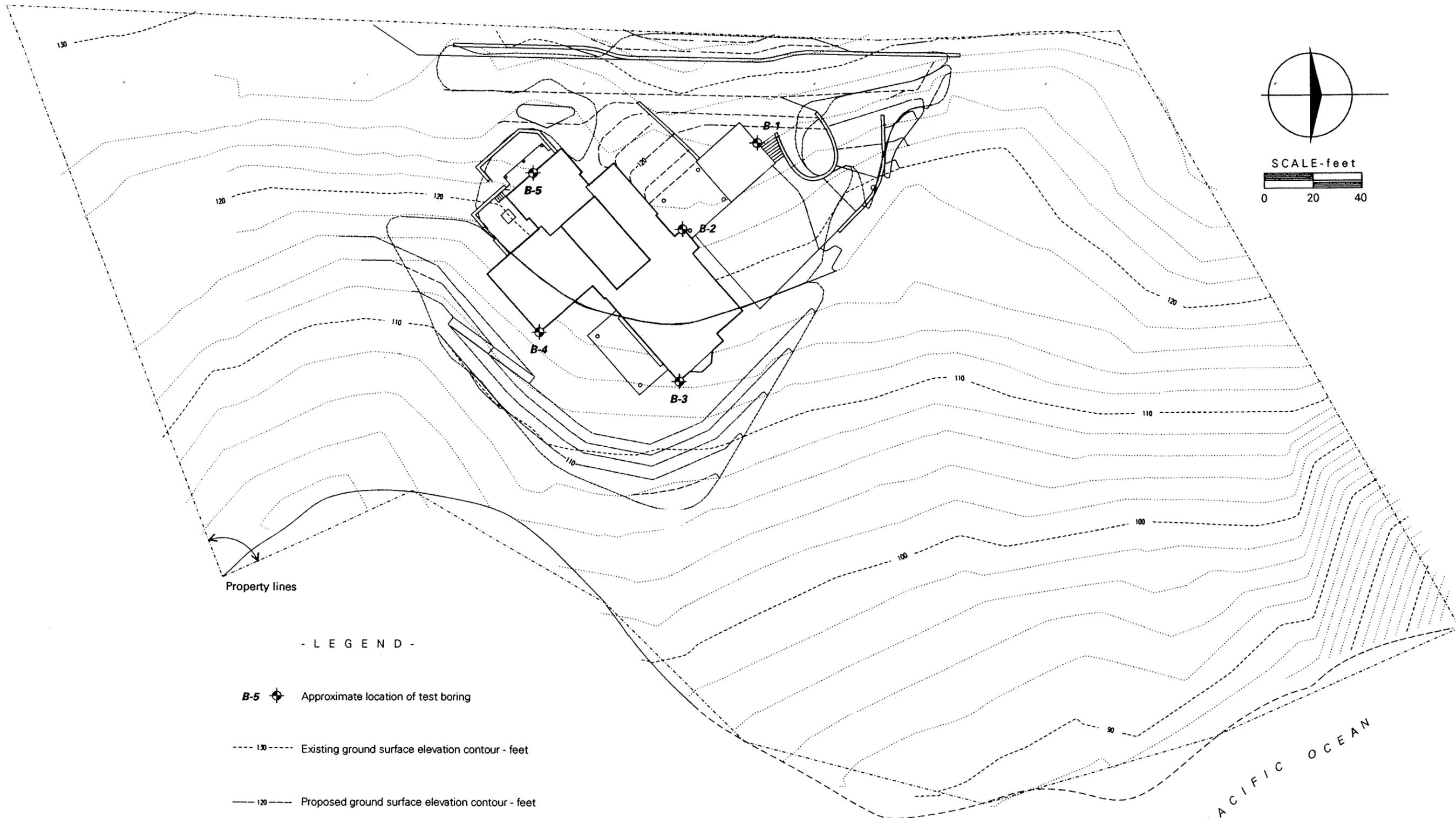
VICINITY MAP

WEIDIG
Geoanalysts

McCULLY RESIDENCE
29-3800 Māmalahoa Highway
Wailea, Big Island, Hawaii

DATE: May, 2007

PROJECT NO. 07-0033.001



Property lines

- L E G E N D -

- B-5  Approximate location of test boring
-  Existing ground surface elevation contour - feet
-  Proposed ground surface elevation contour - feet

**WEIDIG
WEIDIG**
Geoanalysts

Base: Ossipoff, Snyder & Rowland Architects, 2007, *Site Plan Showing Areas of Cut and Fill, Residence for Jim & Fran McCully, 29-3800 Mamalahoa Highway, Wailea, Hawaii, T.M.K. 2-9-03-29* (scale: 1" = 20'), Sheet 2 of 8, dated April 19, 2007.

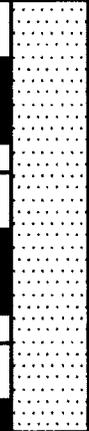
SITE PLAN

McCULLY RESIDENCE
29-3800 Māmalahoa Highway
Wailea, Big Island, Hawai'i

DATE: May, 2007

PROJECT NO. 07-0033.001

BORING LOCATION: See Site Plan	DRILLER: Howard Leslie	BORING NO. B-1
BORING ELEVATION: 126.0 ft.	LOGGED BY: Berwin Chow	
DATE DRILLED: April 4, 2007	TYPE DRILL RIG: Mobile B60 / 4" flight augers	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
UC	74	30.1	0.96		62	SB-1	5		SW	SAND (WEATHERED VOLCANIC ASH AND PUMICEOUS CINDERS) , yellowish gray-brown, very moist, dense, fine to coarse, sharp, well-graded, slightly silty
UC	72	43.2	1.31		74	SB-2				
	101	8.1			140	SB-3				
	103	6.6			250+	SB-4				
					250+	SB-5				
							10			BASALT , light gray, highly weathered and fractured, moderately strong
							15			
							20			Bottom of Boring No. B-1 @ 15.2 ft. No free ground water observed.

SAMPLE TYPE				OTHER LABORATORY TESTS			
BK - Bulk	SB - Split Barrel	AL - Atterberg Limits	SA - Sieve Analysis	CB - Core Barrel	SP - Standard Penetration	CN - Consolidation	SS - Shrink/Swell
DN - Denison Sampler	ST - Shelby Tube	DS - Direct Shear Strength	UC - Unconfined Compression				

LOG OF BORING

	McCULLY RESIDENCE 29-3800 Māmalahoa Highway Wailea, Big Island, Hawai'i
	DATE: May, 2007 PROJECT NO. 07-0033.001

BORING LOCATION: See Site Plan	DRILLER: Howard Leslie	BORING NO. B-2
BORING ELEVATION: 123.0 ft.	LOGGED BY: Berwin Chow	
DATE DRILLED: April 4, 2007	TYPE DRILL RIG: Mobile B60 / 4" flight augers	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
SA	48	55.1			23	SB-1	0	[Dotted pattern]	SW	SAND (WEATHERED VOLCANIC ASH AND PUMICEOUS CINDERS) , yellowish gray-brown, very moist, semicompact, fine to coarse, sharp, well-graded, slightly silty
	78	37.9			69	SB-2	5	[Dotted pattern]		dense
	109	17.9			250+	SB-3	10	[Triangular pattern]		BASALT , light gray, highly weathered and fractured, moderately strong
	103	15.0			170+	SB-4	15	[Triangular pattern]		
					250+	SB-5	20	[Triangular pattern]		
										Bottom of Boring No. B-2 @ 15.3 ft. No free ground water observed.

SAMPLETYPE

BK - Bulk
 CB - Core Barrel
 DN - Denison Sampler
 SB - Split Barrel
 SP - Standard Penetration
 ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits
 CN - Consolidation
 DS - Direct Shear Strength
 SA - Sieve Analysis
 SS - Shrink/Swell
 UC - Unconfined Compression

LOG OF BORING



McCULLY RESIDENCE
 29-3800 Māmalahoa Highway
 Wailea, Big Island, Hawai'i

DATE: May, 2007

PROJECT NO. 07-0033.001

BORING LOCATION: See Site Plan	DRILLER: Howard Leslie	BORING NO. B-3
BORING ELEVATION: 112.3 ft.	LOGGED BY: Berwin Chow	
DATE DRILLED: April 4, 2007	TYPE DRILL RIG: Mobile B60 / 4" flight augers	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION		
AL DS	46	57.5		23	11	SB-1	5		MH	CLAYEY SILT (WEATHERED VOLCANIC ASH) , yellowish gray-brown, very moist, soft		
UC	43	78.7	0.70		12	SB-2						
SA	71	46.7			32	SB-3			10		SW	SAND (WEATHERED VOLCANIC ASH AND PUMICEOUS CINDERS) , yellowish gray-brown, very moist, semicompact, fine to coarse, sharp, well-graded, slightly silty
UC	61	53.1	0.91		35	SB-4						
	84	26.5			90	SB-5						
							20			Bottom of Boring No. B-3 @ 16.0 ft. No free ground water observed.		

SAMPLE TYPE

BK - Bulk SB - Split Barrel
 CB - Core Barrel SP - Standard Penetration
 DN - Denison Sampler ST - Shelby Tube

OTHER LABORATORY TESTS

AL - Atterberg Limits SA - Sieve Analysis
 CN - Consolidation SS - Shrink/Swell
 DS - Direct Shear Strength UC - Unconfined Compression

LOG OF BORING



McCULLY RESIDENCE
 29-3800 Māmalahoa Highway
 Wailea, Big Island, Hawai'i

DATE: May, 2007

PROJECT NO. 07-0033.001

BORING LOCATION: See Site Plan	DRILLER: Howard Leslie	BORING NO. B-4
BORING ELEVATION: 114.8 ft.	LOGGED BY: Berwin Chow	
DATE DRILLED: April 4, 2007	TYPE DRILL RIG: Mobile B60 / 4" flight augers	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
UC	27	159.7	0.69		11	SB-1	0		MH	CLAYEY SILT (WEATHERED VOLCANIC ASH), yellowish gray-brown, very moist, soft
	65	31.6			8	SB-2	5		SW	SAND (WEATHERED VOLCANIC ASH AND PUMICEOUS CINDERS), yellowish gray-brown, very moist, very loose, fine to coarse, sharp, well-graded, slightly silty
	108	17.8			185+	SB-3	10			BASALT, light gray, highly weathered and fractured, moderately strong
					250+	SB-4	10			
							15			
							20			Bottom of Boring No. B-4 @ 10.4 ft. No free ground water observed.

SAMPLETYPE				OTHER LABORATORY TESTS			
BK - Bulk	SB - Split Barrel	AL - Atterberg Limits	SA - Sieve Analysis	CB - Core Barrel	SP - Standard Penetration	CN - Consolidation	SS - Shrink/Swell
DN - Denison Sampler	ST - Shelby Tube	DS - Direct Shear Strength	UC - Unconfined Compression				

LOG OF BORING

	McCULLY RESIDENCE 29-3800 Māmalahoa Highway Wailea, Big Island, Hawai'i
	DATE: May, 2007 PROJECT NO. 07-0033 001

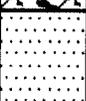
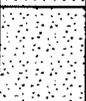
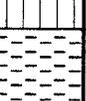
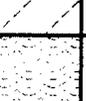
BORING LOCATION: See Site Plan	DRILLER: Howard Leslie	BORING NO. B-5
BORING ELEVATION: 123.9 ft.	LOGGED BY: Berwin Chow	
DATE DRILLED: April 4, 2007	TYPE DRILL RIG: Mobile B60 / 4" flight augers	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	UNCONFINED STRENGTH (ksf)	PLASTICITY INDEX (%)	BLOW COUNT (Blows per foot)	SAMPLE TYPE AND NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	GEOTECHNICAL DESCRIPTION
UC	25	193.7	0.92		10	SB-1	5		MH	CLAYEY SILT (WEATHERED VOLCANIC ASH), yellowish gray-brown, very moist, soft
UC	43	83.2	1.11		13	SB-2				
UC	64	39.6	0.52		15	SB-3	10		SW	SAND (WEATHERED VOLCANIC ASH AND PUMICEOUS CINDERS), yellowish gray-brown, very moist, loose, fine to coarse, sharp, well-graded, slightly silty
	70	33.5			109	SB-4				
					300+	SB-6	15			BASALT, light gray, highly weathered and fractured, moderately strong
							20			

SAMPLE TYPE BK - Bulk SB - Split Barrel CB - Core Barrel SP - Standard Penetration DN - Denison Sampler ST - Shelby Tube		OTHER LABORATORY TESTS AL - Atterberg Limits SA - Sieve Analysis CN - Consolidation SS - Shrink/Swell DS - Direct Shear Strength UC - Unconfined Compression	
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

LOG OF BORING

	McCULLY RESIDENCE 29-3800 Māmalahoa Highway Wailea, Big Island, Hawai'i
	DATE: May, 2007 PROJECT NO. 07-0033.001

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			ICON	CODE	
COARSE-GRAINED SOILS More than 50% of material is larger than the No. 200 Sieve	GRAVEL AND GRAVELLY SOILS Less than 50% of coarse fraction passes the No. 4 Sieve	CLEAN GRAVELS Less than 12% of fine fraction passes the No. 200 Sieve		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		SILTY OR CLAYEY GRAVELS At least 12% of fine fraction passes the No. 200 Sieve		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	SAND AND SANDY SOILS At least 50% of coarse fraction passes the No. 4 Sieve	CLEAN SANDS Less than 12% of fine fraction passes the No. 200 Sieve		SW	Well-graded sands, gravelly sands, little or no fines
					SP
		SILTY OR CLAYEY SANDS At least 12% of fine fraction passes the No. 200 Sieve		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than the No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50	Plasticity index is above 'A' Line		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		Plasticity index is below 'A' Line		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or slightly plastic clayey silts
				OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid Limit is greater than 50	Plasticity index is above 'A' Line		CH	Inorganic clays of high plasticity
		Plasticity index is below 'A' Line		MH	Inorganic silts, micaceous or diatomaceous fine sands or silty soils
				OH	Organic clays of medium to high plasticity, organic silts
				Pt	Peat, humus, marsh soils with high organic content

UNIFIED SOIL CLASSIFICATION SYSTEM

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Wailea, Big Island, Hawai'i

DATE: May, 2007

PROJECT NO. 07-0033.001

APPENDIX B

Laboratory Testing

APPENDIX B

Laboratory Testing

The laboratory testing program included natural moisture content, dry unit weight, plasticity, gradation, direct shear and unconfined compressive strength determinations.

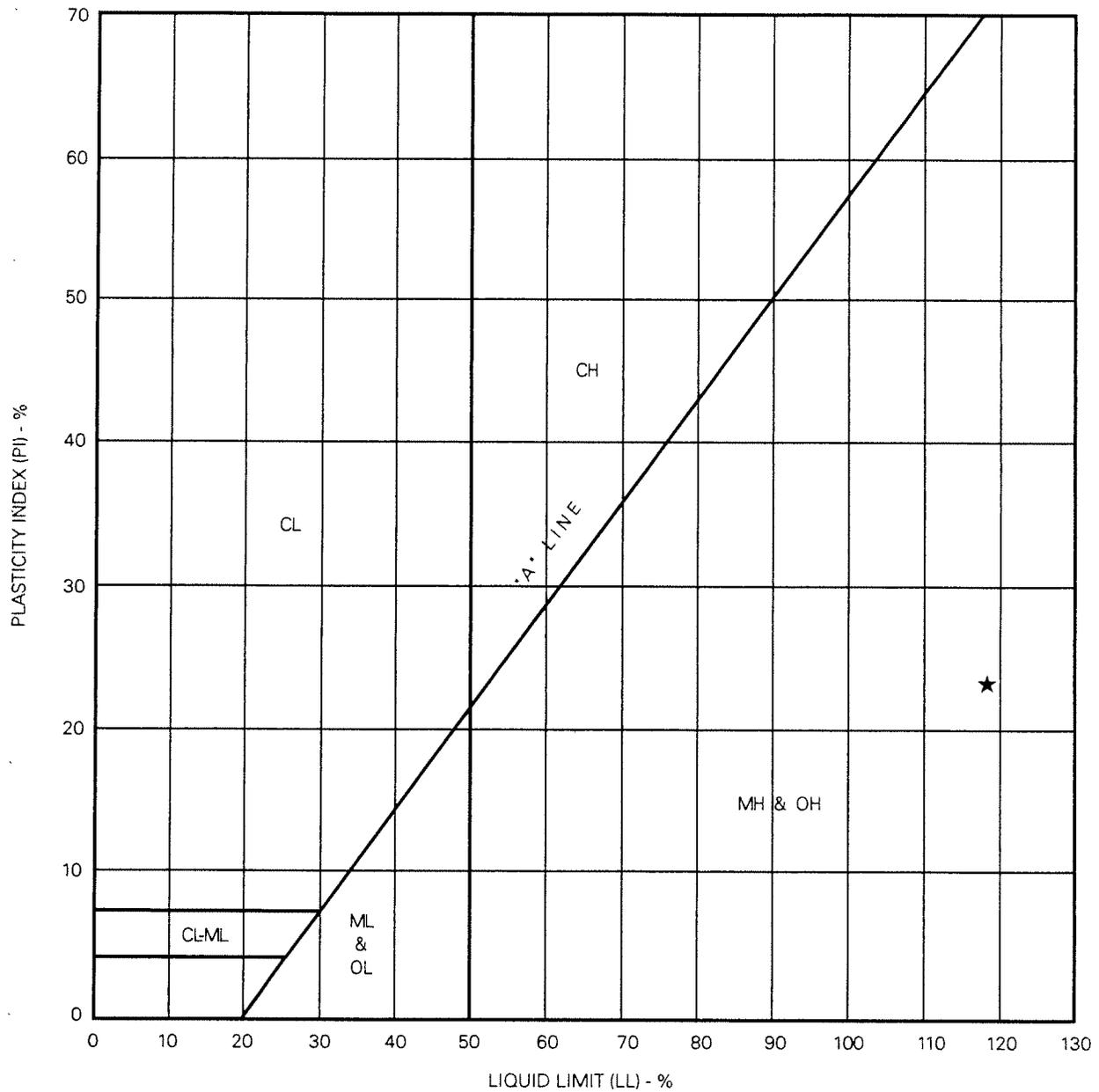
Natural moisture content (ASTM Designation D 4929-89) and dry unit weight tests were conducted on selected samples of the earth materials recovered from each test boring. The results are posted on the Logs of Borings, opposite the depth appropriate to each sample.

Atterberg limits tests (ASTM Designation D 4318-84) were performed on a selected sample of the ashy deposit to evaluate its plasticity characteristics. The results are depicted on Plate No. B1, Atterberg Limits Test Data.

Gradation tests (ASTM Designation D 422-90) were completed on selected samples of the cinder deposits to assess their particle size distribution. The results are illustrated on Plate No. B2, Mechanical Sieve Analysis Test Data.

Consolidated, drained direct shear tests (ASTM Designation D 3080-90) were conducted at normal pressures of 1,000, 2,000 and 3,000 pounds per square foot on selected samples of the ash deposit to evaluate its internal strength characteristics. The results are summarized on Plate No. B3, Direct Shear Test Data.

Unconfined compressive strength tests (ASTM Designation D 2166-91) were completed on selected samples of the surficial soils to estimate their undrained strength properties. The results are illustrated on Plates No. B4 through B6, Unconfined Compressive Strength Test Data.



Point Code	Boring No.	Sample No.	Depth (ft)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Unified Soil Classification
★	B-3	SB-1	1.0	108	85	23	MH

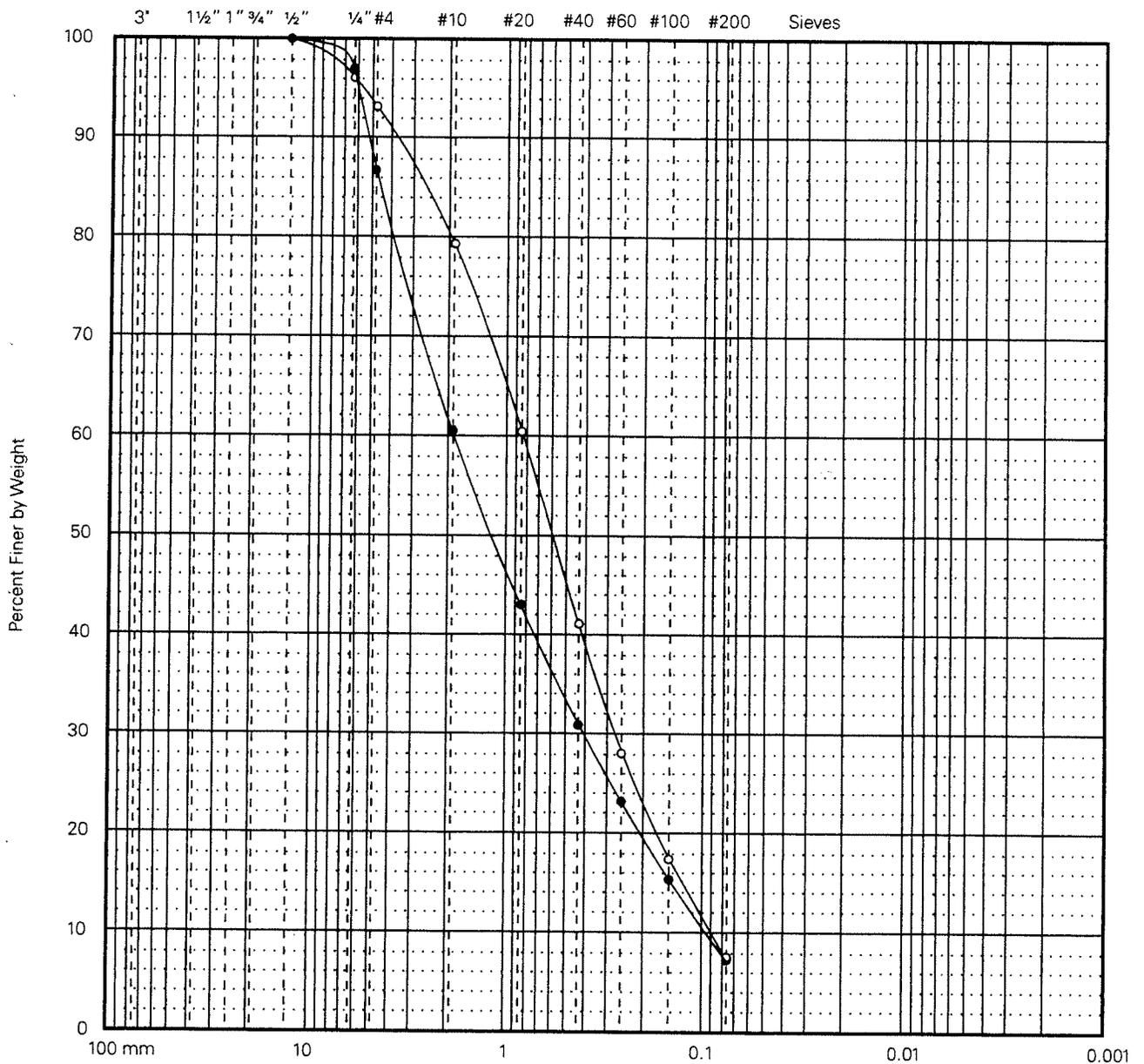
ATTERBERG LIMITS TEST DATA

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PROJECT NO. 07-0033.001



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Gravel (%)	Sand (%)	Silt / Clay (%)
●	B-2	SB-1	1.0	67	44.4	13.1	79.4	7.5
○	B-3	SB-3	7.0	71	46.7	6.8	85.5	7.7

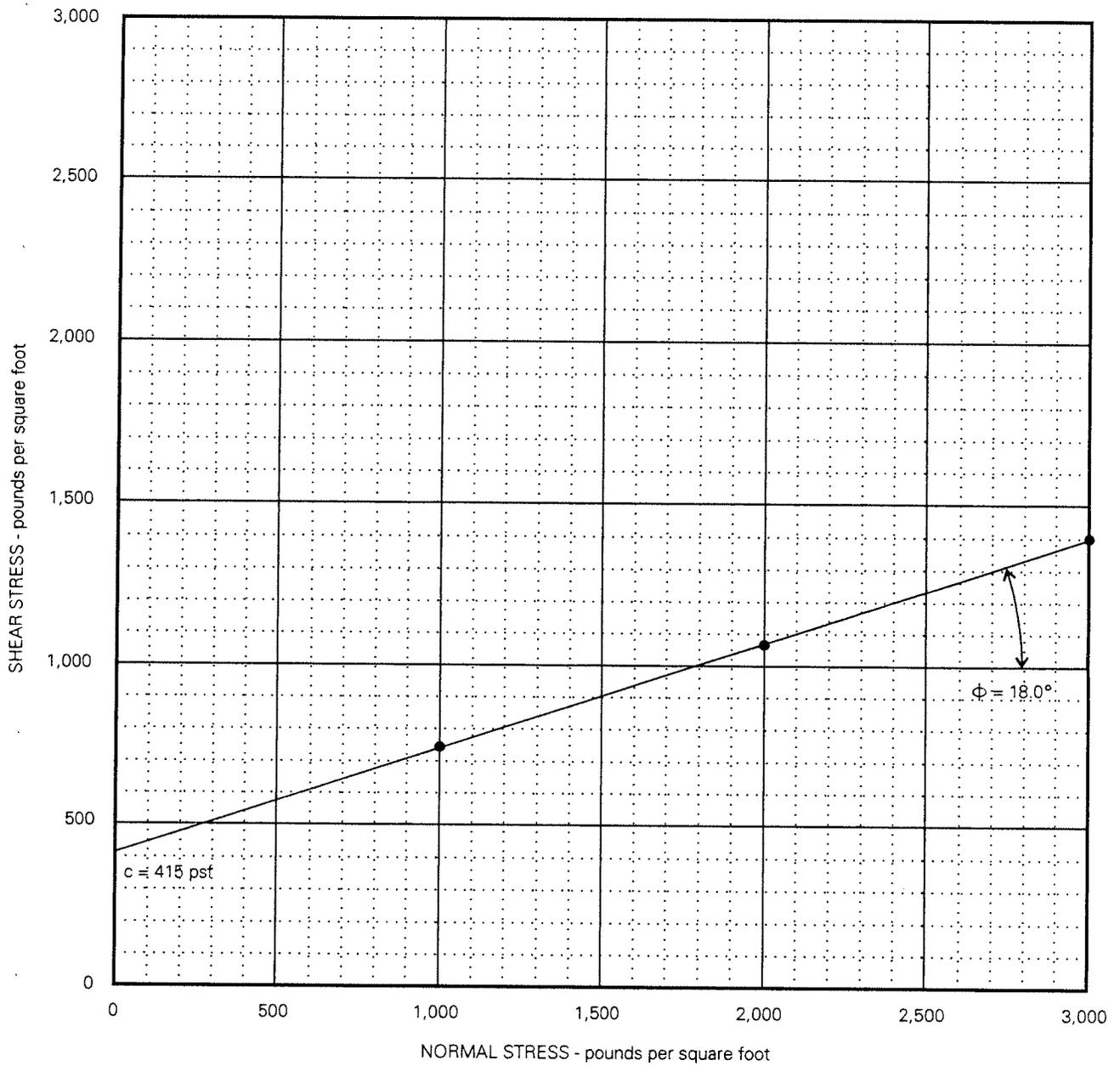
MECHANICAL SIEVE ANALYSIS TEST DATA

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DATE: May, 2007

PROJECT NO. 07-0033.001



Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Normal Stress (psf)	Shear Stress (psf)
B-3	SB-1	1.0	32	133.3	1,000	740
B-3	SB-1	1.0	36	104.7	2,000	1,065
B-3	SB-1	1.0	32	126.6	3,000	1,390

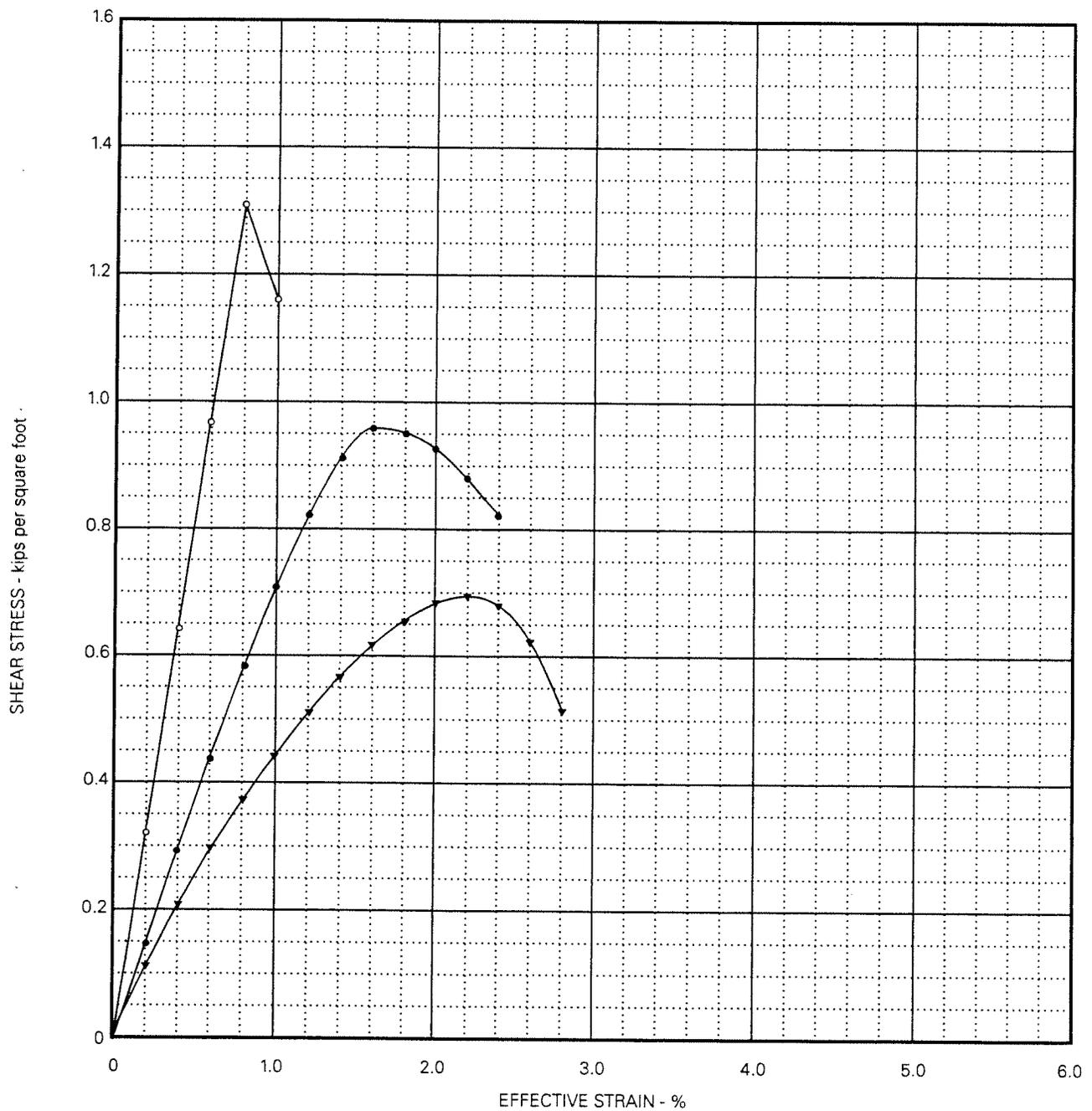
DIRECT SHEAR TEST DATA

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 Wailea, Big Island, Hawai'i

DATE: May, 2007

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Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
•	B-1	SB-1	1.0	74	30.1	1.6	960
○	B-1	SB-2	4.0	72	43.2	0.8	1,310
▼	B-3	SB-2	4.0	78	37.9	2.2	695

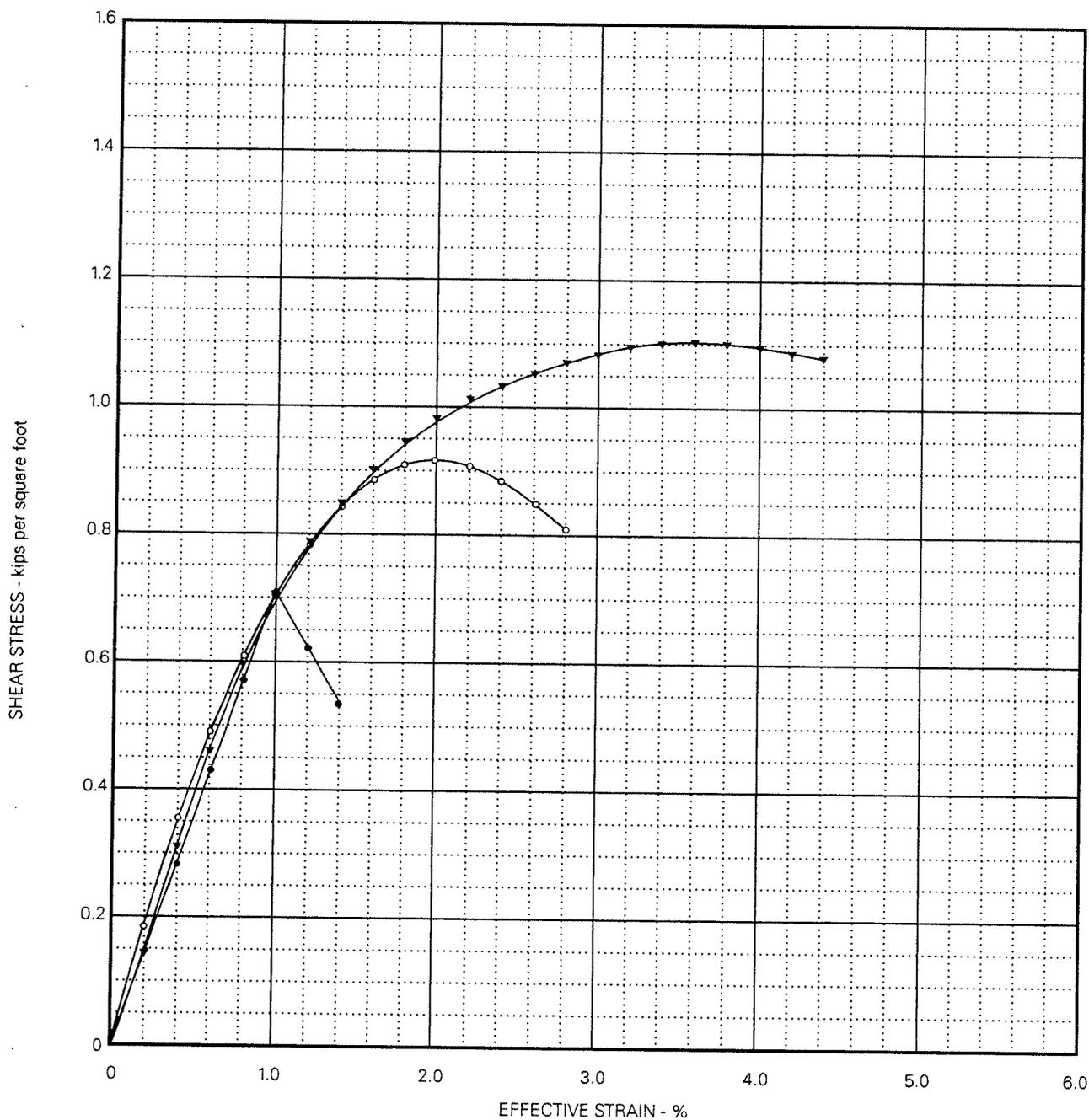
UNCONFINED COMPRESSIVE STRENGTH TEST DATA

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DATE: May, 2007

PROJECT NO. 07-0033.001



Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
●	B-4	SB-1	1.0	27	159.7	1.0	690
○	B-5	SB-1	1.0	25	193.7	2.0	920
▼	B-5	SB-2	4.0	29	174.0	3.4	1,105

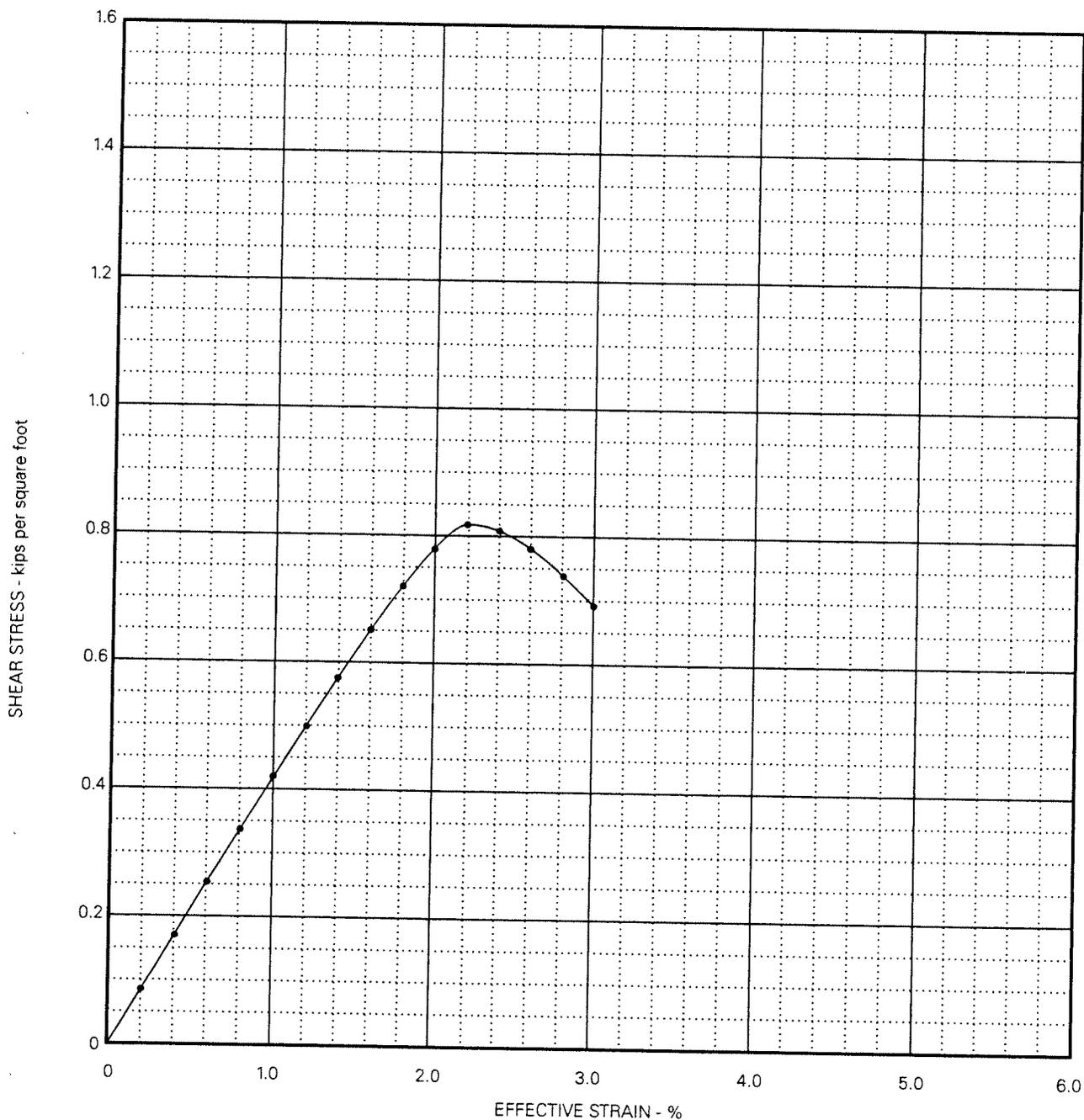
UNCONFINED COMPRESSIVE STRENGTH TEST DATA

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Point Code	Boring No.	Sample No.	Depth (ft)	Dry Unit Weight (pcf)	Moisture Content (%)	Peak Effective Strain (%)	Unconfined Compressive Strength (psf)
•	B-5	SB-3	7.0	64	39.6	2.1	520

UNCONFINED COMPRESSIVE STRENGTH TEST DATA

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29-3800 Māmalahoa Highway
Wailea, Big Island, Hawai'i

DATE: May, 2007

PROJECT NO. 07-0033.001

APPENDIX C

References

APPENDIX C

References

1. Ossipoff, Snyder & Rowland Architects, Inc., 2007, *Residence for Jim & Fran McCully, 29-3800 Mamalahoa Highway, Wailea, Hawaii, T.M.K. 2-9-03-29* (various scales), 8 sheets, dated April 19, 2007.
2. State of Hawai'i, Department of Taxation, 1935, *Taxation Maps Bureau Tax Map 2-9-4:10* (scale: 1"= 500').
3. Sato, H., *et. al.*, 1973, *Soil Survey of Island of Hawai'i, State of Hawai'i*, United States Department of Agriculture, Soil Conservation Service.
4. Stearns, H. T., 1935, *Geology and Ground-Water Resources of the Island of Hawai'i, Hawai'i*, United States Geological Survey Bulletin 2.
5. United States Geological Survey, 1996, *Papa'ikou Quadrangle, Hawai'i - Hawai'i Co., Island of Hawai'i, 7.5-Minute Series (Topographic)* (scale: 1:24,000).
6. Wolfe, E. W., and Morris, J., 1996, *Geologic Map of the Island of Hawai'i*, United States Geological Survey Map 1-2524-A (scale: 1:100,000).

DISTRIBUTION

James W. and Francine M. McCully (1)
40 Kamehameha Avenue
Hilo, Hawai'i 96720

Ossipoff, Snyder & Rowland Architects, Inc. (2)
Attn: Sydney E. Snyder, Jr., AIA
126 Queen Street, Suite 212
Honolulu, Hawai'i 96813

Libbey Heywood, Inc. (1)
Attn: Steven C. Heywood, S. E., President
210 Ward Avenue, Suite 122
Honolulu, Hawai'i 96814

APPENDIX D
BOTANICAL SURVEY

BOTANICAL SURVEY REPORT FOR THE MCCULLY PROJECT SITE

WAILEA, HAWAII

FOR

BRIAN T. NISHIMURA
NISHIMURA PLANNING
101 AUPUNI STREET, SUITE 217
HILO, HAWAII 96720

BY

EVANGELINE J. FUNK, PH.D.
BOTANICAL CONSULTANTS
HONOLULU, HAWAII 96815

TABLE OF CONTENTS

INTRODUCTIONS AND METHODS	2
RESULTS.....	2
CONCLUSIONS.....	3
ENDANGERED SPECIES	3
BIBLIOGRAPHY	4
SPECIES LIST	5

INTRODUCTION AND METHODS

The McCully Project Site is located on the eastern coast of the Island of Hawaii approximately seventeen miles north of the City of Hilo in the Wailea, Hawaii. On June 10, 2004 a botanical survey of this four and one tenth acre site, was carried out by a two-person team. The walk through method of data collection was used and all parts of the site were surveyed. The results of the survey are presented below.

RESULTS

Two vegetation types are discernable on this property. By far the largest of which is Open Mowed Lawn. This broad rolling area is vegetated by a mix of introduced grasses such as Hilo grass (*Paspalum conjugatum* Bergius), California grass (*Brachiaria mutica* (Frossk.) Stapf, beach wiregrass (*Eleusine indica* (L.) Gaertn., yellow foxtail (*Setaria gracilis* Kunth) and Digitaria sp. In the un-mowed fringe of the lawn area can be found two types of white Thunbergia (*Thunbergia fragrans* Roxb.) and Bengal trumpet (*Thunbergia grandiflora* Roxb.), wood rose vine (*Merremia tuberosa* (L.) Rendle), sugar cane (*Saccharum officinarum* L.), various sedges including Nut grass (*Cyperus rotundus* L.), Kili'o'pu (*Kyllinga brevifolia* Rottb.), and *Kyllinga nemoralis* (Dandy ex Hutchinson & Dalziel). There is also Honohono (*Commelina diffusa* N. L. Burm.), some vegetative ginger, Niruri (*Phyllanthus debilis* Klein & Willd.), and *Polygala paniculata* L.

The seaward or eastern edge of the Open Mowed Lawn area is marked by a scattered planting of green hala trees (*Pandanus tectorius* S. Parkinson ex Z) and a variety of hala trees with green and yellow striped leaves (*P. veitchii* Hort {Neal page 53}. Beyond the hala trees are mostly introduced ironwood trees (*Casuarina equisetifolia* L.).

A variety of landscape plantings are also found in the Open Mowed Lawn area. These include several species of palm trees, some bamboos, some Kukui trees, golden pothos and banana type plantings.

The second vegetation type found on the site was Stream Bank Vegetation. Puahanui Stream forms the northern boundary of the McCully Project Site. The banks of Puahanui Stream are very steep and the predominant vegetation is large, introduced trees such as African tulip (*Spathodea campanulata* P. Beauv.), ironwood, coconut (*Cocos nucifera* L.), Hala trees, some banana trees golden pothos (*Epipremnum pinnatum* (L.) Engl.), oak leaf fern (*Dryopteris dentata* (Forsk.) C. Chr.) and Sword fern (*Nephrolepis exaltata* (L.) Schott. are common.

CONCLUSIONS

Aside from the Kukui and hala trees, which may be early Polynesian introductions, the only native plants found on this site were some popolo berry bushes (*Solanum americanum* Mill). Otherwise, the vegetation of this site is all introduced plants and is found in many places in the Hawaiian Islands and will quickly regenerate if it is disturbed.

ENDANGERED SPECIES

No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) are known from this site and none were found during this survey.

BIBLIOGRAPHY

- Haselwood, E. L. and G. G. Motter. (eds.) 1976. Handbook of Hawaiian Weeds. Lyon Arboretum Association.
- Neal, M. C. 1965. In Gardens of Hawaii. Bishop Museum Special Publication #65. Bis. Mus. Press.
- Wagner, W. L., D. R. Herbst, & S. H. Sohmer. 1990. Manual of the Flowering Plants of Hawaii. Bishop Museum Special Publication #83. Univ. Of Hawaii Press. Vols 1 & 2.

SPECIES LIST OF THE PLANTS FOUND ON THE PROPOSED MCCULLY PROJECT SITE, WAILEA, HAWAII

The plant list presented here is a combination of the results of our survey conducted in June, 2004 and an earlier survey conducted in 1993 by Bobby Camara.

The plant families in the species list have been alphabetically arranged within three groups, Ferns and Fern Allies, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of Wagner, Herbst, and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Cook or by the aborigines.
2. The scientific name of the plant.
3. The Hawaiian name or the most widely used common name of the plant.
4. Abundance ratings are for this site only and they have the following meanings:
 - Uncommon = a plant that was found less than five times.
 - Occasional = a plant that was found between five and ten times.
 - Common = a plant considered an important part of the vegetation.
 - Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list presented here is the result of our survey conducted in June, 2004 and an earlier survey conducted in 1993 by Bobby Camara. It reflects the vegetative composition of the flora during a single season. Minor changes to the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

Scientific Name	Common Name	Abundance
-----------------	-------------	-----------

FERNS AND FERN ALLIES

POLYPODIACEAE - Common Fern Family

* <i>Dryopteris dentata</i> (Forssk.) C. Chr.	Oak leaf fern	Uncommon
* <i>Nephrolepis exaltata</i> (L.) Schott.	Sword fern	Locally abundant

MONOCOTYLEDONS

AGAVACEAE – Agave Family

<i>Cordyline fruticosa</i> (L.) A. Chev.	Ti	Occasional
------------------------------------------	----	------------

ARACEAE – Aroid Family

* <i>Epipremnum pinnatum</i> (L.) Engle.	Golden pothos	Uncommon
* <i>Xanthosoma roseum</i> Schott.	Xanthosoma	Occasional

ARECACEAE - Palm Family

* <i>Archontophoenix alexandrae</i> H.A. Wendl.&Drude	King palm	Locally abundant
* <i>Cocos nucifera</i> L.	Coconut palm	Uncommon
*Phoenix sp.	Phoenix palm	Locally abundant
* <i>Pritchardia</i> sp.	Fan palm	Locally abundant

COMMELINACEAE - Spiderwort Family

* <i>Commelina diffusa</i> N. L. Burm.	Honohono	Locally abundant
----------------------------------------	----------	------------------

CYPERACEAE - Sedge Family

* <i>Cyperus rotundus</i> L.	Nut grass	Occasional
* <i>Kyllinga brevifolia</i> Rottb.	Kili'opu	Locally abundant
* <i>Kyllinga nemoralis</i> Dandy ex Hutchinson & dalziei		Locally abundant

MUSACEAE – Banana Family

* <i>Musa x paradisiaca</i> L.	Banana	Common
--------------------------------	--------	--------

PANDANACEAE – Pandanus Family

<i>Pandanus tectorius</i> S. Parkinson ex Z	Hala	Common
---------------------------------------------	------	--------

Scientific Name	Common Name	Abundance
-----------------	-------------	-----------

POACEAE - Grass Family

* <i>Bambusa</i> sp.	Dwarf bamboo	Locally abundant
* <i>Bambusa vulgaris</i> var. <i>aureo-varigeta</i> Hort.	Golden bamboo	Locally abundant
* <i>Brachiaria mutica</i> (Forssk.) Stapf.	California grass	Common
* <i>Eleusine indica</i> (L.) Gaertn.	Wiregrass	Locally abundant
* <i>Digitaria ciliaris</i> (Retz.) Koeler	Henry's crabgrass	Common
* <i>Paspalum conjugatum</i> Bergius	Hilo grass	Locally abundant
* <i>Saccharum officinarum</i> L.	Sugar	Occasional

ZINGIBERACEAE – Ginger Family

* <i>Hedychium flavescens</i> Ker-Gawel..	Yellow ginger	Occasional
-------------------------------------------	---------------	------------

DICOTYLEDONES

ACANTHACEAE – Acanthus Family

* <i>Hemigraphis alternata</i> (N. L.Burm.)	Metal-leaf	Occasional
* <i>Justicia betonica</i> L.	White shrimp plant.	Occasional
* <i>Thunbergia fragrans</i> Roxb.	White thunbergia	Occasional
* <i>Thunbergia grandiflora</i> Roxb.	Bengal trumpet	Occasional

APIACEAE – parsley Family

* <i>Centella asiatica</i> (L.) Urb.	Fir-leafed celery	Locally abundant
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ARALIACEAE – Ginseng Family

* <i>Schefflera actinophylla</i> (Endl.) Harms	Octopus tree	Uncommon
------------------------------------------------	--------------	----------

ASTERACEAE – Sunflower Family

* <i>Ageratum conyzoides</i> L.	Maile hohono	Occasional
* <i>Emilia fosbergii</i> Nicolson	Pualele	Occasional
* <i>Conyza canadensis</i> (L.) Cronq.	Horseweed	Uncommon
* <i>Pluchea symphytifolia</i> (Mill.) Gillis	Sourbush	Uncommon

BEGONIACEAE – Begonia Family

* <i>Begonia</i> sp.		
----------------------	--	--

<u>Scientific Name</u>	<u>Common Name</u>	<u>Abundance</u>
BIGNONIACEAE – Bignonia Family		
* <i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Occasional
CARICACEAE – Papaya Family		
* <i>Carica papaya</i> L.	Papaya	Occasional
CASUARINACEAE – She-oak Family		
* <i>Casuarina equisetifolia</i> L.	Ironwood	Common
CONVOLVULACEAE – Morning glory Family		
* <i>Ipomoea alba</i> L.	Moon flower	Occasional
* <i>Merremia tuberosa</i> (L.) Rendle	Wood rose	Uncommon
EUPHORBIACEAE – Spurge Family		
* <i>Aleurites moluccana</i> (L.) Willd	Kukui	Locally abundant
* <i>Chamaesyce hirta</i> (L.) Millsp.	Hairy spurge	Occasional
* <i>Phyllanthus debilis</i> Klein ex Willd.	Niruri	Occasional
FABACEAE – Bean Family		
* <i>Chamaecrista nictitans</i> (L.) Moench	Partridge pea	Occasional
* <i>Crotalaria incana</i> L.	Fuzzy rattlepod	Occasional
* <i>Crotalaria</i> sp.		Occasional
* <i>Desmodium triflorum</i> (L.) DC		Occasional
* <i>Indigofera suffruticosa</i> Mill.	Indigo	Occasional
* <i>Mimosa pudica</i> L.	Sensitive plant	Occasional
GOODENIACE – Goodenia – Family		
<i>Scaevola sericea</i> Vahl.	Naupaka kuhakai	Occasional
LAURACEAE – Laurel Family		
* <i>Persea americana</i> Mill.	Avocado	Uncommon
MALVACEAE – Mallow Family		
* <i>Malvaviscus penduliflorus</i> DC	Turk's cap	Uncommon

Scientific Name	Common Name	Abundance
MORACEAE – Fig Family		
* <i>Ficus microcarpa</i> L. fil.	Chinese banyan	Occasional
MYRSINACEAE –Myrsine Family		
* <i>Ardisia crenata</i> Sims	Hilo holly	Occasional
MYRTACEAE – Myrtle Family		
* <i>Eucalyptus robusta</i> Sm.	Swamp mahogany	Occasional
* <i>Psidium guajava</i> L.	Common guava	Uncommon
OXALIDACEAE – Wood sorrel Family		
<i>Oxalis corniculata</i> L.	Yellow wood sorrel	Locally abundant
* <i>Oxalis corymbosa</i> DC	Pink wood sorrel	Uncommon
PASSIFLORACEAE – Passion Flower Family		
* <i>Passiflora edulis</i> Sims	Passion fruit	Uncommon
POLYGALACEAE – Milkwort Family		
* <i>Polygala paniculata</i> L.		Uncommon
ROSACEAE - Rose Family		
* <i>Rubus rosifolius</i> Sm.	Thimbleberry	Occasional
RUBIACEAE – Coffee Family		
<i>Morinda citrifolia</i> L.	Noni	Uncommon
SCROPHULARIACEAE – Figwort Family		
* <i>Lindernia crustacea</i> (L.) F.v. Muell.		Locally abundant
SOLANACEAE – Nightshade Family		
<i>Solanum americanum</i> Mill.	popolo	Occasional

APPENDIX E
LANDSCAPE MASTER PLAN



SCALE 1/16" = 1'-0"



This work was prepared by me or under my supervision. Construction of this project will be under my supervision.



Revisions:

McCULLY RESIDENCE
 29-3800 Mamalahoa Hwy.
 Wailea, HI
 TMK 2-9-03-29

Schematic Landscape Development Plan

Job No:
Drawn by: SFM
Date: 4/23/07
Drawing No: LS
___ of ___ Sheets

APPENDIX F
ARCHAEOLOGICAL AND LIMITED CULTURAL ASSESSMENT

Archaeological Inventory Survey and
Limited Cultural Assessment of TMKs:
3-2-9-03:13, 29, and 60

Wailea Ahupua'a
South Hilo District
Island of Hawai'i



PREPARED BY:

Michael Desilets, M.A.
Amy Kasberg, B.A.
and
Robert B. Rechtman, Ph.D.

PREPARED FOR:

Mike Shewmaker
McCully Works, Inc.
40 Kamehameha Ave.
Hilo, HI 96720

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RECHTMAN CONSULTING, LLC

HC 1 Box 4149 Kea'au, Hawai'i 96749
phone: (808) 966-7636 toll-free fax: (800)406-2665
e-mail: bob@rechtmanconsulting.com
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

Archaeological Inventory Survey and
Limited Cultural Assessment of
TMK: 3-2-9-03:13, 29, and 60

Wailea Ahupua'a
South Hilo District
Island of Hawai'i

EXECUTIVE SUMMARY

At the request of Mike Shewmaker, on behalf of McCully Works, Inc., Rechtman Consulting, LLC conducted an archaeological inventory survey and limited cultural assessment of three land parcels (TMK 3-2-9-03: 13, 29, 60) in Wailea *ahupua'a*, South Hilo District, Island of Hawai'i. The project area begins approximately 112 feet east (*makai*) of Hawaii Belt Road in Wailea and extend to the shoreline cliffs. The parcels incorporate a former railroad corridor along their western side. The project area is located squarely in what was traditionally known as *Hilo-pali-Kū* or 'Hilo of the upright cliffs.' The name is apt for such a treacherous coastline; sheer cliffs run from the Wailuku River to Waipi'o and beyond, broken only by a string of relatively narrow gulches pouring down from the slopes of Mauna Kea. Historic maps indicate that a railroad right-of-way once crossed the western portion of the project area. A search of the records on file with DLNR-SHPD revealed that the project area had not been previously surveyed for archaeological sites. Amy Kasberg, B.A., Michael Desilets, M.A., and Robert Rechtman, Ph.D. conducted fieldwork for the current project on May 17, 2004. Project area boundaries were clearly identifiable in the field, and the entire area was systematically and intensively examined using parallel north to south trending transects. Visibility was excellent across most of the project area. On site, SIHP Site 50-10-26-24212, was recorded during the field survey. This site includes two Historic Period railroad features: a railway grade section and a trestle abutment. Site 24212 is considered significant under Criteria D for the information it has yielded regarding early twentieth century sugar cane transportation infrastructure; however, as the current inventory survey project recorded Site 24212 in detail, no further work is recommended.

The fieldwork produced no evidence of traditional Hawaiian artifacts or features. Also, there is no evidence that the area is currently being accessed for the exercise of traditional and customary practices associated with any traditional cultural properties or resources. As part of the current study, the Office of Hawaiian Affairs and other organizations and individuals were contacted in an effort to obtain information about any potential traditional cultural properties and associated practices that might be present or have occurred in this portion of Wailea Ahupua'a. None of the organizations/individuals contacted had any information relative to the existence of traditional cultural properties in the immediate vicinity of the current project area; nor did they provide any information indicating past or current use of the area for traditional and customary practices.

CONTENTS

INTRODUCTION	1
PROJECT AREA DESCRIPTION	4
BACKGROUND	6
<i>Hilo-pali-Kū</i>	6
Railroads	9
Previous Archaeology	12
<i>Māhele</i> Land Awards and Grants	12
PROJECT EXPECTATIONS	13
FIELDWORK RESULTS	13
Feature 1	15
Feature 2	15
Site 24212 Discussion	18
CONSULTATION	18
CONCLUSIONS	18
SIGNIFICANCE EVALUATION AND TREATMENT RECOMMENDATIONS ..	20
REFERENCES CITED	21

FIGURES

1. Project area location (portion of USGS 7.5 minute series Papaaloa and Papaikou quadrangles, HI)	2
2. Tax Map Key 3-2-9-03 showing study parcels 13, 29, and 60.	3
3. Central portion of project area, view to the south	5
4. Northern portion of project area, view to the east.	5
5. Southern portion of project area, view to the east/southeast.	6
6. Project area showing camps near Hakalau. Adapted from a detail of the 1940 Hakalau Plantation Company Domestic Water Supplies Map (Courtesy of James McCully).....	8
7. Hawaii Consolidated Railway map of rail system as of November 1923 (Annual Report 1926).....	10
8. View of Kolekole Bridge after 1946 tsunami, center support washed out. (Pacific Tsunami Museum Archives- Henrietta Carvalho Collection).	11
9. Detail of Tax Map Key 3-2-9-03 showing feature locations.	14
10. SIHP Site 24212 Feature 1, possible railroad grade, view to the south.....	15
11. Plan view of SIHP Site 24212 Feature 2.	16
12. SIHP Site 24212 Feature 2, trestle abutment, view from above.....	16
13. SIHP Site 24212 Feature 2, trestle abutment, view to the west.....	17
14. SIHP Site 24212 Feature 2, trestle abutment, view to the east.	17
15. Profile of Hilo Railroad-Hawaii Consolidated Railway’s Hamakua Division showing locations and elevations of trestles and tunnels from Hilo to Pa‘auilo.....	19

INTRODUCTION

At the request of Mike Shewmaker, on behalf of McCully Works, Inc., Rechtman Consulting, LLC conducted an archaeological inventory survey and limited cultural assessment of three land parcels (TMK 3-2-9-03: 13, 29, 60) in Wailea *ahupua'a*, South Hilo District, Island of Hawai'i (Figures 1 and 2). The purpose of this study is to document the presence of any historic properties (including traditional cultural properties and associated practices) that might exist within the 4.5-acre project area and assess the significance of any such resources. This report is intended to fulfill the requirements of the County of Hawai'i Planning Department and the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) with respect to permit approval for a proposed State land use boundary amendment.

In the Hawai'i Administrative Rules (HAR 13§13-275-2) that would govern the regulatory activities of the State Historic Preservation Division, a definition of historic property is provided.

“Historic property” means any building, structure, object, district, area, or site, including *heiau* and underwater site, which is over 50 years old.

This definition should not be confused with the definition of Historic Property contained in the Federal legislation and its implementing regulation (Section 106 of the National Historic Preservation Act and 36 CFR 800, respectively), where Historic Property is defined as a resource “listed or eligible for listing in the National Register of Historic Places.” The difference being that in the state-used definition ALL buildings, structures, objects, districts, areas, or sites older than fifty years are historic properties and need to be assessed as such. In the Federally used definition, ONLY those buildings, structures, objects, districts, areas, or sites that are determined to be significant are considered Historic Properties.

The criteria for the evaluation of significance contained in the Hawai'i Administrative Rules generally follows that which was promulgated by the Federal government, with the addition of Significance Criterion E, which is not contained in the Federal evaluation criteria. To be significant the resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- A Be associated with events that have made an important contribution to the broad patterns of our history;
- B Be associated with the lives of persons important in our past;
- C Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- D Have yielded, or is likely to yield, information important for research on prehistory or history;
- E Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

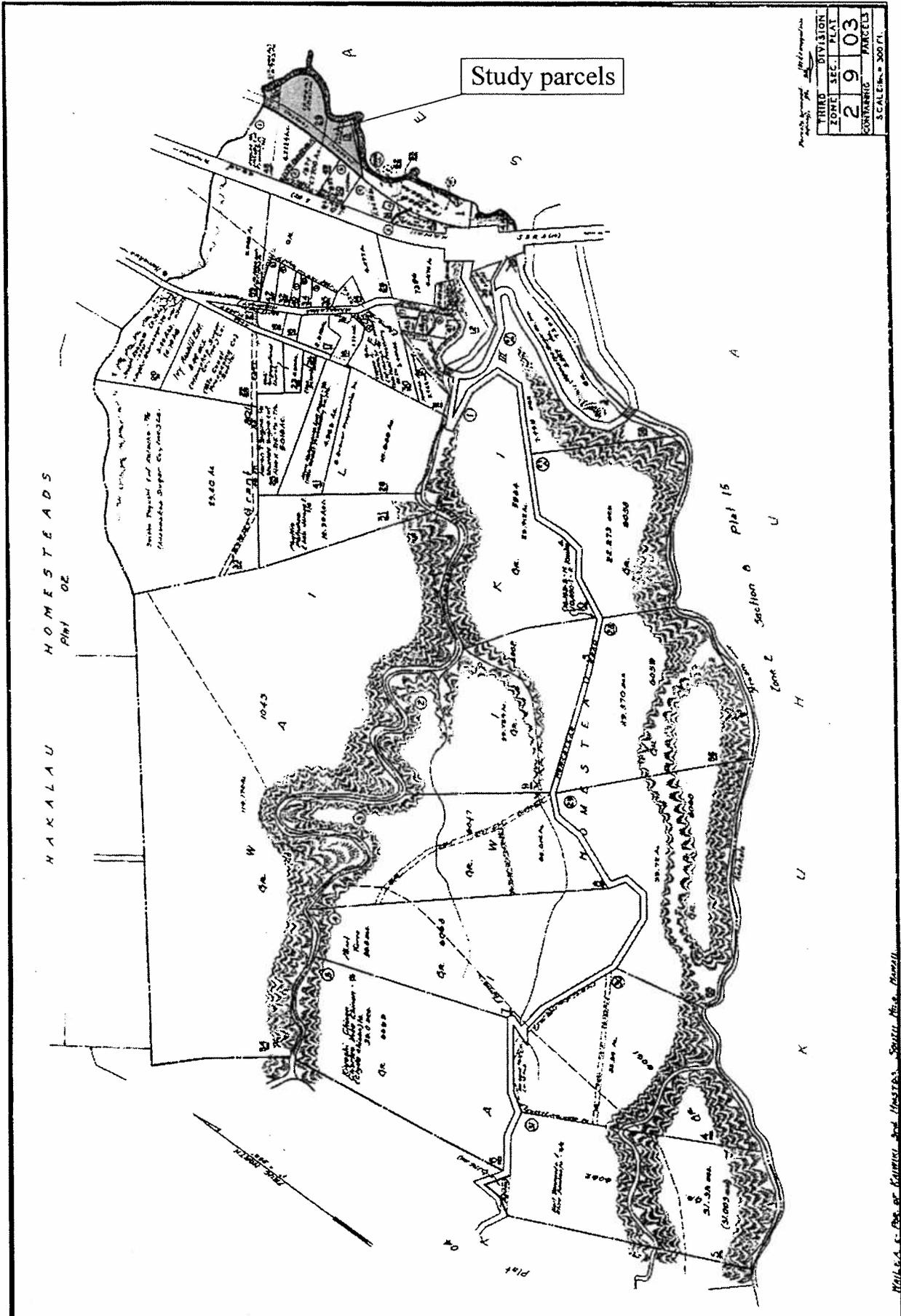


Figure 2. Tax Map Key 3-2-9-03 showing study parcels 13, 29, and 60.

A working definition of Traditional Cultural Property is as follows:

“Traditional cultural property” means any historic property associated with the traditional practices and beliefs of an ethnic community or members of that community for more than fifty years. These traditions shall be founded in an ethnic community’s history and contribute to maintaining the ethnic community’s cultural identity. Traditional associations are those demonstrating a continuity of practice or belief until present or those documented in historical source materials, or both.

The origin of the concept of Traditional Cultural Property is found in National Register Bulletin 38 published by the U.S. Department of Interior-National Park Service. “Traditional” as it is used, implies a time depth of at least 50 years, and a generalized mode of transmission of information from one generation to the next, either orally or by act. “Cultural” refers to the beliefs, practices, life-ways, and social institutions of a given community. The use of the term “Property” defines this category of resource as an identifiable place. Traditional Cultural Properties are not intangible, they must have some kind of boundary; and are subject to the same kind of evaluation as any other historic resource, with one very important exception. By definition, the significance of Traditional Cultural Properties should be determined by the community that values them.

PROJECT AREA DESCRIPTION

The project area consists of three adjoining parcels (TMK 3-2-9-03: 13, 29, and 60) that begin approximately 112 feet east (*makai*) of Hawaii Belt Road in Wailea and extend to the shoreline cliffs. The parcels incorporate a former railroad corridor along their western side (see Figure 2). The nearest major drainage is Kolekole Gulch, which is only a few hundred meters to the south. A smaller stream named Ka’ahakini is also nearby and ultimately feeds into Kolekole Gulch near its mouth. An even smaller, unnamed gulch is just north of Ka’ahakini and forms the northern boundary of the project area. Shoreline cliffs form the southern and eastern boundaries. Elevation within the project area ranges from 100 to 140 feet above sea level.

The project area is predominantly a mowed and highly maintained grass lawn with various landscaped vegetation along its perimeter (Figures 3, 4, and 5). Vegetation includes African tulip (*Spathodea campanulata* Beauv.), sword fern (*Nephrolepis multiflora*), maidenhair fern (*Adiantum raddianum*), ironwood (*Casuarina equisetifolia*), guava (*Psidium guajava*), hala (*Pandanus odoratissimus*), autograph tree (*Clusia rosea*), banana (*Musa spp.*), papaya (*Carica papaya* L.), liliko’i (*Passiflora spp.*), ti (*Cordyline fruticosa* (L.) A. Chev.), blue gum eucalyptus (*Eucalyptus globus*), ‘ape (*Alocasia macrorrhiza*, *Xanthosoma robustum*), bamboo (*Bambus vulgaris* var. *aureo-variegata* Hort.) and various types of ginger (Zingiberaceae), palms (Palmae) and grasses (Poaceae). The project area was sectioned off into thirds by two stands of vegetation that ran roughly east to west. The northern stand consists of bamboo and the southern of palms.

Terrain in the project area is smooth and slopes down to the east. A terrace is present in places along the western portion, and appears to be associated with past (prior to the current land owner) landfilling and slope altering activities. Soils within the project area are classified as ‘Hilo silty clay loam, 0 to 10 percent slopes’ (Sato et al. 1973:17). This soil type falls within the Hilo Series, which is described as “well-drained silty clay loams,”

These soils formed in a series of volcanic ash layers that give them a banded appearance. They are gently sloping to steep soils on uplands at an elevation ranging from near sea level to 800 feet. They receive from 120 to 180 inches of rainfall annually, and their mean annual soil temperature is between 72° and 74° F. The natural vegetation consists of hilograss, californiagrass, guava, ohia, and tree fern. (Sato et al. 1973:17)



Figure 3. Central portion of project area, view to the south.



Figure 4. Northern portion of project area, view to the east.

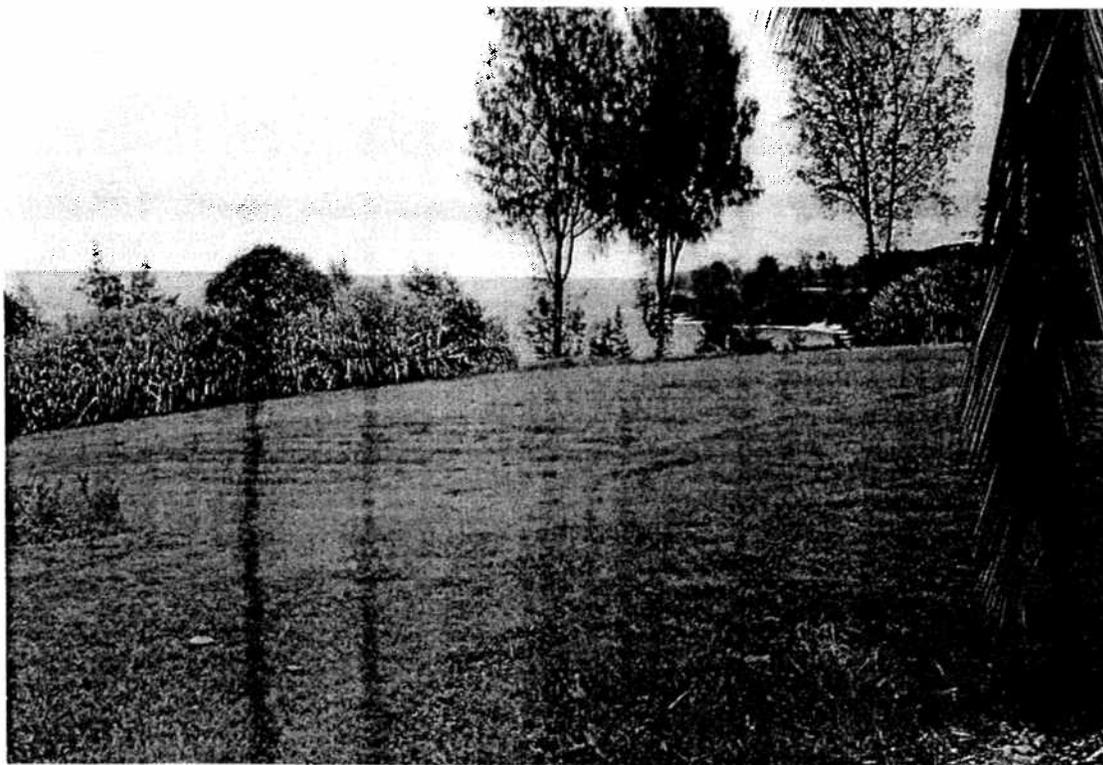


Figure 5. Southern portion of project area, view to the east/southeast

BACKGROUND

This section of the report presents several classes of background information relevant to the project area and its surrounding region. Current understanding of traditional Hawaiian land-use is outlined along with an explanation of Historic Period modifications and exploitation. A historical overview of the Hilo Railroad-Hawaii Consolidated Railway is also presented. Prior archaeological studies conducted in and around the project area are then reviewed, followed by a discussion of relevant Land Commission Awards and Grants. The background information is then used in the following section to develop a set of expectations for the current survey.

Hilo-pali-Kū

The project area is located squarely in what was traditionally known as *Hilo-pali-Kū* or 'Hilo of the upright cliffs.' The name is apt for such a treacherous coastline. Sheer cliffs run from the Wailuku River to Waipi'o and beyond, broken only by a string of relatively narrow gulches pouring down from the slopes of Mauna Kea. Although travel along this coast was once difficult, the broad plateaus, or *kula*, between the gulches are very fertile as are the lush bottom-lands of the larger gulches. These areas once supported a large pre-contact Hawaiian population subsisting on crops such as taro, sweet potato, banana, and coconut. Other crops such as 'awa, bamboo, and sugar cane were also cultivated on the *kula* lands. According to Handy and Handy (1972:537), much of the *kula* land along the nearby and comparable Hāmākua Coast was forested with *kukui*. This may have been the case for South Hilo as well. Early accounts provide some information on the South Hilokula landscape in the early 1800s:

The light and fertile soil is formed by decomposing lava, with a considerable portion of vegetable mould. The whole is covered with luxuriant vegetation, and the greater part of it formed into plantations, where plantains, bananas, sugar-cane, taro, potatoes and melons, come to the greatest perfection. Groves of cocoa-nut and bread-fruit trees are seen in every direction, loaded with fruit, or clothed with luxuriant foliage. (Ellis in Handy and Handy 1972:539)

For North Hilo, which contains an identical environment:

The face of the country by which we sailed, was fertile and beautiful, and the population throughout considerable. The numerous plantations on the tops or sides of the deep ravines, or vallies, by which they were frequently interspersed, with the meandering streams running down them into the sea, presented altogether a most agreeable prospect. (Ellis in Handy and Handy 1972:539)

Accounts of Hāmākua to the north also speak of organized agriculture and habitation in the *kula* lands:

The land we passed in the forenoon rose in a steep bank from the water side and from thence the country stretched back with an easy acclivity for about four or five miles, and was laid out into little fields, apparently well cultivated and interspersed with the habitations of the natives. Beyond this the country became rugged and woody, forming mountains of great elevations. (Menzies in Handy and Handy 1972:537)

The lowland portion of South Hilo was clearly a region thriving with traditional Hawaiian habitation and cultivation. Like most other parts of Hawai‘i, introduced diseases and global economic forces would have a devastating impact on traditional life-ways in the early to mid-1800s. Due to its rugged coastline and many deep gulches, however, transportation difficulties were severe in South Hilo, North Hilo, and Hāmākua. This served to delay large-scale commercial exploitation of the *kula* lands. In the second half of the nineteenth century these problems were overcome and sugar cane plantations replaced subsistence agriculture and grazing as the dominant land use.

Within a few years of the 1876 Treaty of Reciprocity a number of new plantations were in production. According to Best (1978:123), the new plantations commonly extended some two to three miles inland from the coast. Elevations ranged from 250 feet above sea level along the shoreline bluffs to 2,000 feet above sea level at their western (*mauka*) limits. Ocean frontage could range from two to six miles. Railroads operating on steam and animal power were built on some plantations by 1887. Other plantations utilized flumes or cable railways to transport cane from the fields to the coastal mills. The redoubtable Claus Spreckles owned much of this acreage including both Hakalau and Wailea Plantations. By 1911, both these plantations were served by the newly built Hāmākua Division of the Hilo Railroad. Sugar production in the area weathered the partial destruction of the Hakalau Mill by a *tsunami* in 1946 and operations continued into the late twentieth century.

Throughout their productive existence, the Wailea and Hakalau plantations employed large numbers of immigrants and their Hawai‘i-born offspring. This labor force was housed in camps situated at various elevations within the plantations. Two camps, known collectively as the Wailea Camps, were located to the south and west of the current project area (Figure 6). The camp to the south of the project area housed workers employed at the Wailea Mill and was known as Wailea Japanese Camp (Maly 1994:A-18). One marked gravesite is present there and is under the jurisdiction of the State of Hawaii.

To the west of the project area was Spanish Camp. This site is now occupied by a greenhouse and residential structure. Interestingly, Spanish Camp abuts the unnamed Gulch that bounds the project area to the north. The region west (*mauka*) of Spanish Camp is reported to contain an area where Hawaiian families had graves (Maly 1994:A-18). Although most graves from the camps were probably disinterred (particularly the Japanese), interviews with former residents conducted by Kepā Maly suggest that some may still be present (Maly 1994:A18).

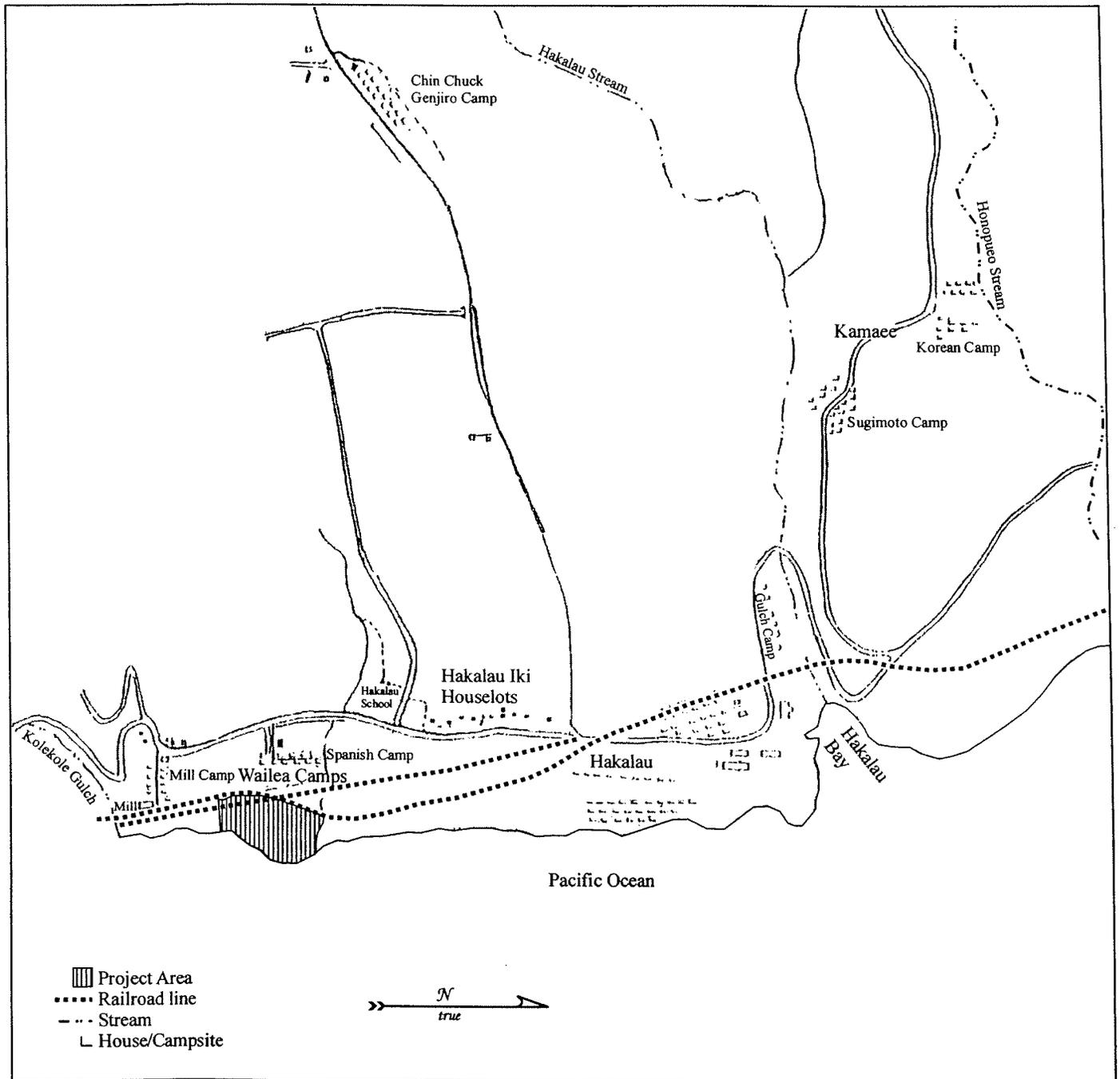


Figure 6. Project area showing camps near Hakalau. Adapted from a detail of the 1940 Hakalau Plantation Company Domestic Water Supplies Map (Courtesy of James McCully).

Railroads

Historic maps indicate that a railroad right-of-way once crossed the western portion of the project area; therefore, we briefly review the history of railroads in South Hilo, North Hilo, and Hāmākua Districts.

The story of railroads in Hawai‘i is a study in the ebb and flow of economic forces and governmental policy. With the 1875 ratification of the Treaty of Reciprocity between the United States of America and the Hawaiian Kingdom, economic conditions were ripe for the development of many large-scale commercial enterprises in the islands. Among the products which could be exported to the United States free of tariff under the treaty were

muscovado, brown, and all other unrefined sugar, meaning hereby the grade of sugar heretofore commonly imported from the Hawaiian Islands, and now known in the markets of San Francisco and Portland a "Sandwich Island Sugar;" syrups of sugar-cane, melado, and molasses (Article I, Treaty Of Reciprocity between the United States and the Hawaiian Kingdom, 1875).

These words would prove to have a profound impact on the economy, landscape, and ethnic composition of the Hawaiian Islands. Until this time, sugar was produced on a relatively small scale using labor-intensive methods of cultivation, harvesting, and transportation (Conde 1971:11). Crops and product were still transported by beast and cart. Now that Hawaiian sugar had free access to the American market, the cane plantations were poised to expand and modernize their operations. Railroad construction was one of the most important elements of governmental and private sector planning in this regard.

On the Island of Hawai‘i, the first major line to be constructed was in North Kohala District. Operated as the Hawaiian Railroad Company, the narrow-gauge line ran some 20 miles connecting Māhukona Harbor with Honoipua Landing, Kohala Landing, and six sugar cane plantations (Conde 1971). The Hawaiian Railroad Company was the brainchild of one Samuel Gardner Wilder (1831-1888), already the owner of an inter-island steamship company and Minister of the Interior of the Hawaiian Islands. Wilder’s railroad operated continuously, with occasional changes in ownership and name, until truck hauling took over transportation in 1945. The North Kohala line, however, was envisioned as only the first step toward a much larger system connecting the cane fields of Kohala, Hāmākua, and Hilo Districts with Hilo Harbor, the only protected deep-water port on the island. Although Wilder didn’t live to see it happen, rail lines eventually connected Hilo with plantations as far north as Pa‘auilo and with sugar, logging, and tourism operations in Puna District (Clark et al. 2001).

The Hilo Railroad Company

In 1898, Benjamin F. Dillingham planned a large sugar mill at ‘Ōla‘a (now Kea‘au) with its produce to be transported to Hilo via a railroad he would also construct —the Hilo Railroad. A 50 year charter for the Hilo Railroad Company was granted by the Republic of Hawaii in 1899. Under the charter, the Hilo Railroad Company was authorized to construct rail lines anywhere on the Island of Hawai‘i. Furthermore, government land was offered free of charge for the purposes of right-of-way, yards, or station areas (Best 1978:125). Following construction trends in the United States, Dillingham was determined to build both his internal Olaa Sugar Company tracks and the common carrier running to Hilo to standard gauge (4 ft ½ in). This was to be the first and only standard gauge railroad in Hawai‘i.

Initial construction began in 1899 and by 1900 the grade had reached ‘Ōla‘a. By 1901 the Olaa Sugar Company tracks had been finished with production scheduled to begin in 1902. Other tracks were constructed in the following years as tourism to Kīlauea and harvesting of mahogany, *koa*, and ‘*ōhi‘a* above of Pāhoa became viable enterprises (see Clark et al. 2001:5-10).

In 1908 Hilo Railroad’s trunkline was expanded with construction of the Hamakua Division (Figure 7). The impetus for this new line was a stipulation in a Rivers and Harbors bill recently passed by the United States Congress. In exchange for construction of a breakwater in Hilo Bay, the Hilo Railroad was required to build a new wharf, a one-mile rail extension from Waiākea, and a 50 mile rail extension north to Honoka‘a Mill (the Hamakua Division). The extension to Honoka‘a would finally connect the sugar mills of South Hilo, North Hilo, and Hāmākua with Hilo’s protected harbor.

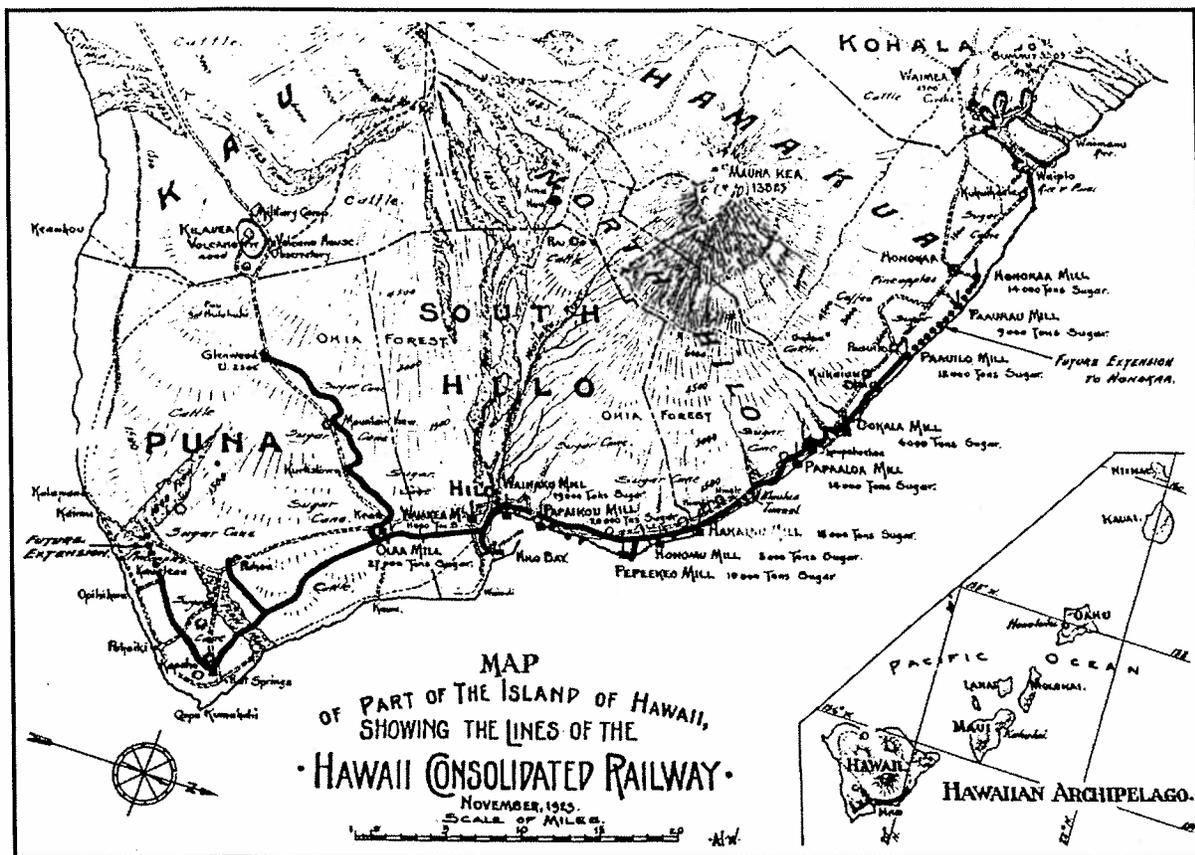


Figure 7. Hawaii Consolidated Railway map of rail system as of November 1923 (Annual Report 1926).

The Hamakua Division

A detailed description of the construction and operation of the Hamakua Division can be found in Best (1978), from which much of the following is abstracted.

The first section of the Hamakua Division ran 12.7 miles from Hilo to Hakalau Mill, crossing many deep gulches and valleys along its route. Construction of the so-called Hakalau extension began in 1908 and was completed by 1911 at a cost of \$800,000. Although the Hakalau extension went far over budget, the Hilo Railroad floated another \$750,000 in authorized bonds and continued on to Pa'auilo. This 21 mile section proved even more difficult than the first, requiring the construction of 13 steel bridges, most of which were over 100 feet high (Best 1978:133). The highest bridge reached 193 feet and the longest spanned 1,006 feet. In all, fully 3,100 feet of tunnel was excavated, the longest single tunnel measuring 2,700 feet. By any measure of railroad aesthetics, the tunnels, turns, trestles, and rugged coastline of the Hamakua Division marked it as a breathtakingly beautiful railroad.

As might be expected, these engineering feats came at a cost. Following completion of the Pa'auilo section in 1913, the company reported a total cost of \$3,500,000. This comes to a staggering \$106,000 per mile. Indeed, expenditures by the Hilo Railroad Company during its 16 year existence totaled \$6,036,105 for only 100 miles of line (Best 1978:139).

By 1915, Dillingham's railroad was in dire financial straits. Unable to pay bondholder coupons, Hilo Railroad Company soon went into receivership. It was thereupon purchased by the bondholders for \$1,000,000 on March 1, 1916 and reorganized as the Hawaii Consolidated Railway. Additional engines and rolling stock were purchased over the next few years.

In 1920 the company attempted to capture a larger piece of the growing tourist business with its *Scenic Express*. It had long offered service to Glenwood for tourists visiting Kilauea, but motorbuses now dominated this route. The Hāmākua coast, by contrast, was not easily accessible by automobile. Hawaii Consolidated Railway was therefore able to run passenger coaches profitably along the Hamakua Division with stops at scenic points.

The rise of the automobile, however, was a harbinger for the railroads. Passenger business declined precipitously in the early decades of the twentieth century. In 1920, 607,220 passengers were carried. In 1930 the number dropped to 77,894 and in 1936 to 16,681 (Best 1978:145-146). At this point, the remaining passenger cars were converted to other uses. The little passenger traffic which remained was hauled on custom-built railbuses. Passenger service saw a significant spike in the early 1940s due to war-time gas rationing and the presence of large numbers of servicemen. In 1943 passenger totals had rebounded to 103,635.

The automobile was also taking a toll on the railroad's industrial customers. As roads were improved and gasoline prices dropped, simple economics favored trucking over trains. The trend was clear at the time and is even more so from an historical perspective. Ironically, just as rail transportation was in the throes of decline, Hawaii Consolidated Railway was by 1945 almost out of debt for the first time since its inception. The great *tsunami* of 1946, however, would soon seal its fate.

End of the Railroad

On April 1, 1946 a *tsunami* triggered by an earthquake in the Aleutians slammed into Hawai'i's north shore. The Hawaii Consolidated Railway had received a fatal blow. Track along the waterfront was entirely washed out and the Hilo Station was a wreck. An entire span of the Wailuku Bridge was torn out and washed upriver. In the north, the center span of the Kolekole Bridge was destroyed (Figure 8). Water in Kolekole and Hakalau Gulches reached 37 feet (Klein et al. 1985:10). In addition to the outright destruction, the *tsunami* also damaged the foundations, bracing members, and struts of bridges in its path (e.g. Hakalau Bridge (Klein et al. 1985:10)). Needless to say, the Hamakua Division was out of business and total costs for repairs were estimated at \$500,000.

Hawaii Consolidated put the question of rebuilding to a vote. Shippers were asked to decide the matter, and with the exception of Theo. H. Davies Ltd., they voted to ship by truck. The Hamakua Division would not be repaired.

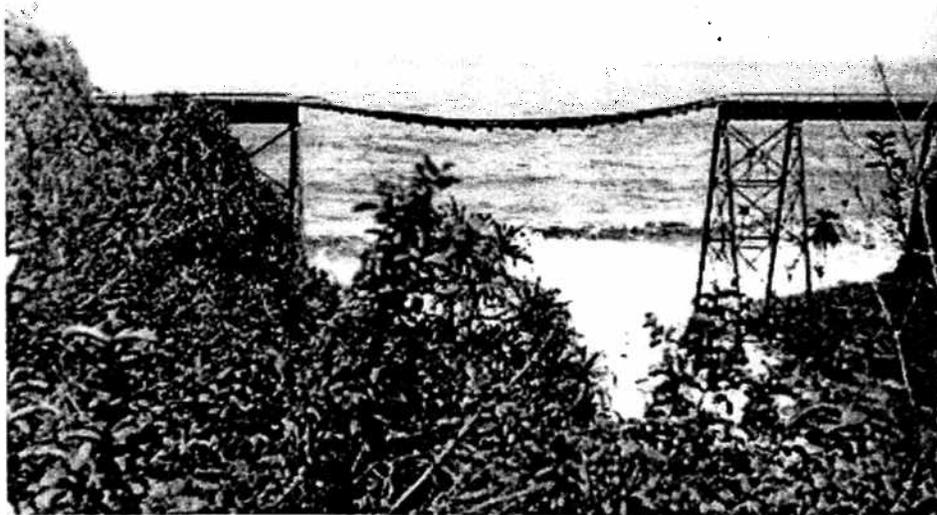


Figure 8. View of Kolekole Bridge after 1946 *tsunami*, center support washed out. (Pacific Tsunami Museum Archives-Henrietta Carvalho Collection).

With the Hamakua Division officially defunct, Hawaii Consolidated Railway offered its right-of-way, bridges, and tunnels to the territorial division of highways and Hawai'i County supervisors. In a bold act of short-sightedness, both agencies refused. Un-phased, Hawaii Consolidated liquidated its assets on December 26, 1946. The entire railroad was sold to Gilmore Steel & Supply Co. of San Francisco for a mere \$81,000. Most of the bridges were dismantled and the rails were pulled up along the length of the Hamakua Division. Together with the remaining rolling stock, they were shipped to California as scrap metal. In the midst of the disassembly, the Division of Highways belatedly decided that Route 19 needed to be relocated and improved. It purchased the remaining bridges, plus some that were awaiting shipment in Hilo, for \$302,723.53. Steel from the dismantled railroad bridges was used to widen the standing bridges for their new roles as highways. Five of the former Hamakua Division bridges remain in use today.

In Hilo, the damaged docks and track were repaired and rail service was continued to Olaa Sugar under lease from Gilmore Steel & Supply Co. Product was transported by train from Olaa Sugar until December of 1948, at which time the line was permanently closed. All remaining assets were sold to The Independent Ironworks of Oakland for scrap.

Previous Archaeology

Among the earliest archaeological work to be done in East Hawai'i was that of the early twentieth century *heiau* researchers Thrum and Stokes (Thrum 1908, Stokes and Dye 1991). Neither investigator was able to identify *heiau* in the project area nor in the larger region between Honomū and Hakalau. In the early 1930s, A.E. Hudson, working under the aegis of the Bishop Museum, also conducted archaeological investigations in East Hawai'i (Hudson 1932). He found little in the region surrounding the project area, although he did note the presence of a .25 mile square area of taro terraces in the upper part of Hakalau Gulch (Hudson quoted in Maly 1994:A-15).

A search of archaeological reports filed with SHPD-DLNR was conducted as part of the background research for this project. No archaeological reports within the project area or in the surrounding land parcels were registered. In fact, no archaeological research has been reported for TMK 3-2-9-003 or TMK 3-2-8-015. As part of an environmental assessment for seismic retrofitting of Kolekole Bridge, however, an archaeological survey was performed at the base of Kolekole Gulch (Hammatt and Colin 1998). The project area consisted of "the slopes of Kolekole Gulch under and surrounding the Kolekole Bridge and approximately 100.0 feet of the slopes *mauka* and *makai* of the bridge" (Hammatt and Colin 1998:i). Square footings from the pre-1946 Kolekole Bridge were noted outside the project area and a cylindrical cement footing was observed in the middle of Kolekole Stream. No other cultural remains were observed.

One archaeological project (Walker and Rosendahl 1994a, 1994b) was completed in TMK 3-2-9-002, 004. This project involved the survey of some 595 acres between Hawaii Belt Road and the 1,500 foot elevation mark. The parcels were located on the northern side of Hakalau Gulch. Low-level aerial (helicopter) survey was conducted on some uncultivated portions of the area. Other uncultivated areas were inspected using "variable-coverage (partial to 100%) variable-intensity ground survey" (Walker and Rosendahl 1994b: 2). Walker and Rosendahl report that the project area had been extensively modified in historic times for sugar cane cultivation. For this reason, no archaeological sites or "significant cultural materials of any kind" were found (Walker and Rosendahl 1994b:2) (Walker and Rosendahl 1994b:2).

Māhele Land Awards and Grants

A review of historic documents associated with the project parcels indicates that no Land Commission Awards are present in or near the project area. However, the northern and central portions of the project area were originally granted to one Na'ai in 1852 and 1855 (Grants 803 and 1874 respectively). The southernmost parcel within the project area was previously owned by Wailea Milling Company, Ltd. Historic maps also indicate that Hakalau Plantation Company and S. B. Hele'la deeded portions of a former railroad right-of-way along the western project area boundary to Hilo Railroad Company in 1910.

PROJECT EXPECTATIONS

Based on the background information summarized above, a set of archaeological expectations for the project area can be formulated. Historical data indicate that the general area was part of the heavily exploited traditional Hawaiian *kula* lands. For the last 100 years, however, the area has been utilized for sugar cane cultivation and associated transportation and employee housing infrastructure. It is likely that these historic era modifications have largely destroyed any traditional Hawaiian features once present in the project area. The extreme coastal fringe and the small gulch to the north may have been unaffected by these disturbances. The gulch, however, is very steep-sided and descends directly to a rocky streambed. It is a very unsuitable place for traditional Hawaiian cultivation or habitation.

Perhaps the most important disturbance to the project area was the construction of the Hamakua Division of the Hilo Railroad. This construction effort probably involved significant landscape modification to the western and central portions of the project area. Once the railroad was built, the project area was effectively cut off from the western (*mauka*) lands. The project area probably received little impact then until the railroad was scrapped in 1946. More recently, the current landowner claims to have significantly modified the project area landscape. This was accomplished primarily by filling in the western and central regions, but also included the planting of a variety of shrubs and trees.

It is expected that remains associated with historic sugar cane cultivation, transportation, and employee housing will be the most likely finds in the project area. These remains may be concentrated in the western and central portions of the area. Traditional Hawaiian agricultural and habitation features are unlikely to have survived historic disturbance. If present, they may include stone-constructed mounds, platforms, *heiau*, or walls. These would likely be found in the lesser-impacted eastern portion of the project area.

FIELDWORK RESULTS

Amy Kasberg, B.A. and Michael Desilets, M.A. conducted fieldwork for this project on May 17, 2004, under the supervision of Robert Rechtman, Ph.D. Project area boundaries were clearly identifiable in the field. The entire area was systematically and intensively examined using parallel north to south trending transects at 15 meter spacing. Visibility was very good across most of the project area, with dense vegetation present only along the eastern cliff-line.

Systematic survey of the subject parcels produced one site—SIHP Site 50-10-26-24212. The site includes two Historic Period railroad features (Features 1 and 2). These include a possible railroad grade section and a railroad trestle abutment. They were both recorded in the northwestern part of the project area (Figure 9). These features are described in detail below.

The survey produced no evidence of traditional Hawaiian artifacts or features. Also, there is no evidence that the area is currently being accessed for the exercise of traditional and customary practices associated with any traditional cultural properties or resources.

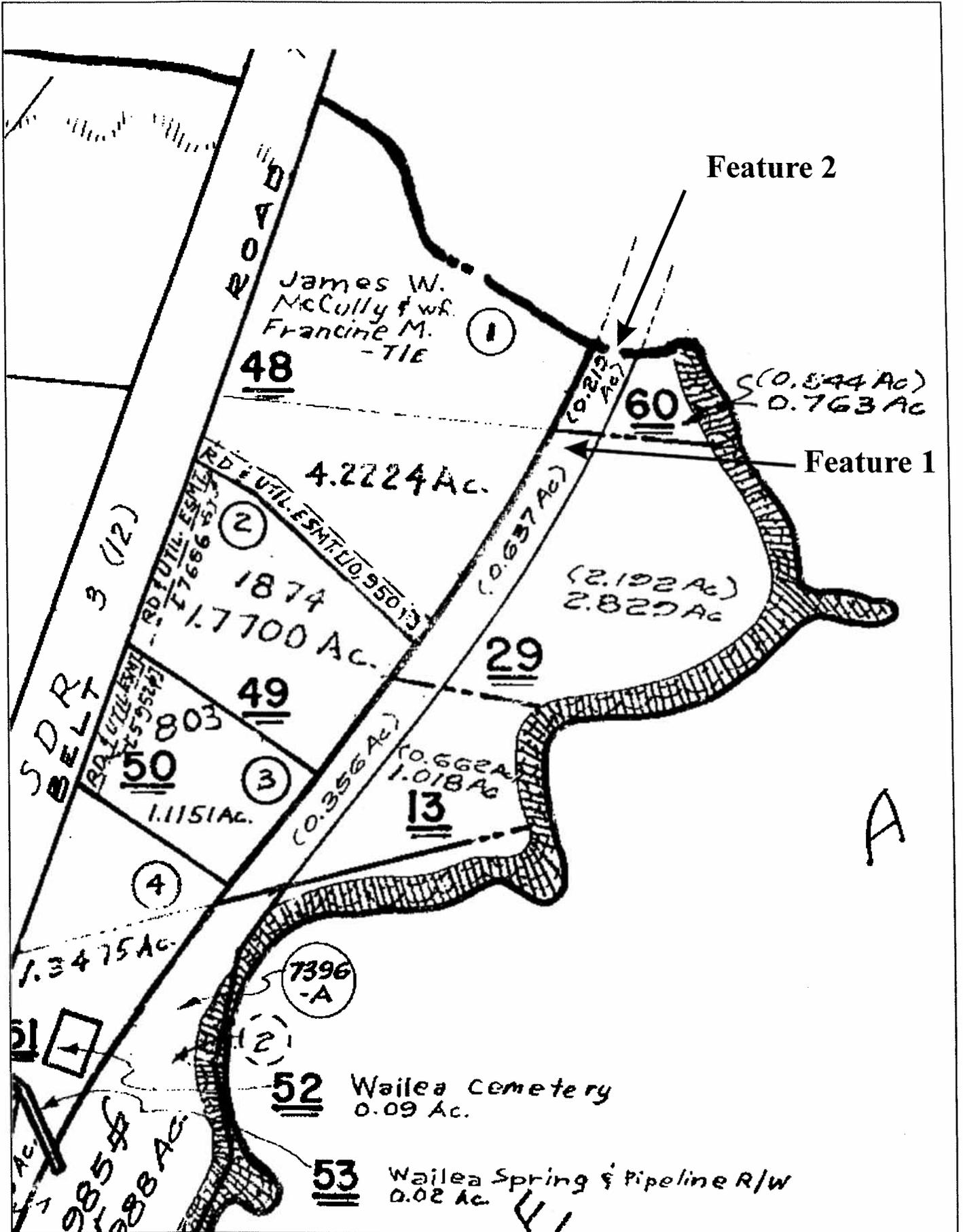


Figure 9. Detail of Tax Map Key 3-2-9-03 showing feature locations.

SIHP Site 21212 Feature 1

Feature 1 is a possible remnant of the former Hilo Railroad-Hawaii Consolidated Railway railroad grade (Figure 10). It is located in the northern portion of the project area (see Figure 9). The section measures 10.0 to 15.0 meters in length (north-south) and approximately 4.0 meters in width. Feature 1 is in an area that has been extensively landscaped and filled in modern times, so it is doubtful whether this possible railroad grade is in its original state. Tax Map Keys and U.S. Geologic Survey maps, however, do show the rail corridor as being in this location. No surface remains were observed on Feature 1 or in the surrounding area.



Figure 10. SIHP Site 24212 Feature 1, possible railroad grade, view to the south.

SIHP Site 24212 Feature 2

Feature 2 is a stone and concrete railroad abutment (Figures 11, 12, 13, and 14). This feature is located at the northern boundary of the project area (see Figure 9). It is situated near the bottom of a deep, unnamed gulch that leads to the ocean. The main body of the abutment is semi-circular in cross-section and runs east to west, parallel with the gulch. It is composed of cemented *pāhoehoe* cobbles and boulders and measures 16.6 meters long (east-west) by 1.9 meters wide (north-south) and stands 180 centimeters high. At its western extremity, the feature exhibits a raised section measuring 2.9 meters long (north-south) by 0.6 meters wide (east-west) and stands 170 centimeters high (see Figure 13). The raised portion is composed of stacked and faced, medium-sized, square-cut *pāhoehoe* cobbles. Concrete is present between the stones. The top of this segment slopes to the east at an approximately 45° angle.

A tire and two pieces of unidentified rusted metal were recorded to the immediate south of Feature 1, nestled between the feature and the southern gulch slope.

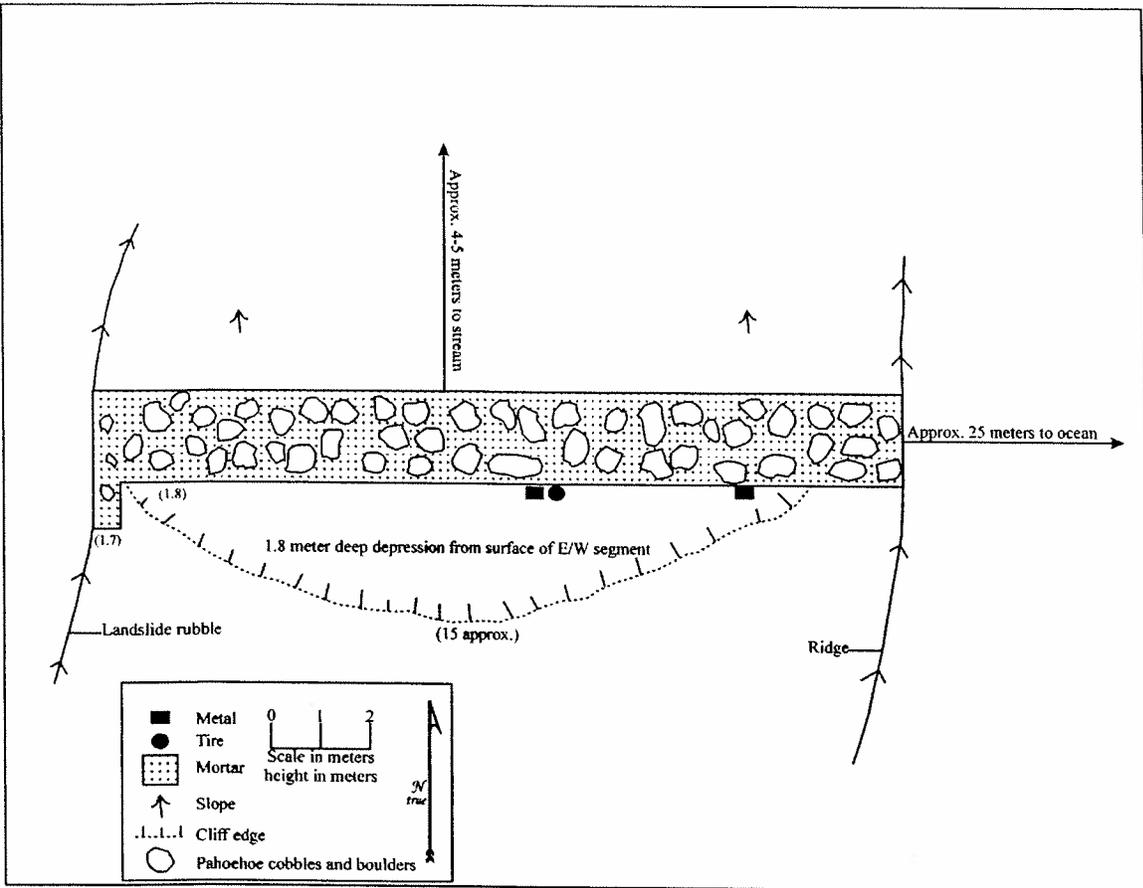


Figure 11. Plan view of SIHP Site 24212 Feature 2.



Figure 12. SIHP Site 24212 Feature 2, trellis abutment, view from above.



Figure 13. SIHP Site 24212 Feature 2, trestle abutment, view to the west.



Figure 14. SIHP Site 24212 Feature 2, trestle abutment, view to the east.

SIHP Site 24212 Discussion

From the background research, we know that the Hāmākua Division of the Hilo Railroad-Hawaii Consolidated Railway ran through the western portion of the project area, entering from a parcel to the south and exiting across a minor gulch to the north. A terrace (Feature 1) on the western slope of the project area is situated in the approximate location of the railroad grade. It is therefore very likely that this terrace is a remnant of the historic Hāmākua Division. Alternatively, it is possible that past land use associated with sugarcane cultivation by prior owners may have resulted in modified portions of the property in this vicinity. At present, it is not clear whether those earlier actions have entirely obscured the original Hāmākua Division grade.

Another railroad related feature was identified in the gulch that bounds the project area to the north. Feature 2 is in the approximate position at which the railroad crosses this small, unnamed gulch. It is interpreted as a possible trestle abutment. The original trestle, due to its elevation, likely survived the *tsumani* of 1946. Flood levels at Kolekole Gulch to the south and Hakalau Gulch to the north reached 37 feet above sea level (Klein et al. 1985:10). Given that this gulch is smaller and narrower, the water level likely reached an even higher elevation. Even if the surge water reached as high as the abutment, however, its force at this point would be greatly reduced. In this regard, it is important to note that the two trestles (Wailuku and Kolekole) along the Hāmākua Division that sustained the greatest damage from the *tsumani* were based at or very near sea level (Figure 15). It seems unlikely that the *tsumani* of 1946 destroyed the subject trestle, as it is situated some 50 feet or more above sea level.

A more likely scenario is that the trestle was removed either during initial deconstruction of the line by Gilmore Steel & Supply Co., or else later by the Division of Highways. The tire and metal remains may have been thrown over the bank from above or transported down the gulch any time in the last 100 years. It is even possible that they are discarded material from Spanish Camp, which was located only a few hundred feet upstream. In any case, they retain little integrity and have no clear association with the former railroad or camp.

CONSULTATION

As part of the current study, the Office of Hawaiian Affairs (Ululani Sherlock) and Kepā Maly (Kumu Pono Associates) were contacted in an effort to obtain information about any potential traditional cultural properties and associated practices that might be present or have occurred in this portion of Wailea Ahupua‘a. Neither had any specific information relative to this project area, however, the Office of Hawaiian Affairs suggested we contact the Laupāhoehoe Hawaiian Civic Club. To that end, we contacted Lucille Chung and Walter Victor, who in turn recommended that we contact Jack or Waichi Ouye, Yukio Takaya, or Lorraine Mendoza. Lorraine in turn suggested contacting Kiyoshi Kubo and Masaichi Chinen. Interviewees remembered that the railway ran across the property until the 1946 *tsumani* destroyed the Kolekole Bridge. On the adjacent property to the Hilo side of the study area there was a pig farm in the gulch used by camp residents and a trail that accessed the shore. Fisherman used this trail and there was good fishing immediately shoreward of the study area.

None of the organizations/individuals contacted had any information relative to the existence of traditional cultural properties in the immediate vicinity of the current project area; nor did they provide any information indicating past or current use of the area for traditional and customary practices.

CONCLUSIONS

Systematic survey of three parcels (TMK 3-2-9-03: 13, 29, 60) produced no evidence of traditional Hawaiian remains or evidence that the area was currently being accessed for the exercise of traditional and customary practices.

One historic era site—SIHP Site 24212, was recorded. The site contains two features associated with the Hamakua Division of Hilo Railroad-Hawaii Consolidated Railway and were recorded in the northwestern portion of the project area. One is a possible section of railroad grade and the other is a railroad trestle abutment. The features were in active use by the railroad from 1911 to 1946. Their primary function was to facilitate the transport of raw sugar from the many mills along the Hilo and Hāmākua Coasts to the harbor at Hilo Bay. In later years, they also served the secondary function of facilitating tourism.

SIGNIFICANCE EVALUATION AND TREATMENT RECOMMENDATIONS

The above-described archaeological site is assessed for its significance based on criteria established and promoted by DLNR-SHPD and contained in the Hawai'i Administrative Rules 13§13-284-6. This significance evaluation should be considered as preliminary until DLNR-SHPD provides concurrence. For a resource to be considered significant it must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- A Be associated with events that have made an important contribution to the broad patterns of our history;
- B Be associated with the lives of persons important in our past;
- C Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- D Have yielded, or is likely to yield, information important for research on prehistory or history;
- E Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

Site 24212 is considered significant under Criteria D for the information it has yielded regarding early twentieth century sugar cane transportation infrastructure. As the current inventory survey project recorded Site 24212 in detail, however, no further work is recommended.

In the unlikely event that archaeological resources are encountered during future development activities at TMK 3-2-9-03: 13, 29, and 60, work in the immediate area of the discovery should be halted and DLNR-SHPD contacted as outlined in Hawaii Administrative Rules 13§13-275-12.

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LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 22, 2004

Robert Rechtman, Ph.D.
Rechtman Consulting Inc.
HC 1 Box 4149
Kea'au, Hawaii 96749

LOG NO: 2004.3657
DOC NO: 0412MM09

Dear Dr. Rechtman:

**SUBJECT: Chapter 6E-42 Historic Preservation Review, Replacement Pages for:
"Archaeological Inventory Survey and Limited Cultural Assessment
of TMK 3-2-9-03:13, 29, 60" (RC 0247)
Ahupua`a of Wailea, South Hilo, Hawaii Island
TMK: (3) 2-9-003:013, 029, 060**

Thank you for submitting the above mentioned revised report for our review, which we received on September 3, 2004. The report was originally submitted as an Archaeological and Cultural Assessment, however, since a historic property was identified during the survey (Site No. 50-10-26-24212), the report needed to be submitted as an Inventory Survey, subject to review under Hawaii Administrative Rules (HAR) §13-276.

Site 24212 consists of portions of a possible railroad grade section and trestle abutment, and is assessed as significant under Criterion D for the information it has yielded regarding early twentieth century sugar cane transportation. No further work is recommended for the 4.5-acre project area.

We agree with your assessment and recommended treatment. We consider the report to be adequate to meet the requirements of HAR §13-276 and accept it as final. If you have any questions about this review, please contact MaryAnne Maigret in our Hawaii Island office at (808) 327-3690 or Dr. Sara Collins at (808) 692-8026

Aloha,

Melanie A. Chinen, Administrator
State Historic Preservation Division

MM:jen

c: Christopher J. Yuen, Director, Hawaii PIng, 101 Pauahi St, Ste 3, Hilo, HI 96720-3043

RECHTMAN CONSULTING, LLC

HC 1 Box 4149 Kea'au, Hawai'i 96749-9710
phone: (808) 966-7636 fax: (808) 443-0065
e-mail: bob@rechtmanconsulting.com
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

January 24, 2005

RC-0247

Brian T. Nishimura
Planning Consultant
101 Aupuni Street, Ste. 217
Hilo, Hawaii 96720

Dear Mr. Nishimura:

Subject: James McCully
Petition for District Boundary Amendment
TMK: (3) 2-9-003: 013, 029 & 060
Wailea, South Hilo District, Island of Hawaii

This letter serves to advise you of the approval status of the *Archaeological Inventory Survey and Limited Cultural Assessment of TMKs: 3-2-9-03:13, 29, and 60; Wailea Ahupua'a, South Hilo District, Island of Hawai'i*, and also to provide you with additional information concerning the cultural assessment aspect of the study.

Background

The report was initially submitted to the State Department of Land and Natural Resources - Historic Preservation Division ("DLNR-SHPD") on July 16, 2004 under the title *Archaeological and Limited Cultural Assessment of TMK: 3-2-9-03:13, 29, and 60; Wailea Ahupua'a, South Hilo District, Island of Hawai'i*. It was acknowledged by letter dated August 27, 2004.

This letter states that the information presented, which was intended to satisfy the requirements of the County of Hawai'i Planning Department and DLNR-SHPD with respect to permit approval for a proposed State land use district boundary amendment, "is generally adequate for predicting the kinds of historic properties that might be found during the survey" and that the "background information and previous archaeological research is likewise sufficient." The letter also states that "[a]dditionally, the presence of traditional Hawaiian remains or evidence that the area was currently being accessed for the exercise of traditional and customary practices was found to be negative."

Due to the presence of one historical site (SIHP Site 50-10-26-24212, a possible railroad grade station and a railroad trestle abutment), the report had to be revised and resubmitted as an Archaeological Inventory Survey (and not an Assessment).

The report was revised to reflect the requested changes and resubmitted to DLNR-SHPD on September 3, 2004. It was acknowledged by letter dated December 22, 2004. The letter states that DLNR-SHPD considers "the report to be adequate to meet the requirements of HAR §13-276 and accept it as final".

Cultural Assessment

In relation to the archival and documentary research that was conducted for the Archaeological Inventory Survey, archival and documentary information was reviewed for the preparation of the Cultural Assessment as well. This research did not reveal any documentation of any previous or ongoing traditional and customary practices. The area was historically known as *Hilo-pali-Kū* (Hilo of the upright cliffs) and there are a few accounts that indicate that this area, which encompasses the sheer cliffs stretching along the Hāmākua Coast from the Wailuku River to Waipi'o and beyond, once supported a large Precontact Hawaiian population that subsisted on crops such as taro, sweet potato, banana, and coconut. Other agricultural resources such as 'awa, bamboo, and sugarcane were also cultivated on the *kula* lands that stretched from South Hilo to Hāmākua. In the second half of the nineteenth century, the transportation difficulties that had delayed the large-scale commercial exploitation of the *kula* lands were overcome and sugarcane plantations replaced subsistence agriculture and grazing as the dominant land use.

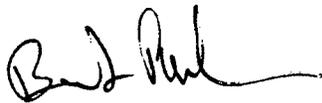
In an effort to identify cultural resources associated with the Petition Area, contact was made with Ululani Sherlock of the Office of Hawaiian Affairs (OHA) and Kepā Maly of Kumu Pono Associates in June of 2004. They were contacted in an effort to obtain information about any potential traditional cultural properties and associated practices that might be present or have occurred in this portion of the Wailea Ahupua'a. Neither contact had any specific information regarding this Petition Area. However, OHA suggested that the Laupāhoehoe Hawaiian Civic Club be contacted as they might have additional information. Lucille Chung and Walter Victor were contacted and they, in turn, suggested that Jack or Waichi Ouye, Yukio Takaya and Lorraine Mendoza be contacted. Lorraine Mendoza recommended that Kiyoshi Kubo and Masaichi Chinen be contacted. All calls were made between June and July, 2004.

Interviewees recalled that the railway used to run across the property until the Kolekole Bridge was destroyed by the *tsunami* of 1946. On the adjacent property to the south (Hilo-side), there used to be a pig farm that was used by camp residents and a trail that accessed the shore. This trail allowed the residents and local fishermen to access the shoreline below the *pali* that bounds the property to the east. This trail was not located on the subject property nor did it cross the subject property.

None of the organizations or individuals that were contacted had any information relative to the existence of traditional cultural properties in the immediate vicinity of the Petition Area; nor did they provide any information indicating past or current use of the area for traditional and customary practices. It is unlikely that there are any traditional and customary practices occurring in the Petition Area as the lands were utilized for sugarcane cultivation and associated transportation for over 100 years. Any traditional Hawaiian features that may have been associated with former cultural practices that may have occurred in the Petition Area would have been destroyed by the sugarcane cultivation and related uses.

Please do not hesitate to contact me should you have any additional questions.

Sincerely,



Robert Rechtman, Ph.D.
Principal Archaeologist

APPENDIX G
OPINION LETTER FROM YOGI KWONG ENGINEERS



May 1, 2007

Mr. R. Ben Tsukazaki, Esq.
Tsukazaki Yeh & Moore
85 W. Lanikaula Street
Hilo, HI 96720

Subject: Preliminary Geotechnical Evaluation of Sea Cliff at McCully Property
TMK: 2-9-003: 013, 029 and 060, Wailea, South Hilo, Hawaii

Dear Mr. Tsukazaki:

Based on your recent request and Yogi Kwong Engineers, LLC's (YKE) sea cliff evaluation in support of a planning study at the McCully property, more specifically identified as TMK: 2-9-003: 013, 029 and 060, Wailea, South Hilo, Hawaii, below is a brief summary of our preliminary geotechnical opinions in support of the planning study. Our services are performed based on our earlier proposal to Mr. James McCully.

We understand the proposed McCully single-family dwelling and related improvements to be constructed on TMK: 2-9-003: 029 will be sited no less than 70 feet inland of the bluff edge. During our site reconnaissance in November 2005, the property was maintained as a grassed area with scattered landscape plantings which did not show observable sign of recent mass wasting above the edge of the sea cliff. Review of 2007 aerial photograph of site observed similar surface conditions.

Based on a review of various historical aerial and topographic photos and maps, as well as the siting of the proposed single-family dwelling no less than 70 feet inland of the top of the bluff at the time of design and construction, I feel that the setback appears prudent based on the height of the existing bluff (approximately 100 to 140 feet high) and a 75-year design life for the dwelling and associated structures against potential coastal erosion caused by intensive or storm wave action, tsunami, and related coastal flooding. The proposed 70-foot setback from the top of the bluff appears reasonable considering the height of the bluff.

We understand that Mr. McCully will retain a qualified geotechnical engineer to perform site and project specific detailed geotechnical investigation for the design and construction of the dwelling and associated structures and related earthworks and hillside stability pertaining to the new development. These services are beyond the scope of YKE's study.

Please feel free to contact us if you have any questions concerning this letter report.

Yours truly,
Yogi Kwong Engineers, LLC

A handwritten signature in black ink that reads 'James Kwong' in a cursive script.

James Kwong, Ph.D., P.E.
Principal

Yogi Kwong Engineers, LLC.
615 Piikoi Street, Suite 1605
Honolulu, Hawaii 96814
Tel: 808.596.2928
Fax: 808.596.2409