DRAFT ENVIRONMENTAL ASSESSMENT

JOAN SHAFER SINGLE-FAMILY RESIDENCE IN THE CONSERVATION DISTRICT AT WA‘AWA‘A

March 2010

TMK (3rd): 1-4-028:001
Wa‘awa‘a, Puna, County of Hawai‘i, State of Hawai‘i

APPLICANT:

Joan Shafer
209 Honeysuckle Lane
Maggie Valley, NC 28751

APPROVING AGENCY:

State of Hawai‘i
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street, Room 131
Honolulu, Hawai‘i 96813

CONSULTANT:

Geometrician Associates LLC
P.O. Box 396
Hilo, Hawai‘i 96721

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CLASS OF ACTION:

Use of Land in Conservation District

This document is prepared pursuant to:
The Hawai‘i Environmental Protection Act,
Chapter 343, Hawai‘i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai‘i Department of Health Administrative Rules (HAR).

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SUMMARY OF PROJECT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Joan Shafer (the applicant) seeks a Conservation District Use Permit (CDUP) to build a single-family residence and related improvements on a 0.392-acre lot located near the shoreline but mauka of a shoreline reserve property, in Waʻawaʻa in the Puna District. The residence would occupy a footprint of 3,488 square feet and would include a garage and lanai. Other features include a driveway, septic system, pond and minimal landscaping using mostly the native or Polynesian species found in the area.

Landclearing and construction activities over about 7,250 square feet (less than half the lot) would produce minor short-term impacts to noise, air and water quality and scenery. These would be mitigated by Best Management Practices that are expected to be required as conditions of the Conservation District Use Permit and grading permit. The applicant will ensure that her contractor performs all earthwork and grading in conformance with applicable laws, regulations and standards. The project has been fully surveyed for threatened and endangered plants and none are present. Archaeological and cultural resources have been avoided through inventory, consultation, and site planning, which has situated the structures as far mauka as feasible. In the unlikely event that additional undocumented archaeological resources, including shell, bones, midden deposits, lava tubes, or similar finds, are encountered during construction within the project site, work in the immediate area of the discovery will be halted and the State Historic Preservation Division will be contacted to determine the appropriate actions.

PART 1: PROJECT DESCRIPTION AND E.A. PROCESS

1.1 Project Description and Location

Joan Shafer (the applicant) seeks a Conservation District Use Permit (CDUP) to build a single-family residence and related improvements on a 0.392-acre subdivision lot located just mauka of a shoreline beach reserve property in Waʻawaʻa, on the Puna Coast of the Big Island of Hawaiʻi. The 3,488-square-foot, single-story home would include three bedrooms with a study, garage and lanai. The project would also include a pond and minimal landscaping using mostly the native or Polynesian species found in the area, as well as a driveway and a septic system located on the mauka side of the lot (Figures 1-3).

The property is located in the northwestern corner of the Waʻawaʻa Subdivision on the makai side of the Government Beach Road and mauka of a shoreline beach reserve property held in common by the subdivision owners. This strip provides a setback from the shoreline and an area for residents and the public to walk, fish or gather; public access to this strip is directly adjacent to the Shafer lot, within the 78.33-acre parcel (TMK 1-4-003:018) to the west that is owned by the State of Hawaiʻi and makes up a portion of the Nānāwale Forest Reserve. Adjacent to the east is another subdivision lot of 0.325 acres (TMK 1-4-028:002).

1.2 Environmental Assessment Process

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawaiʻi Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawaiʻi Administrative Rules (HAR), is the basis for the environmental impact assessment process in the State of Hawaiʻi. According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria. Part 4 of this document states the anticipated finding that no significant impacts are expected to occur, based on the preliminary findings for each criterion made by the consultant in consultation with the Hawaiʻi State Department of Land and Natural Resources, the approving agency. If, after considering comments to the Draft EA, DLNR concludes that, as anticipated, no significant impacts would be expected to occur, then the agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to proceed. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) will be prepared.

1.3 Public Involvement and Agency Coordination

The following agencies, organizations and individuals have been consulted during the Environmental Assessment Process:

- County:
  - Planning Department
  - County Council
  - Department of Public Works
  - Police Department
- State:
  - Department of Health
  - Department of Land and Natural Resource (DLNR)
    - State Historic Preservation Division
    - Office of Conservation and Coastal Lands
    - Na Ala Hele Program
  - Office of Hawaiian Affairs
- Private:
  - Sierra Club
  - Malama O Puna

Copies of communications received during early consultation are contained in Appendix 1a.

PART 2: ALTERNATIVES

2.1 Proposed Project

The proposed project and its location are described in Section 1.1 above and illustrated in Figures 1-3.

2.2 No Action

Under the No Action Alternative, the residence would not be built. The lot, which was part of a larger property legally subdivided for eventual residences, would remain unused. Trash dumping, including potentially toxic materials and bulky items, could become a problem, as it has in some other vacant land in this area. Inappropriate entry into caves with resources important to Hawaiian culture could also occur. This EA considers the No Action Alternative as the baseline by which to compare environmental effects from the project. No other alternative uses for the property are desired by Ms. Shafer, and thus none are addressed in this EA.

Figure 1a
Project Location Maps

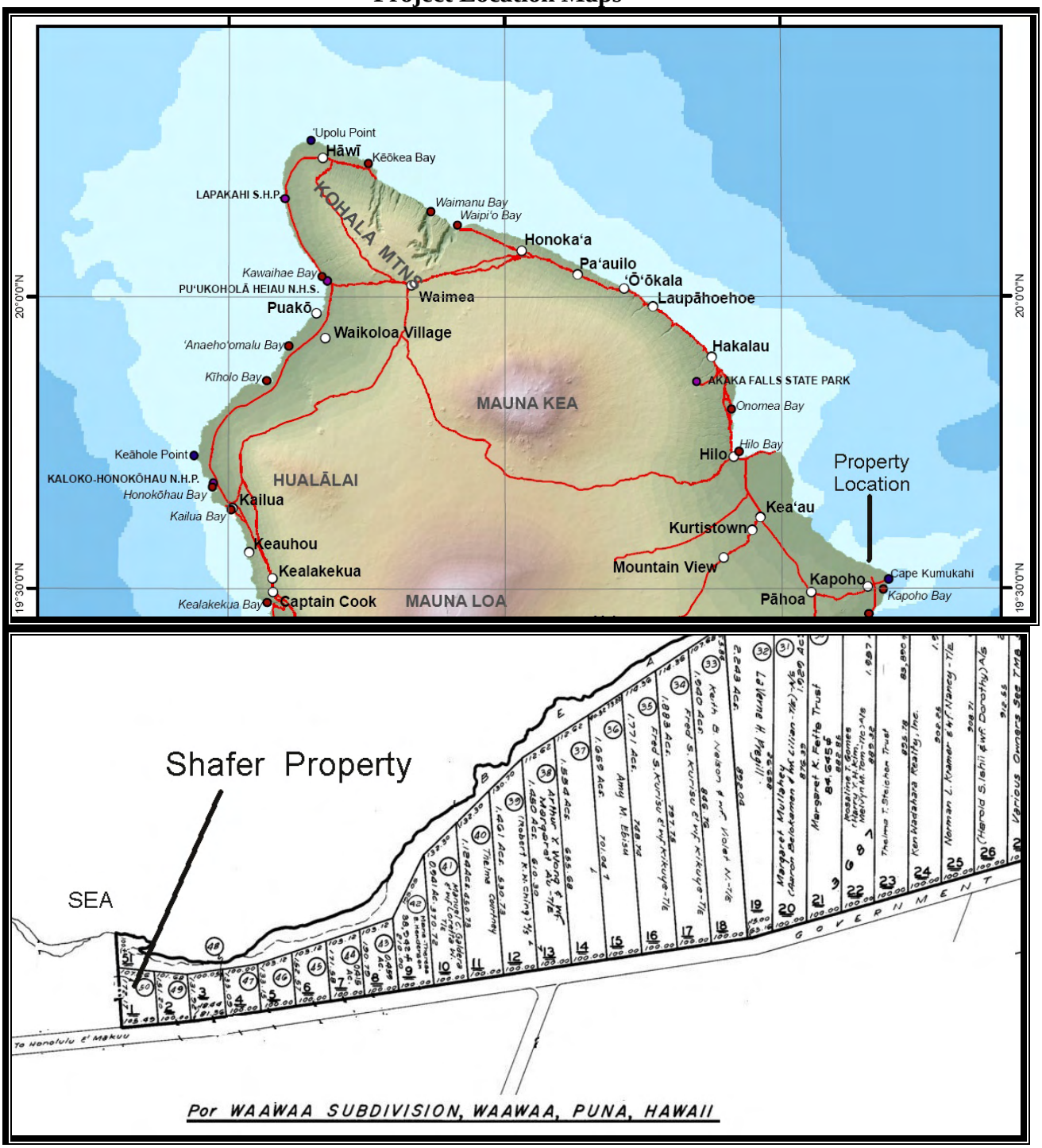
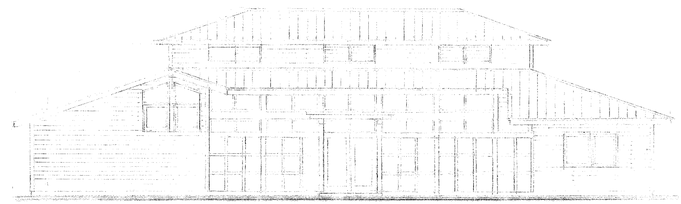


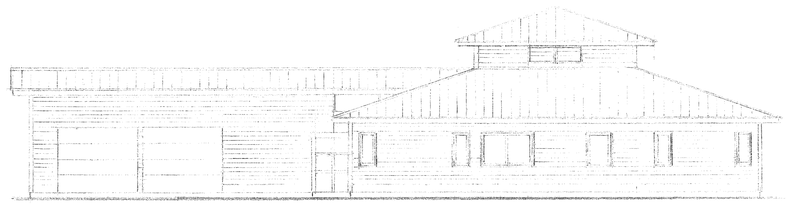
Figure 1b Project Site Photos

1b1 Obscured View from Road to Shoreline ▲ ▼ 1b2 Building Site

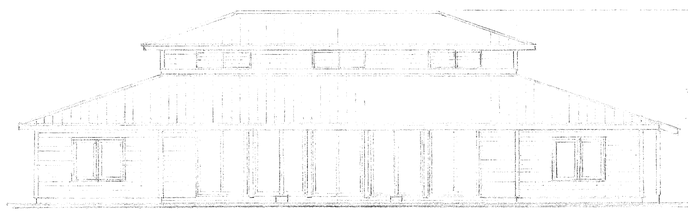
1b3 Shoreline in Front and to Northwest ▼



FRONT

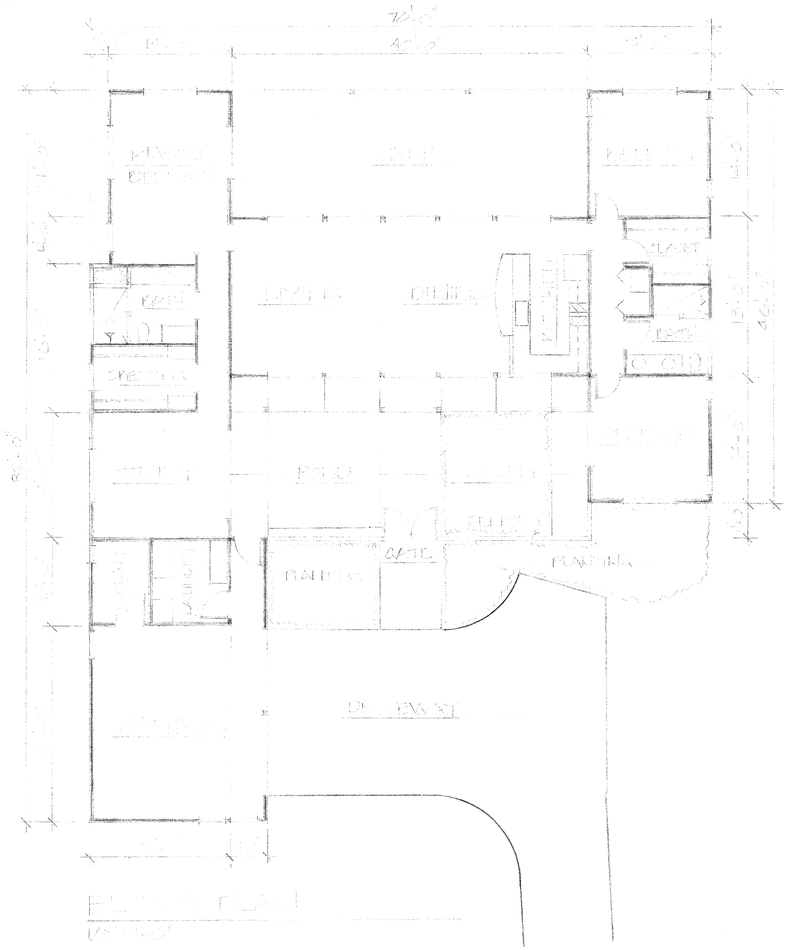


RIGHT

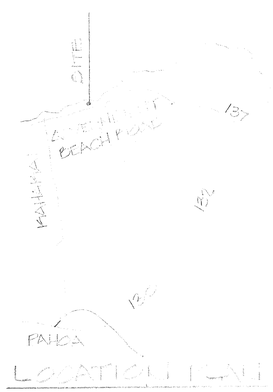


BACK

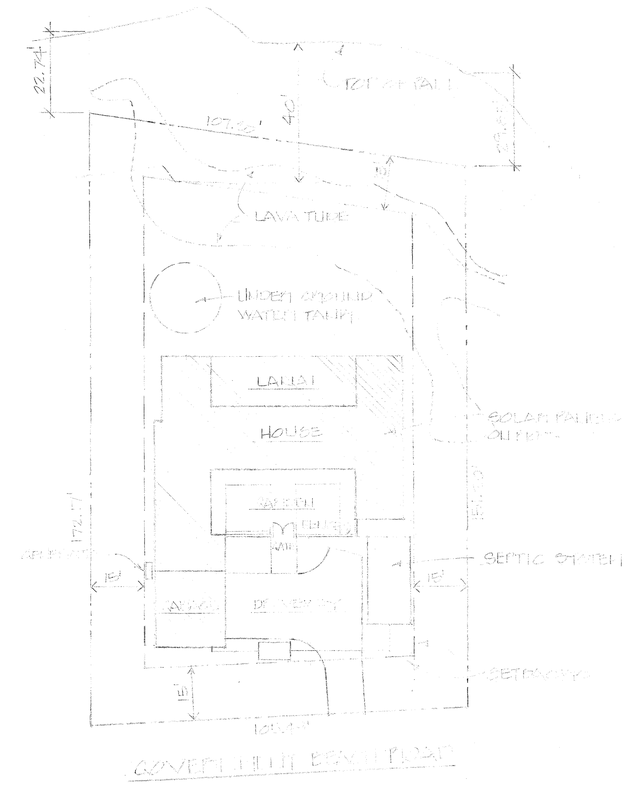
LEFT



FLOOR PLAN



LOCATION PLAN



SITE PLAN

SQUARE FOOTAGE

Living-Dining-Kitchen	18'-0" x 40'-0" =	720 Sq. Ft.
Lanai	14'-0" x 40'-0" =	560
Master Bedroom	14'-0" x 19'-6" =	273
Bath-Dressing-Hall	16'-0" x 16'-6" =	264
Study	14"-0" x 16'-0" =	224
Solar-Laundry-Hall	10"-0" x 20'-0" =	200
Bedroom	14'-0" x 14'-0" =	196
Bedroom	14'-0" x 14'-0" =	196
Closet-Bath-Hall	14'-0" x 18'-0" =	252
Garage	20'-0" x 22'-0" =	440
Pond	12"-6" x 13'-0" =	163
Total		3,488 Square Feet

REVISIONS	BY

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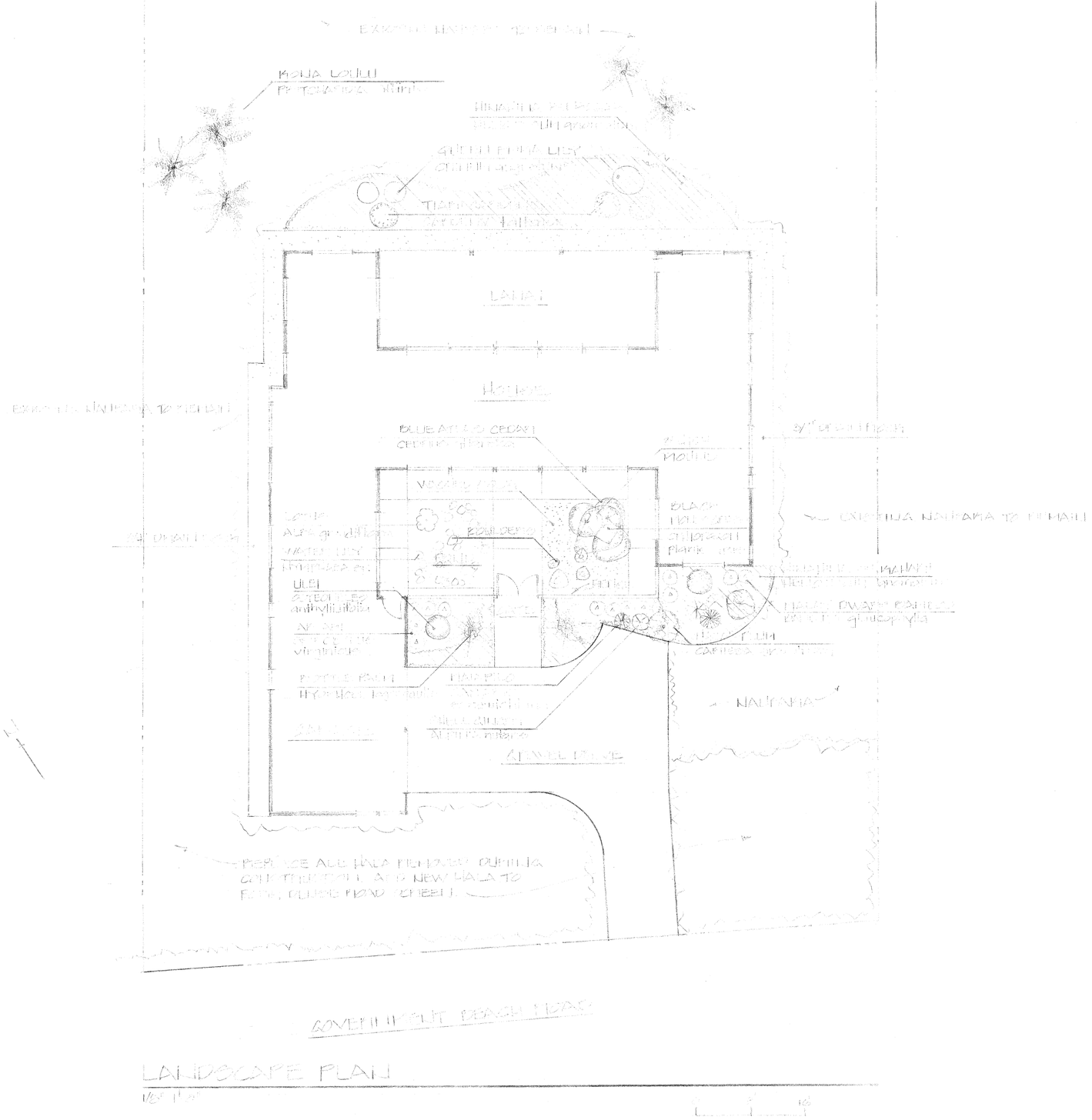
NEW RESIDENCE FOR JOAN SHAFER

LOT 50, GOVERNMENT BEACH ROAD
WA'A WA'A, PUNA, HAWAII

Date
Scale
Drawn
Job
Sheet
Of Sheets

24 X 36 PRINTED ON NO. 1000H CLEARPRINT®



LANDSCAPE PLAN

1/8" = 1'-0"

PLANT LIST

Common Name	Botanical Name
PALMS	
Bottle Palm	Hyophobe lagencaulis
Kona Loulu	Pritchardia affinis
TREES	
Blue Atlas Cedar	Cedrus atlantica "Glauca"
SHRUBS	
Maia Pilo	Capparis sandwichiana
Malay Dwarf Bamboo	Bambusa glaucophylla
Natal Plum	Carissa grandiflora
Queen Emma Lily	Crinum augustum
Shell Ginger	Alpinia nutans
Tiari Gardenia	Gardenia taitensis
Ulei	Osteomeles anthyllidifolia
GROUND COVERS	
Aki Aki	Sporobolus virginicus
Black Mondo Grass	Ophiopogog planiscapus
Hinahina Ku Kahaki	Heliotroum anomalum
WATER PLANTS	
Lotus	Alba grandiflora
Water Lily	Nyphaea sp.

REVISIONS	BY

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NEW RESIDENCE FOR JOAN SHAFER

LOT 50, GOVERNMENT BEACH ROAD
WA'A WA'A, PUNA, HAWAII

Date 10-18-11
Scale 1/8" = 1'-0"
Drawn
Job
Sheet 1 Of 1 Sheets

24 X 36 PRINTED ON NO. 1000H CLEARPRINT®

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

The property, which is presently vacant and unused, is separated from Nānāwale Bay and the shoreline by a portion of a shoreline beach reserve property, a 12.6-acre parcel commonly held by the subdivision's lot owners. The architect for the project, Dennis Preston Davis, measured elevations at the property and determined that the lowest corner, on the seaward side, is approximately 31 feet above mean sea level.

3.1 Physical Environment

3.1.1 Geology, Soils and Geologic Hazards

Environmental Setting

The project site is located on the flank of Kilauea, an active volcano, in the District of Puna, in the ahupuaʻa of Waʻawaʻa, lava flows dated at between 750 and 1,500 years ago, near the boundary of a lava flow from 1840 flow. A littoral cone created by the 1840 flow at the shoreline is located approximately one-third of a mile to the northwest. Soil in the area is predominately pahoehoe lava flow (rLW), with ʻaʻa lava (rLV) nearby to the west (U.S. Soil Conservation Service 1973). Both are highly drained and their soil subclass is VIIIs, which means they have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes because of their stony nature. This area receives an average of about 110 inches of rain annually, with a mean annual temperature of approximately 75 degrees Fahrenheit (UH Hilo-Geography 1998:57).

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the U.S. Geological Survey in this area of Puna is Zone 2 on a scale of ascending risk 9 to 1 (Heliker 1990:23). The high hazard risk is based on the fact Kilauea is an active volcano. Volcanic hazard Zone 2 areas have had 15-25% of land area covered by lava or ash flows since the year 1800, and are at lower risk than Zone 1 areas because they are not directly themselves active zones, but are found adjacent to and downslope of active rift zones.

In terms of seismic risk, the entire Island of Hawaiʻi is rated Zone 4 Seismic Hazard (*Uniform Building Code, 1997 Edition*, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built. The project site does not appear to be subject to subsidence, landslides or other forms of mass wasting.

Impacts and Mitigation Measures

In general, geologic conditions impose no constraints on the proposed action, as much of Hawaiʻi Island faces similar volcanic and seismic hazard. The applicant understands the risk and the residence is not imprudent to construct.

3.1.2 Flood Zones and Shoreline Setting

Environmental Setting

Floodplain status for many areas of the island of Hawai‘i has been determined by the Federal Emergency Management Agency (FEMA), which produces the National Flood Insurance Program’s Flood Insurance Rate Maps (FIRM) (Figure 4). The map for the project area is 1551661400C. The property is classified in Flood Zone X, areas outside the mapped 500-year floodplain.

Impacts and Mitigation Measures

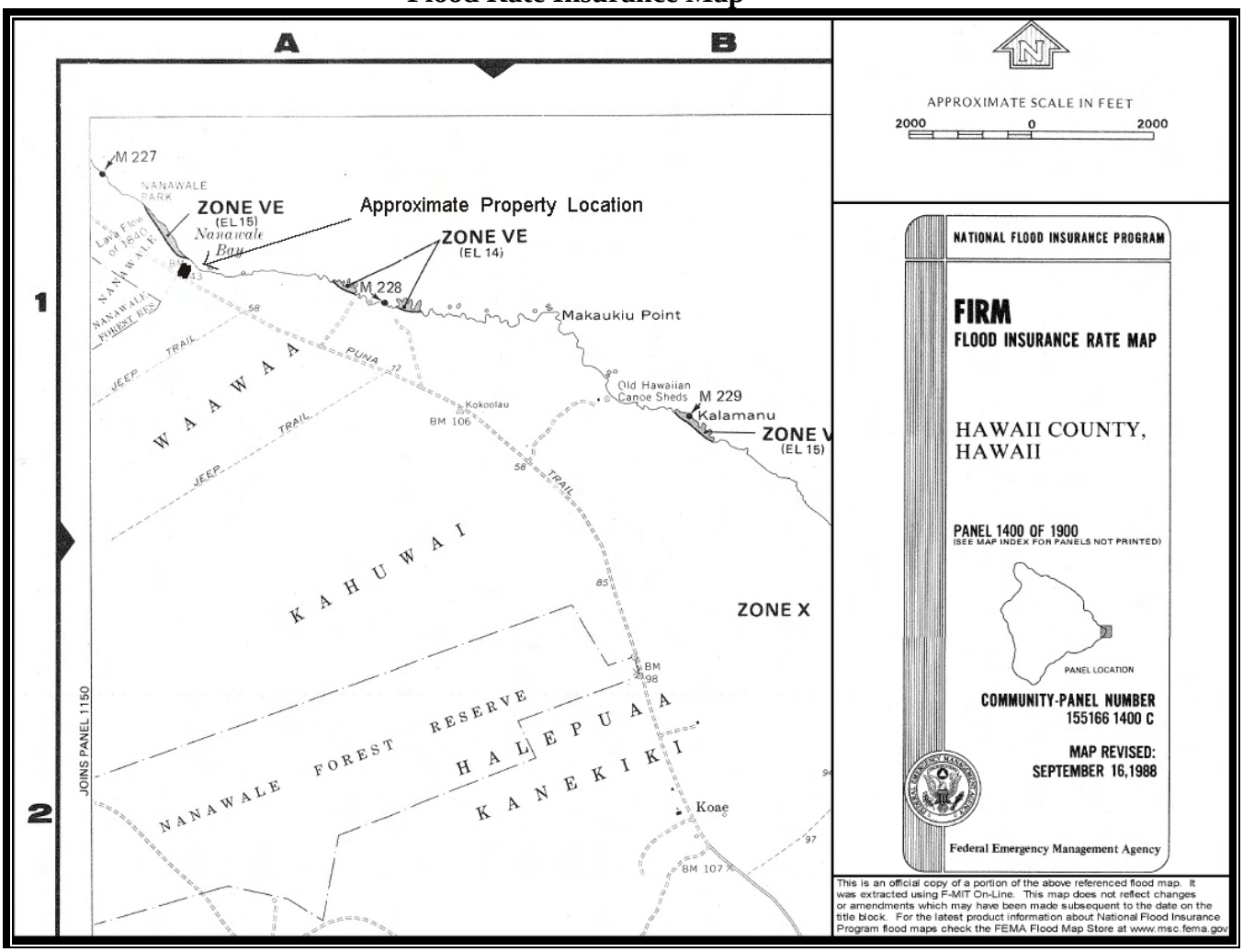
Property near the shoreline is subject to natural coastal processes including erosion and accretion, which can be affected by human actions such as removal of sand or shoreline hardening. Erosion may adversely affect not only a lot owner’s improvements but also State land and waters, along with the recreational and ecosystem values they support. Development of shoreline properties also exposes residents and visitors to increased risk of hazardous high waves and tsunami.

In the case of this lot, a shoreline beach reserve property separates the subject property from the shoreline, which is at least 50 feet from Ms. Shafer’s property line. The project does not involve any shoreline hardening or use of areas subject to beach processes. Access to the home will be by a driveway from the Government Beach Road at the back of the property. As discussed above, the proposed home would be outside the Flood Zone, at an elevation of approximately 31 feet above sea level.

Of increasing importance to land use approvals in coastal regions throughout the world is the issue of sea level rise. The Earth is warming because of increases in human-produced greenhouse gases such as carbon dioxide and methane, which in turn, has led to a rise in global sea level (http://www.ncdc.noaa.gov/oa/climate/globalwarming.html). According to the National Climate Data Center of the National Oceanic and Atmospheric Administration (NOAA), global mean sea level has been rising at an average rate of 1.7 mm/year (plus or minus 0.5mm) over the past century, a rate which has increased over the last 10 years to 3.1 mm/year (Bindoff et al 2007). NOAA projects an expected range of sea level rise over the next century of between 0.18 and 0.59 m due mainly to thermal expansion and contributions from melting alpine glaciers. However, potential contributions from melting ice sheets in Greenland or Antarctica may yield much larger increases. Dr. Charles Fletcher of the University of Hawai‘i, Manoa, estimates that sea level may rise up to one meter by the end of the next century.

In Hawai‘i, beach erosion, reef overtopping and consequent higher wave run-ups, more devastating tsunami, and full-time submergence of critical coastal areas are likely to occur (http://www.soest.hawaii.edu/coasts/sealevel/). It is particularly important to consider the

Figure 4
Flood Rate Insurance Map



Note: Property location approximate; no TMK by Hawai‘i County Department of Public Works available.

location of new infrastructure, and the State and counties must consider how to adjust zoning and setbacks so that expensive or critical public infrastructure is not put in the path of inevitable damage. On the Big Island, eustatic (global) sea level rise is coupled with local effects of subsidence. Since 1946, sea level at Hilo on the Big Island has risen an average of 1.8 ± 0.4 mm/yr faster than at Honolulu on the island of O‘ahu, a figure that has recently decreased. The degree to which this reflects subsidence versus variations in upper ocean temperature is currently not known (Caccamise et al 2005).

A scenario of modest sea level rise would likely not substantially affect the integrity or use of the proposed residence (which is 31 feet above sea level) for many decades, if at all. Somewhat larger increases, particularly in a case of sudden onset, could perhaps eventually affect it. If so, this residence would be among thousands, or perhaps tens of thousands, to be affected in what would be the largest disaster to affect the Hawaiian Islands since human settlement. As sea level rise is gradual, there would probably be an opportunity for the owner to consider relocating or scrapping the structure for re-use of its valuable materials should sea level rise sufficiently to endanger the structure. The owner would agree to a CDUP and/or deed condition that would prevent any future request for shoreline hardening to protect the residence, regardless of hardship, and a condition requiring moving or dismantling the home if sea level rise eventually threatens the integrity of the structure.

3.1.3 Water Quality

As discussed in the preceding section, the property is adjacent to a reserve that fronts the shoreline. No water features such as streams, springs, or anchialine ponds are found on or near the property. Grading for the driveway and house lot will include practices to minimize the potential for sedimentation, erosion and pollution of coastal waters. The builder shall perform all earthwork and grading in conformance with Chapter 10, Erosion and Sediment Control, and Chapter 27, Drainage, of the Hawai‘i County Code, and any additional best management practices required by the Board of Land and Natural Resources.

Land clearing and construction activities would occur on about 7,250 square feet (less than half the lot), including the driveway. The project would require a grading permit but not a National Pollutant Discharge Elimination System permit, because the total graded area is less than one acre. The grading would be restricted to the mauka two-thirds of the property and would take less than three days. The applicant will ensure that her contractor shall perform all earthwork and grading in conformance with:

(a) “Storm Drainage Standards,” County of Hawai‘i, October, 1970, and as revised.
(b) Applicable standards and regulations of Chapter 27, “Flood Control,” of the Hawai‘i County Code.
(c) Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).
(d) Applicable standards and regulations of Chapter 10, “Erosion and Sedimentation Control,” of the Hawai‘i County Code.

In addition, as part of construction, Ms. Shafer and her architect will require that the construction contractor implement the following practices.

- The total amount of land disturbance will be minimized. The construction contractor will be limited to the delineated construction work areas within the lot.

- The contractor will not allow any sediment to leave the site, particularly towards the ocean.
- Construction activities with the potential to produce polluted runoff will not be allowed during unusually heavy rains or storm conditions that might generate storm water runoff.
- Cleared areas will be replanted or otherwise stabilized as soon as possible;

Upon its completion, the home will be similar to others in the Wa‘awa‘a area and is not expected to contribute to sedimentation, erosion, and pollution of coastal waters.

3.1.4 Flora and Fauna

Environmental Setting: Flora

The natural vegetation of this part of this part of Puna shoreline was mostly coastal forest and strand vegetation, dominated by naupaka (*Scaevola taccada*), hala (*Pandanus tectorius*), ‘ohi‘a (*Metrosideros polymorpha*), nanea (*Vigna marina*) and various sedges and coastal herbs (Gagne and Cuddihy 1990). The site was inspected for biological resources in August 2009, with special attention to the presence of *Ischaemum byrone*, a State and federally listed endangered grass known to grow in the general area and reported by a resident (see Appendix 1a) to be present on or near the property. The site was dominated by the native shrub naupaka in the makai areas, with a number of the native hala trees scattered among introduced plants such as octopus tree (*Schefflera actinophylla*) and wedelia (*Wedelia trilobata*). No *Ischaemum byrone* was found on the property itself, but a patch was located about 100 feet west of the property on State land. A list of all species detected on the property itself is found in Table 1.

Environmental Setting: Fauna

Typical expected birds, some of which were observed during site visits, include Common Myna (*Acridotheres tristis*), Northern Cardinal (*Cardinalis cardinalis*), Spotted Dove (*Streptopelia chinensis*), Japanese White-eye (*Zosterops japonicus*), and House Finch (*Carpodacus mexicanus*). No native birds were identified during the survey, and it is unlikely that many native forest birds would be expected to use the project site due to its low elevation, alien vegetation and lack of adequate forest resources. Common shorebirds such as Golden Plover (*Pluvialis fulva*), Ruddy Turnstone (*Arenaria interpres*), and Wandering Tattler (*Heteroscelus incanus*), can be observed on the basalt shelf fronting the property, feeding on shoreline resources. They would be unlikely to make much use of the property itself, which offers no habitat for them.

As in all of East Hawai‘i, several endangered native terrestrial vertebrates may be present in the general area and may overfly, roost, nest, or utilize resources of the property, including the

Table 1
Plant Species Observed on Shafer Property

Scientific Name	Family	Common Name	Life Form	Status
Andropogon virginicus	Poaceae	Broomsedge	Grass	A
Casuarina equisetifolia	Casuarinaceae	Ironwood	Tree	A
Chamaecrista nictitans	Fabaceae	Partridge pea	Herb	A
Cocos nucifera	Arecaceae	Coconut	Tree	A
Cyperus polystachyos	Cyperaceae	Pycreus	Sedge	I
Desmodium sp.	Fabaceae	Desmodium	Vine	A
Eleusine indica	Poaceae	Wire grass	Grass	A
Emilia fosbergii	Asteraceae	Pualele	Herb	A
Epipremnum pinnatum	Araceae	Pothos vine	Liana	A
Fimbristylis cymosa	Cyperaceae	Mau‘u akiaki	Sedge	I
Furcraea foetida	Agavaceae	Mauritius hemp	Shrub	A
Macroptilium lathyroides	Fabaceae	Cow pea	Vine	A
Melinus minutiflora	Poaceae	Molasses grass	Grass	A
Morinda citrifolia	Rubiaceae	Noni	Shrub	A
Paederia foetida	Rubiaceae	Maile pilau	Vine	A
Pandanus tectorius	Pandanaceae	Hala	Tree	I
Paspalum sp.	Poaceae	Paspalum	Grass	A
Phymatosorus grossus	Polypodiaceae	Laua‘e	Fern	A
Pluchea carolinensis	Asteraceae	Sourbush	Shrub	A
Psidium cattleianum	Myrtaceae	Strawberry guava	Tree	A
Scaevola taccada	Goodeniaceae	Naupaka	Shrub	I
Schefflera actinophylla	Araliaceae	Octopus tree	Tree	A
Stenotaphrum secundatum	Poaceae	St. Augustine grass	Grass	A
Vigna marina	Fabaceae	Nanea	Vine	I
Wedelia trilobata	Asteraceae	Wedelia	Herb	A

I = Indigenous, A = Alien

endangered Hawaiian Hawk (*Buteo solitarius*), the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened Newell’s Shearwater (*Puffinus auricularis newelli*). The large trees favored by Hawaiian Hawks for nests were not present on the property.

Mammals in the project area are all introduced species, including feral cats (*Felis catus*), small Indian mongooses (*Herpestes a. auropunctatus*) and various species of rats (*Rattus* spp.). None are of conservation concern and all are deleterious to native flora and fauna.

The coastal and marine fauna and flora are typical of the high-energy coasts of Puna, which are young ecosystems with limited coral growth but a variety of algae, fish and invertebrates. Marine mammals and reptiles, some of them endangered, also visit the Puna coastal waters.

Impacts and Mitigation Measures

Because of the minor nature of the project and the lack of sensitive terrestrial ecosystems and threatened or endangered plant species, construction and use of the single-family residence are not likely to cause adverse biological impacts. The applicant is planning minimal landscaping utilizing mainly the native and Polynesian species found in the area. The applicant has been made aware of the *Ischaemum byrone* near the property in order to avoid accidental trampling and to effects to other patches of this grass should they emerge elsewhere on or near the property. The precautions for preventing effects to water quality during construction listed above in Sections 3.1.1 and 3.1.6 will reduce adverse impact on aquatic biological resources in coastal waters to negligible levels.

In order to avoid impacts to the endangered but regionally widespread terrestrial vertebrates listed above, the applicant has committed to conditions that are proposed for the CDUP. Specifically, the construction will commit to refrain from activities that disturb or remove the vegetation between the months of June and August, inclusive, when Hawaiian hoary bats may be sensitive to disturbance. If land clearing occurs within the months of March through May, or during September, a pre-construction hawk nest search by a qualified ornithologist using standard methods will be conducted. If Hawaiian Hawks are present, no land clearing will be allowed until October, when hawk nestlings will have fledged. Finally, the applicant agrees to shield any exterior lighting from shining upward, in conformance with Hawaiʻi County Code § 14 – 50 et seq., to minimize the potential for disorientation of seabirds.

3.1.4 Air Quality, Noise, and Scenic Resources

Environmental Setting

Air quality in the area is generally excellent, due to its rural nature and minimal degree of human activity, although vog, sulfur dioxide and particulate matter from Kilauea volcano is occasionally blown into this part of Puna.

Noise on the site is low, and is derived from natural sources (such as surf and wind) due to the very rural nature of the area.

The area shares the quality of scenic beauty along with most of the Puna coastline. The County of Hawaiʻi General Plan contains Goals, Policies and Standards intended to preserve areas of natural beauty and scenic vistas from encroachment. The General Plan specifically lists as examples of natural beauty a shoreline area about one mile to the north (Honolulu Landing) at TMK 1-4-003:019, and three areas at Kahuwai about one mile to the south (the black sand beach at Kapela Bay, Makaukiu Point and the shoreline) at TMK 1-4-003:013. There are also Exceptional Trees protected by County ordinance present on the Old Government Road in the form of a mango grove that lines both sides of the roadway. The area near the Shafer property does not contain mango trees.

Impacts and Mitigation Measures

The project would not affect air quality or noise levels in any substantial ways. Brief and minor adverse effects would occur during construction. However, there are virtually no sensitive noise receptors in the vicinity, and given the small scale of the project, noise mitigation will likely not be necessary.

The current view from Old Government Road across the lot to the ocean is illustrated in Figure 1b1, which shows that the view is generally obscured by existing vegetation. The proposed action would insert a home between Old Government Road and the ocean that could be partially visible to passing motorists, bicyclists and pedestrians. Ms. Shafer proposes to landscape the area between the road and the house with hala, the most common native species in the area, to partially shield the home from view. Although the addition of a structure may be considered to detract at some level from the scenic landscape, the attractive design of the home and the landscaping, given the existing context, will not materially degrade the scenery of the project area.

3.1.6 Hazardous Substances, Toxic Waste and Hazardous Conditions

Based on onsite inspection and the lack of any known former use on the property, it appears that the site contains no hazardous or toxic substances and exhibits no other hazardous conditions. In addition to the measures related to water quality detailed in Section 3.1.3, in order to ensure to minimize the possibility for spills of hazardous materials, the applicant proposes the following conditions of the CDUP:

- Unused materials and excess fill will be removed and disposed of at an authorized waste disposal site. The contractor will be encouraged to recycle or donate for reuse excess material, as appropriate.
- During construction, emergency spill treatment, storage, and disposal of all hazardous materials, will be explicitly required to meet all State and County requirements, and the contractor will be asked to adhere to “Good Housekeeping” for all appropriate substances, with the following instructions:
    - Onsite storage of the minimum practical quantity of hazardous materials necessary to complete the job;
    - Fuel storage and use will be conducted to prevent leaks, spills or fires;
    - Products will be kept in their original containers unless unresealable, and original labels and safety data will be retained;
    - Disposal of surplus will follow manufacturer’s recommendation and adhere to all regulations;
    - Manufacturers’ instructions for proper use and disposal will be strictly followed;
    - Regular inspection by contractor to ensure proper use and disposal;
    - Onsite vehicles and machinery will be monitored for leaks and receive regular maintenance to minimize leakage;

- Construction materials, petroleum products, wastes, debris, and landscaping substances (herbicides, pesticides, and fertilizers) will be prevented from blowing, falling, flowing, washing or leaching into the ocean
- All spills will be cleaned up immediately after discovery, using proper materials that will be properly disposed of;
- Regardless of size, spills or toxic or hazardous materials will be reported to the appropriate government agency;
- Should spills occur, the spill prevention plan will be adjusted to include measures to prevent spills from re-occurring and for modified clean-up procedures.

3.2 Socioeconomic and Cultural

3.2.1 Land Use, Designations and Controls

Existing Environment

The property is bordered by the shoreline beach reserve property to the north, by the Government Beach Road to the south, by state property to the west and by private property to the east.

The State Land Use District for the property, and adjacent properties within the Waʻawaʻa Subdivision, is Conservation. Its subzone is Resource, for which, according to Hawaiʻi Administrative Rules (HAR) §13-5-15, a single-family residence is an identified use. The property is zoned by the County of Hawaiʻi as being in the Agricultural District, minimum size of three acres (A-3a), although County zoning does not apply in the Conservation District. The project site is within the Special Management Area.

Single-family residences may be determined to be an exempt action under the County's Special Management Area (SMA) guidelines. The County of Hawaiʻi Planning Department requires preparation of an SMA Assessment Application, in which SMA issues are expressly dealt.

The consistency of the project with the regulations and policies of the Conservation District and the Special Management Area are discussed in Section 3.6.2 and 3.6.3.

3.2.2 Socioeconomic Characteristics and Recreation

Existing Environment

The project site is a privately owned parcel in the sparsely populated Waʻawaʻa Subdivision, located within the ahupuaʻa of Waʻawaʻa on the northeast shore of the Island and County of Hawaiʻi. This is a remote portion of the Big Island, with the nearest town of Pahoa located approximately seven miles away. Several closely associated subdivisions, Hawaiian Shores, Hawaiian Shores Recreational Estates, Hawaiian Beaches and Hawaiian Parks, are located approximately 1.5 miles to the west.

Puna's early history is closely tied to agriculture, beginning with harvests by early Hawaiians of resources from upland forests such as bird feathers and fiber for cordage and cloth and later sandalwood. That was followed in the early 19th century by plantations of taro, sweet potatoes and sugar cane. The farming of sugar began in earnest in 1899 with the establishment of Ola‘a Sugar Company with fields in Kea‘au, Pahoa, and Kapoho.

Puna is also home to Kilauea, one of the world's most active volcanoes. This natural wonder is popular attraction that brings in tourist dollars but takes an economic toll on the district. Since the current eruption began in 1983, lava flows have covered more than 45 square miles of land and destroyed 189 structures.

Puna has been the Big Island's fastest-growing district over the last thirty years. The *Puna Community Development Plan* estimated Puna's population at 43,071 in 2007, which is a 37 percent increase over 2000 figures (Hawai‘i County Planning Department 2008:1-3). Since only about one in four of the available lots have been developed to date, the district has much room for growth. Much of Puna is made up of large subdivisions created by speculators beginning in the late 1950s. Despite a lack of basic infrastructure such as paved roads and water in most subdivisions, their relatively inexpensive lots, which typically range in size from one to three acres, have attracted residents from the U.S. mainland and other parts of the State of Hawai‘i seeking more affordable property. Some of the subdivisions have become bedroom communities for Hilo's workforce, as evidenced by the heavy flow of Hilo-bound traffic during the AM rush hour.

The Wa‘awa‘a area has a distinctly rural character, with scattered homes, farms, and little infrastructure. Several larger residential subdivisions are located to the north but they are more than a mile away.

Despite the long coastline, there are few beaches in Puna, and in most location, ocean recreation consists primarily of fishing from the cliffs. This is true at Wa‘awa‘a, where fishermen and opihi gatherers access the shoreline from a path just west of the Shafer property. As shown in Figure 1b3, the shoreline here is rocky and rough. Fishing takes place occasionally on the shoreline between the subdivisions and the project site in areas in which the Government Beach Road is close to the shoreline. Aside from the rough trail within the shoreline reserve, consultation of maps and initial discussions with the DLNR Na Ala Hele Program, who will be reviewing the EA, revealed no historic trails on or immediately adjacent to the property.

Impacts and Mitigation Measures

No adverse socioeconomic impacts are expected to result from the project. The project will have a very small positive economic impact for the County of Hawai‘i. The residence and associated improvements will not adversely affect recreation, as access along the coast and the existing parking area and path to the ocean that lie northwest of the property will undergo no changes or restrictions.

3.2.3 Cultural and Historic Resources

A cultural impact assessment by Rechtman Consulting that includes discussion of historic properties and a burial within a cave under the property is attached as Appendix 2 and summarized below. In the interest of readability, the summary below does not include all scholarly references; readers interested in extended discussion and sources may consult Appendix 2.

Historical and Cultural Background

The project site is located within Waʻawaʻa Ahupuaʻa, a land unit of the District of Puna, one of six major districts on the island of Hawaiʻi. As McGregor relates, "Puna is where new land is created and new growth and new life sprout. The new land is sacred, fresh, clean, and untouched. After vegetation begins to grow upon it, it is ready for human use." (2007:145). In Precontact and early Historic times the people lived in a small number of small settlements along the coast where they subsisted on marine resources and agricultural products. Each of the villages, McEldowney notes:

> …seems to have comprised the same complex of huts, gardens, windbreaking shrubs, and utilized groves, although the form and overall size of each appear to differ. The major differences between this portion of the coast and Hilo occurred in the type of agriculture practiced and structural forms reflecting the uneven nature of the young terrain. Platforms and walls were built to include and abut outcrops, crevices were filled and paved for burials, and the large numbers of loose surface stones were arranged into terraces. To supplement the limited and often spotty deposits of soil, mounds were built of gathered soil, mulch, sorted sizes of stones, and in many circumstances, from burnt brush and surrounding the gardens. Although all major cultigens appear to have been present in these gardens, sweet potatoes, ti (*Cordyline terminalis*), *noni (Morinda citrifolia*), and gourds (*Lagenaria siceraria*) seem to have been more conspicuous. Breadfruit, pandanus, and mountain apple (*Eugenia malaccensis*) were the more significant components of the groves that grew in more disjunct patterns than those in Hilo Bay. [1979:17]

Puna was a region famed in legendary history for its associations with the goddess Pele and god Kāne. Because of the relatively young geological history and persistent volcanic activity the Region has a strong association with Pele. However, the connection to Kāne is perhaps more ancient. Kāne, ancestor to both chiefs and commoners, is the god of sunlight, fresh water, verdant growth, and forests. It is said that before Pele migrated to Hawaiʻi from Kahiki, Puna was esteemed the most beautiful place in the islands by many. Contributing to that beauty were the groves of fragrant hala and forests of ʻōhiʻa lehua for which Puna was famous. The inhabitants of Puna were likewise famous for their expertise and skill in lauhala weaving.

In 1823, British missionary William Ellis and members of the American Board of Commissioners for Foreign Missions (ABCFM) toured the island of Hawai‘i scouting communities in which to establish church centers for the growing Calvinist mission. Ellis recorded observations made during this tour in a journal (Ellis 1963). His writings contain descriptions of residences and practices that are applicable to the general study area:

> As we approached the sea, the soil became more generally spread over the surface, and vegetation more luxuriant. About two p.m. we sat down to rest. The natives ran to a spot in the neighbourhood, which had formerly been a plantation, and brought a number of pieces of sugar-cane, with which we quenched our thirst, and then walked on through several plantations of sweet potato belonging to the inhabitants of the coast . . . (Ellis 1963:182-183)
>
> The population in this part of Puna, though somewhat numerous, did not appear to possess the means of subsistence in any great variety or abundance; and we have often been surprised to find desolate coasts more thickly inhabited than some of the fertile tracts in the interior; a circumstance we can only account for, by supposing that the facilities which the former afford for fishing, induce the natives to prefer them as places of abode; for they find that where the coast is low, the adjacent water is usually shallow.
>
> We saw several fowls and a few hogs here, but a tolerable number of dogs, and quantities of dried salt fish, principally albacores and bonitos. This latter article, with their *poë* [*poi*] and sweet potatoes, constitutes nearly the entire support of the inhabitants, not only in this vicinity, but on the sea coasts of the north and south parts of the island.
>
> Besides what is reserved for their own subsistence, they cure large quantities as an article of commerce, which they exchange for the vegetable productions of Hilo and Mamakua [Hāmākua], or the *mamake* and other tapas of Ora [‘Ōla‘a] and the more fertile districts of Hawaii.
>
> When we passed through Punau [Pānau], Leapuki [Laeapuki], and Kamomoa [Kamoamoa], the country began to wear a more agreeable aspect. Groves of coca-nuts ornamented the projecting points of land, clumps of kou-trees appeared in various directions, and the habitations of the natives were also thickly scattered over the coast . . . (Ellis 1963:190-191)

One year after Ellis’ tour, the ABCFM established a base church in Hilo. From that church (Hāili), the missionaries traveled to the more remote areas of the Hilo and Puna Districts. David Lyman, who came to Hawai‘i in 1832, and Titus Coan, who arrived in 1835, were two of the most influential Congregational missionaries in Puna and Hilo. As part of their duties they compiled census data for the areas within their missions. In 1841, Titus Coan recorded that most of the 4,371 recorded residents of Puna lived near the shore, though there were hundreds of individuals who lived inland. In that same year, Commander Charles Wilkes of the United States Exploring Expedition toured the Hawaiian Islands (Wilkes 1845). His expedition traveled through lower Puna not far from the project site:

> Almost all of the hills or craters of any note have some tradition connected with them; but I found that the natives were now generally unwilling to narrate these tales, calling them "foolishness." After leaving the *pahoihoi* [pāhoehoe] plain, we passed along the line of conecraters towards Point Kapoho, the Southeast part of the island (Wilkes 1845 Vol. IV:186).

As a result of the *Māhele* that divided lands in the mid-19th century, Waʻawaʻa Ahupuaʻa was retained as Government Land. The entire ahupuaʻa was later commuted as four separate grant parcels: Grant No. 997 to Haole in 1852, Grant No. 1363 to Pakaka in 1854, Grant No. 2687 to Manamana in 1860, and Grant No. 3687 to R. A. Lyman in 1894. The project site is located *makai* of Grant No. 997 to Haole, but was part of Grant No. 3687 to Lyman. No Land Commission Award kuleana claims to commoners were made in Waʻawaʻa Ahupuaʻa.

The population of Puna declined during the early nineteenth century and Hawaiians maintained marginalized communities outside of the central population centers. In the aftermath of the *Māhele*, economic interests in the region swiftly changed from the traditional Hawaiian land tenure system of subsistence farming and regional trading networks to the more European based cash crops including coffee, tobacco, sugar, and pineapple, and emphasized dairy and cattle ranching.

Land use within Waʻawaʻa ahupuaʻa also began to change. The inland portions of the ahupuaʻa appear to have been used for cattle ranching, some by the Lyman Estate, and possibly for sugarcane cultivation by the Puna Sugar Company. The project site does not appear to have been used for either purpose. In more recent times small-scale agriculture, including the cultivation of orchids and papayas, has replaced the cattle and sugarcane operations. In 1958, a large portion of Waʻawaʻa Ahupuaʻa, from the coast to the mauka boundary of Grant No. 3687, was subdivided into 177 residential lots (the Waʻawaʻa Residential Subdivision), which include the subject lot.

Archaeological Investigations and Resources

The project site was surveyed for archaeological resources in 2008, and an assessment reporting no archaeological features was prepared and accepted by the State Historic Preservation Division (SHPD) (see letter of acceptance in Appendix 1a). Subsequently, while conducting a botanical study of the subject parcel, a section of dense *naupaka* was cleared and a narrow opening to a lava tube was discovered. The botanists contacted Rechtman Consulting, LLC to investigate the lava tube.

Rechtman Consulting, LLC conducted a thorough examination of the lava tube and discovered a single set of badly preserved human skeletal remains. This inadvertent discovery of human

skeletal remains was reported to SHPD (see letter from SHPD in Appendix 1a), and the lava tube was mapped and its extent projected to the ground surface. One corner of the home where it was the proposed to be located was on top of the lava tube. Since it was the owner's intent to preserve the remains in place and avoid any effects to the entire lava tube to the extent practical, the design was changed to shift the proposed single-family home as far mauka as possible to avoid constructing directly above the lava tube. The home is now proposed to abut the 15-foot front yard setback boundary and is no longer directly on top of the lava tube (see Figure 2).

Impacts and Mitigation for Archaeological Resources

With respect to the inadvertent discovery made on TMK: 3-1-4-028:001, the proposed treatment is preservation in place. The closest portion of the proposed house will be 40 feet from the lava tube entrance and roughly 60 feet from the skeletal remains. An underground water tank is also proposed for the property; it will be roughly 35 feet from the lava tube opening and roughly 30 feet from the skeletal remains. The makai 35 feet of the parcel (roughly 7,420 square feet) will be formally recorded as a preservation easement. Prior to any construction activities, construction fencing will be placed at the mauka edge of this easement extending the width of the parcel. The landowner also proposes to have a single slab of pāhoehoe placed over the lava tube opening to both conceal and protect the burial and to provide for a safe ground surface. There will be no signs identifying the site, and aside from the addition of a few loulu (*Pritchardia affinis*), no planting will occur in the vicinity of the lava tube. Access to this burial site for religious or cultural practice will be granted to any native Hawaiian descendants who have been formally recognized by the Hawai‘i Island Burial Council and SHPD. The proposed access route will follow the existing public access path that extends makai from the Government Beach Road on State land adjacent to and west of the subject property, then along the makai property boundary for roughly 70 feet, then directly mauka for about 15 feet to the lava tube entrance. As a further precaution, in the unlikely event that additional undocumented archaeological resources, including shell, bones, midden deposits, lava tubes, or similar finds, are encountered during construction within the project site, work in the immediate area of the discovery shall be halted and SHPD contacted as outlined in Hawai‘i Administrative Rules 13§13-275-12.

Other Cultural Resources and Practices

The investigations of the property did not reveal any cultural resources or practices aside from the traditional Precontact burial and cave. Although fishing and gathering occur on the shoreline, this area is makai of the property, which has a shoreline reserve property between it and the ocean. No springs, pu‘u, native forest groves, gathering resources or other natural features appeared to be present on or near the project site.

However, when assessing potential cultural impacts to resources, practices, and beliefs, input gathered from community members with genealogical ties and/or long-standing residency

relationships to the study area is vital. It is precisely to these individuals for whom meaning and value are ascribed to traditional resources and practices. Community members may also retain traditional knowledge and beliefs that are not recorded in the historical or cultural record of a place. Appendix 2 provides Dr. Robert Rechtman's account of the consultation process, which is summarized here in the following two paragraphs.

On September 10, 2009, an informal consultation was conducted with Jesse Kawaaloa at his job site in Pahoa. This individual has strong genealogical ties to the area having descended from Hawaiians residing in Kalapana dating from pre-*Māhele* times, and likely Precontact times. Jesse's personal recollection of the current study area extends back to the 1950s, when he was a small boy walking the trails and roads to his auntie and uncle's house in Waʻawaʻwa to go fishing and swimming in the warm pond. He explained that before the Hawaiian Beaches Subdivision was created that the coastal area of Waʻawaʻwa was a great place for fishing and gathering limu and opihi. Access to Waʻawaʻwa from his home in Kalapana was by way of trails and the Old Government Road. Jesse stated, "when we were young we used to walk the whole way" stopping only to swim in the warm pond which he said "the pond was great! It was the only warm pond with white sand, but the owners started charging 10 cents then they raised it to 25 cents that's when we stopped coming because a quarter was a lot of money in those days". When asked how he felt about the construction of the single-family residence, Jesse indicated that as long as the house was not an "eyesore," that ocean access is never denied to people wanting to fish, and that no cultural sites are impacted then it would be alright.

As a result of the reported inadvertent discovery, SHPD requested that consultation occur with two previously identified cultural descendants of the Puna area, Nicole Lui and Jim Medeiros Sr. When contacted, Ms. Lui was explained that she was very busy with other cultural issues and declined involvement, deferring to Mr. Medeiros. Jim Medeiros Sr. was contacted and a field visit to the parcel was conducted on January 24, 2010. Mr. Medeiros is also a member of a Native Hawaiian cultural organization known as the Kanaka Council. Two other Kanaka Council members (Palikapu Dedman and Rocky Jensen) were also present during the January 24, 2010 field visit. The proposed development plans were shared with all of those present along with the proposed preservation treatment for the burial and lava tube. Jimmy, Palikapu, and Rocky all offered their support for the proposed development plan along with their mahalo for the in-place preservation of the burial and associated lava tube. Palikapu wanted the landowner to understand the she has now accepted the kuleana for the care and maintenance of the burial site, and Rocky added that he felt the "proper" thing was being done. Jimmy expressed his desire to see that the preservation would be identified in perpetuity, and that somehow the immediate location of the burial be acknowledged so as to restrict foot traffic from occurring directly on top of the portion of the tube the contains the burial.

Based on fieldwork by archaeologists and botanists, documentary research, and consultation with knowledgeable individuals, aside from the cave containing a set of human remains, the project site does not appear to support any known traditional resource uses, nor are there any Hawaiian

customary and traditional rights or practices known to be associated with the property. Although no archaeological sites or traditional cultural resources or activities appear to be present on the property, for the purposes of evaluating cultural significance, it is important to reiterate that the burial is culturally significant to Hawaiian people and that this burial is to be preserved in place.

Impacts and Mitigation Measures

The specific plans for preservation and maintenance of the burial feature will be detailed in a Burial Treatment Plan prepared for SHPD. The applicant does recognize the responsibility for the perpetual preservation of the burial site, and in addition to those measures specified in the treatment plan and in compliance with the desires of consulted parties, she will construct a low (maximum 2 feet high) six-foot square, stacked stone marker on the ground surface directly over the projected location of the subterranean burial. The burial appears to be the only culturally important resource on the property, and adverse effects to it will be prevented. It is reasonable to conclude that based upon the limited range of resources and the proposed mitigation to all affected resources, the exercise of native Hawaiian rights related to gathering, access or other customary activities will not be affected, and there will be no adverse effect upon cultural practices or beliefs. This Draft EA has been distributed to agencies and groups who might have knowledge in order to confirm this finding.

3.3 Public Roads, Services and Utilities

3.3.1 Roads and Access

Existing Environment, Impacts and Mitigation Measures

The sole access to the project site is from the Government Beach Road, an unimproved, narrow, mostly unpaved public roadway extending from Papio Street in Hawaiian Shores Recreational Estates to Kapoho (see Figure 1b1).

3.3.2 Public Utilities and Facilities

Environmental Setting, Impacts and Mitigation Measures

No public utilities of any kind service the project site. No parks, schools or other facilities are present nearby. The project would utilize a photovoltaic system and a generator backup for electrical power and wastewater would be managed with a septic system in conformance with requirements of the State Department of Health (see Figure 2 for location). There will be no adverse impact to any public or private utilities. The addition of one single-family home will have no measurable adverse impact to or additional demand on public facilities such as schools, police or fire services, or recreational areas. Ms. Shafer acknowledges and understands the lot, along with others in this part of the Puna District, is remote from emergency services.

3.4 Secondary and Cumulative Impacts

Due to its small scale, the proposed project would not produce any major secondary impacts, such as population changes or effects on public facilities.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. There are scattered single-family homes located in the project area, and occasionally there are two or more houses under construction. Although the County of Hawai‘i in the past has discussed the possibility of paving and minor widening of the Old Government Road, at this time there are no plans to do so. The adverse effects of building a single-family residence in this context are very minor and involve temporary disturbances to air quality, noise, traffic and visual quality during construction. It should again be noted that this area is in an isolated, sparsely populated area, and no accumulation of adverse construction effects would be expected. Other than the precautions for preventing adverse impacts during construction listed above in Sections 3.1.3 and 3.1.6, no special mitigation measures should be required to counteract the small adverse cumulative effect.

3.5 Required Permits and Approvals

County of Hawai‘i:

Special Management Area Permit or Exemption
Plan Approval and Grubbing, Grading, and Building Permits

State of Hawai‘i:

Conservation District Use Permit

3.6 Consistency With Government Plans and Policies

3.6.1 Hawai‘i County General Plan

The *General Plan* for the County of Hawai‘i is the document expressing the broad goals and policies for the long-range development of the Island of Hawai‘i. The plan was adopted by ordinance in 1989 and revised in 2005. The General Plan’s Land Use Allocation Guide Map designates the subject parcel as Open. The *General Plan* is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawai‘i. Below are pertinent sections followed by a discussion of conformance.

ECONOMIC GOALS

(a) Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.
(b) Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawaii.
(d) Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural, and social environment.

Discussion: The proposed project is in balance with the natural, cultural and social environment of the County, would create temporary construction jobs for local residents, and would indirectly boost the economy through construction industry purchases from local suppliers. A multiplier effect takes place when these employees spend their income for food, housing, and other living expenses in the retail sector of the economy. Such activities are in keeping with the overall economic development of the island.

ENVIRONMENTAL QUALITY GOALS

(a) Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
(b) Maintain and, if feasible, improve the existing environmental quality of the island.
(c) Control pollution.

ENVIRONMENTAL QUALITY POLICIES

(a) Take positive action to further maintain the quality of the environment.

ENVIRONMENTAL QUALITY STANDARDS

(a) Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.
(b) Incorporate environmental quality controls either as standards in appropriate ordinances or as conditions of approval.
(c) Federal and State environmental regulations shall be adhered to.

Discussion: The proposed project would not have a substantial adverse effect on the environment and would not diminish the valuable natural resources of the region. The home and associated improvements would be compatible with the existing rural single-family homes and recreational uses in the area. Pertinent environmental regulations would be followed, including those for mitigation of water quality impacts.

HISTORIC SITES GOALS

(a) Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawaii.
(b) Appropriate access to significant historic sites, buildings, and objects of public interest should be made available.

HISTORIC SITES POLICIES

(a) Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.
(b) Amend appropriate ordinances to incorporate the stewardship and protection of historic sites, buildings and objects.
(c) Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.
(d) Public access to significant historic sites and objects shall be acquired, where appropriate.

Discussion: The archaeological assessment and follow-up studies after inadvertent discovery of a lava tube burial during property surveying conducted for the property have properly documented and mitigated impacts to historic sites and provided fuller protection to a Hawaiian cultural resource.

FLOOD CONTROL AND DRAINAGE GOALS

(a) Protect human life.
(b) Prevent damage to man-made improvements.
(c) Control pollution.
(d) Prevent damage from inundation.
(e) Reduce surface water and sediment runoff.
(f) Maximize soil and water conservation.

FLOOD CONTROL AND DRAINAGE POLICIES

(a) Enact restrictive land use and building structure regulations in areas vulnerable to severe damage due to the impact of wave action. Only uses that cannot be located elsewhere due to public necessity and character, such as maritime activities and the necessary public facilities and utilities, shall be allowed in these areas.
(g) Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.

FLOOD CONTROL AND DRAINAGE STANDARDS

(a) "Storm Drainage Standards," County of Hawaii, October, 1970, and as revised.
(b) Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawaii County Code.
(c) Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).
(d) Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawaii County Code.
(e) Applicable standards and regulations of the Natural Resources Conservation Service and the Soil and Water Conservation Districts.

Discussion: The property is within the Zone X, or areas outside of the 500-year Floodplain as determined by detailed methods in the community flood insurance study, according to the Flood Insurance Rate Maps (FIRM). The project will conform to applicable drainage regulations and policies of the County of Hawai‘i.

NATURAL BEAUTY GOALS

(a) Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
(b) Protect scenic vistas and view planes from becoming obstructed.
(c) Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

NATURAL BEAUTY POLICIES

(a) Increase public pedestrian access opportunities to scenic places and vistas.
(b) Develop and establish view plane regulations to preserve and enhance views of scenic or prominent landscapes from specific locations, and coastal aesthetic values.

Discussion: The improvements are minor and consistent with traditional uses of the land and will not cause scenic impacts or impede access.

NATURAL RESOURCES AND SHORELINES GOALS

(a) Protect and conserve the natural resources from undue exploitation, encroachment and damage.
(b) Provide opportunities for recreational, economic, and educational needs without despoiling or endangering natural resources.
(c) Protect and promote the prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.
(d) Protect rare or endangered species and habitats native to Hawaii.

(e) Protect and effectively manage Hawaii's open space, watersheds, shoreline, and natural areas.
(f) Ensure that alterations to existing land forms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.

NATURAL RESOURCES AND SHORELINES POLICIES

(a) Require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.
(c) Maintain the shoreline for recreational, cultural, educational, and/or scientific uses in a manner that is protective of resources and is of the maximum benefit to the general public.
(d) Protect the shoreline from the encroachment of man-made improvements and structures.
(h) Encourage public and private agencies to manage the natural resources in a manner that avoids or minimizes adverse effects on the environment and depletion of energy and natural resources to the fullest extent.
(p) Encourage the use of native plants for screening and landscaping.
(r) Ensure public access is provided to the shoreline, public trails and hunting areas, including free public parking where appropriate.
(u) Ensure that activities authorized or funded by the County do not damage important natural resources.

Discussion: A shoreline reserve property is present between the subject property and the shoreline. The home would be set back as far as feasible on the lot, about 70 feet from the pali above the ocean, at an elevation of about 31 feet above sea level, and would not affect shoreline resources or be damaged by waves or tides.

3.6.2 Special Management Area

The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawai‘i Revised Statutes (HRS), entitled *Coastal Zone Management*. Single-family residences may be determined to be an exempt action under the County's Special Management Area (SMA) guidelines. The proposed use would be consistent with Chapter 205A because it would not affect public access to recreational areas, historic resources, scenic and open space resources, coastal ecosystems, economic uses, or coastal hazards.

The proposed improvements are not likely to result in any substantial adverse impact on the surrounding environment. The house site is set back from the shoreline and will not restrict any shoreline uses such as hiking, fishing or water sports. Lateral pedestrian use of the shoreline area

will not be impacted and there will be no effect on the public's access to or enjoyment of this shoreline area. Furthermore, viewplanes towards the project site will not be adversely impacted in any substantial way, as the property is already covered by trees near the road. It is expected that the project will not result in any impact on the biological or economic aspects of the coastal ecosystem. The project site is not situated over any major natural drainage system or water feature that would flow into the nearby coastal system. The property contains common native plants. An endangered grass species is present northeast of the property in an area frequented by fisherman. The proposed home would have no effect on this grass, and Ms. Shafer has been made aware of the location and characteristics of the grass to further avoid harm. No floodplains are present in the area. Flood Insurance Rate Maps (FIRM) delineate the areas of the property in which construction would occur as Zone X, outside the floodplain. In terms of beach protection, construction is set back from the shoreline and would not affect any beaches nor adversely affect public use and recreation of the shoreline in this area. No impacts on marine resources are likely to occur. Historic sites and cultural uses have been properly assessed.

The Planning Director has been asked to make the determination that the proposed development of a single-family home is not considered a "development" under Special Management Area Rules and Regulations of the County of Hawaii, Section 9-4 (10) (B).

3.6.3 Conservation District

The property is in the State Land Use Conservation District, Resource subzone. Any proposed use must undergo an examination for its consistency with the goals and rules of this district and subzone. The applicant has concurrently prepared a Conservation District Use Application (CDUA), to which this EA is an Appendix. The CDUA includes a detailed evaluation of the consistency of the project with the criteria of the Conservation District permit process. Briefly, the following individual consistency criteria should be noted:

1. The proposed land use is consistent with the purpose of the Conservation District;

The development of the single-family residence is in conformance with the purpose of the Conservation District. The proposed use of the subject property for a single-family residence is an identified use within the Conservation District, requiring a Board Permit for such use. A commitment by the owner to management of the site will conserve, protect and preserve the natural features on the subject property. The proposed use will not impact the lateral public access or the public's ability to utilize the coastal resources that front this property. Additionally, due to the careful and limited nature of the proposed development, there would be no significant impacts to the natural or cultural resources of the area.

2. The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;

The objective of the Resource subzone "…*is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas."* This identified use, which conforms to the design standards in 13-5-41, will ensure the sustained use of the natural resources in the project area by mitigating potential impacts as outlined in this document. Single-family residences are an identified use in the Resource subzone under HAR 13-5-24, R-8.

3. The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawaii Revised Statutes (HRS), entitled "Coastal Zone Management," where applicable;

The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawaiʻi Revised Statutes (HRS), entitled *Coastal Zone Management*, as discussed above in Section 3.6.2.

4. The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region;

Because of the relatively minor nature of the project and the lack of native terrestrial ecosystems and threatened or endangered plant species, construction and use of the property for a single-family residence is not likely to cause adverse biological impacts. The applicant is planning to implement modest landscaping of the property, which, in part, is intended to minimize the visual impact of the structure as seen from adjacent public areas. Additionally, the construction of the proposed residence will allow for the management of the property, including preventing illegal dumping and inappropriate entry into the lava tube. No effect on any coastal ecosystem will occur, because of the extensive vegetated area fronting the proposed home site, the fact that no activities are planned for the seaward portion of the property, and the planned precautions for preventing soil runoff during constructions. The proposed action will also have no impact on the public's current access to or use of the shoreline area fronting the property.

5. The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels;

The proposed use is consistent with single-family residential use on Conservation land. The home will have a low-key design of one story with 3,488 square feet (sf). This identified use, which conforms to the design standards in HAR 13-5-41, will ensure the sustained use of the natural resources in the project area by mitigating potential impacts. The use will not adversely affect the surrounding properties or how these properties are utilized.

6. The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable;

The proposed use of the subject property for a single-family residence and commitment to

management of the site will help conserve, protect and preserve the natural features of the area. The physical beauty characteristics of the existing lot will be enhanced by landscaping with native species, especially hala.

7. Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District;

The proposed action does not involve or depend upon subdivision and will not lead to any increase in intensity of use beyond the requested single-family residence.

8. The proposed land use will not be materially detrimental to the public health, safety and welfare.

The general area is already in use for recreation by the landowners of the area and the proposed single-family residence will not be detrimental to the public health, safety, and welfare.

PART 4: DETERMINATION, FINDINGS AND REASONS

4.1 Determination

The applicant expects that the State of Hawai‘i, Department of Land and Natural Resources, will determine that the proposed action will not significantly alter the environment, as impacts will be minimal, and that this agency will accordingly issue a Finding of No Significant Impact (FONSI). This determination will be reviewed based on comments to the Draft EA, and the Final EA will present the final determination.

4.2 Findings and Supporting Reasons

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* No valuable natural or cultural resource would be committed or lost. Common native plants are present but native ecosystems would not be adversely affected. A valuable cultural resource in the form of a lava tube burial will be preserved in place with more protection than exists currently. No archaeological resources are present. No valuable cultural resources and practices such as coastal access, fishing, gathering, hunting, or access to ceremonial sites would be affected in any way.

2. *The proposed project will not curtail the range of beneficial uses of the environment.* No restriction of beneficial uses would occur by residential use on this subdivision lot.

3. *The proposed project will not conflict with the State’s long-term environmental* policies. The State’s long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. The project is

minor and basically environmentally benign, and it is thus consistent with all elements of the State's long-term environmental policies.

4. *The proposed project will not substantially affect the economic or social welfare of the community or State.* The project would not have any substantial effect on the economic or social welfare of the Big Island community or the State of Hawai‘i.

5. *The proposed project does not substantially affect public health in any detrimental way.* The project would not affect public health and safety in any way. Wastewater will be disposed of in conformance with State Department of Health regulations.

6. *The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities*. The small scale of the proposed project would not produce any major secondary impacts, such as population changes or effects on public facilities.

7. *The proposed project will not involve a substantial degradation of environmental quality*. The project is minor and environmentally benign, and thus it would not contribute to environmental degradation.

8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* Thorough survey has determined that an endangered grass reported to be on the property is located to the northeast instead and would not be harmed. No other rare, threatened or endangered species of flora or fauna are known to exist on or near the project site, and none would be affected by any project activities.

9. *The proposed project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* The adverse effects of building a single-family residence are very minor and temporary disturbance to traffic, air quality, noise, and visual quality during construction. This area is fairly isolated from other residences, and no accumulation of adverse construction effects would be expected. Other than the precautions for preventing adverse effects during construction listed above, no special mitigation measures should be required to counteract the small adverse cumulative effect.

10. *The proposed project will not detrimentally affect air or water quality or ambient noise levels.* No substantial effects to air, water, or ambient noise would occur. Brief, temporary effects would occur during construction and would be mitigated.

11. *The project does not affect nor would it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area.* The home would be located outside the flood zone, at 31 feet above sea level and about 70 feet from pali above the ocean, outside the area historically affected by tsunami.

12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* The current view from Old Government Road across the lot to the ocean is generally obscured by existing vegetation. The proposed action would insert a home between Old Government Road and the ocean that could be partially visible to passing motorists, bicyclists and pedestrians. The area between the road and the house will be landscaped with hala, the most common native species in the area, to partially shield the home from view. Although the addition of a structure may be considered to detract at some level from the scenic landscape, the attractive design of the home and the landscaping, given the existing context, would not materially degrade the scenery of the project area.

13. *The project will not require substantial energy consumption.* Negligible amounts of energy input would be required for construction.

For the reasons above, the proposed project will not have any significant effect in the context of Chapter 343, Hawai‘i Revised Statues and section 11-200-12 of the State Administrative Rules.

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ENVIRONMENTAL ASSESSMENT

JOAN SHAFER SINGLE-FAMILY DWELLING IN THE CONSERVATION DISTRICT AT WA‘AWA‘A

TMK (3rd): 1-4-028:001
Wa‘awa‘a, Puna, County of Hawai‘i, State of Hawai‘i

Appendix 1a
Responses to Early Consultation/SHPD Letters

LINDA LINGLE
GOVERNOR OF HAWAII

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

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:AB

Correspondence: HA-10-29

AUG 12 2009

Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, Hawai'i 96721

SUBJECT: Environmental Assessment Pre-Consultation for Proposed Single Family Residence, Located at Wa'awa'a, Puna, Hawai'i, TMK: (3) 1-4-028:001

Dear Mr. Terry:

The Office of Conservation and Coastal Lands (OCCL) is in receipt of your correspondence requesting early consultation for the preparation of an environmental assessment (EA) for a single-family residence (SFR) on a 0.392-acre lot located at Wa'awa'a, Puna, Hawai'i, TMK: (3) 1-4-028:001.

The subject parcel appears to be located within the Conservation District, Resource subzone. A SFR is an identified land use within the Resource Subzone pursuant to Hawai'i Administrative Rules (HAR) §13-5-24, R-8, SINGLE FAMILY RESIDENCE, D-1, *A single family residence that conforms to design standards as outlined in this chapter*. A SFR would need to comply with HAR §13-5-41, Single family residences; standards. The proposed action would require the filing of a Conservation District Use Application (CDUA) for a Board permit and an EA. Ultimately, the decision to approve or deny the construction of a SFR is at the discretion of the Board of Land and Natural Resources.

OCCL recommends that you review Chapter 13-5, HAR and the CDUA form on our website at www.hawaii.gov/dlnr/occl for incorporation into the EA. In addition, please include a discussion on coastal hazards as they relate to the proposed action. The discussion might include a description of historical events and any special engineering designed to adapt or accommodate beach erosion or extreme coastal hazards (e.g., hurricane or tsunami inundation). It may also be useful to discuss the impact of the proposed action on public shoreline access.

Thank you for the opportunity to pre-consult on the EA. Should you have any questions regarding this correspondence, please contact Audrey Barker of our office at (808) 587-0316 or audrey.t.barker@hawaii.gov.

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

c: Chairperson
HDLO
Hawai'i County Planning Department

William P. Kenoi
Mayor

BJ Leithead Todd
Director

Margaret K. Masunaga
Deputy

County of Hawai'i

PLANNING DEPARTMENT
Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawai'i 96720
Phone (808) 961-8288 • Fax (808) 961-8742

August 14, 2009

Mr. Ron Terry
Geometrician Associates LLC
P.O. Box 396
Hilo, HI 96721

Dear Mr. Terry:

SUBJECT: Pre-Consultation on Environmental Assessment
Landowner: Joan M. Shafer Trust
Project: Construction of a Single-Family Dwelling & Related Improvements
Tax Map Key: 1-4-28:1, Wa'awa'a Subdivision, Puna, Hawai'i

This is in regards to your letter dated August 6, 2009 requesting our comments for an Environmental Assessment on the above referenced project.

We note the following:

1. According to Real Property Tax Records, the parcel consists of 17,076 square feet.

2. The General Plan's Land Use Pattern Allocation Guide (LUPAG) Map designation of the subject parcel is Open.

3. It is designated Conservation by the State Land Use Commission. For parcels that are designated Conservation by the State Land Use Commission, there is no County zoning per se.

4. Although it is located within the County's Special Management Area, our maps denote that Tax Map Key: 1-4-28:51 is makai of the subject parcel. Parcel 51, however, is affected by coastal erosion and may not be exactly as represented by existing maps.

5. According to files on nearby parcels, this is an environmentally sensitive area. This area is a littoral lowland native forest. The Federally listed *Ischaemum byrone* is

present throughout this area. The endangered Hawaiian bat and endangered Hawaiian hawk also frequent this area.

6. We understand that an archaeological inventory will be conducted. The historic Puna Trail is in the vicinity. We recommend that Na Ala Hele be contacted for their comments.

7. There may be "Exceptional Trees" adopted by County ordinances nearby.

8. A Special Management Area Use Permit Assessment Application will be required to be submitted for the proposed structures and activities.

Thank you for the opportunity to provide preliminary comments. Please provide us with a copy of the Draft Environmental Assessment for our review and file.

If you have questions, please contact Esther Imamura of this office at 961-8139.

Sincerely,

BJ LEITHEAD TODD
Planning Director

ETI:cs
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William P. Kenoi
Mayor

Harry S. Kubojiri
Police Chief

Paul K. Ferreira
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8865

August 13, 2009

Mr. Ron Terry
Principal
Geometrician Associates
P. O. Box 396
Hilo, HI 96721

Dear Mr. Terry:

Subject: Early Consultation Environmental Assessment for Single-Family Home in the Conservation District at Wa'awa'a, Puna District TMK: (3rd)1-4-028:001

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.

If you have any questions, please contact Captain Steven Guillermo, Commander of the Puna District, at 966-5835.

Sincerely,

DEREK D. PACHECO
ASSISTANT POLICE CHIEF
AREA I OPERATIONS

SG:lli

MALAMA O PUNA
P. O. Box 1520
Pahoa, Hawai 'i 96778
(808) 965-2000
www.malamaopuna.org * malamaopuna@yahoo.com

Preserving Hawai 'i's precious natural heritage

August 29, 2009

Board of Land and Natural Resources
Department of Land and Natural Resources
P. O. Box 621
Honolulu, HI 96809

Aloha Land Board Members,

Malama O Puna is an environmental 501(c)(3) nonprofit with nearly 1500 member households, dedicated to safeguarding Puna's natural heritage, and we offer mana'o on the proposed development at TMK (3)1-4-028-001, on the Puna coastline at Wa'a wa'a.

The applicant proposes to build a 3500 sq. foot house on a 0.392 acre lot that is entirely within the Conservation District, Subzone Resource and the Special Managemant Area. This conservation district and SMA exist along the front of the 50 coastal lots in the subdivision. All of these lots are fully in the SMA, and the lots that are fully in the conservation district are contiguous and make up about a fifth of the coastal properties. This mostly undeveloped coastline is part of one of the last native coastal forests of its extent left on the islands.

There is a plethora of legislation to prohibit this development. We cite the relevant law below, in italics, and our comments are in bold type:

§13-5-1 Purpose. *The purpose of this chapter is to regulate land-use in the conservation district for the purpose of conserving, protecting, and preserving the important natural resources of the ·State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare.*

§13-5-30 *(c) In evaluating the, merits of a proposed land use, the department or board shall apply the following criteria:*
(1) The proposed land use is consistent with the purpose of the conservation district; ("...conserving, protecting, and preserving the important natural resources...", from ***Purpose***, above)

Please see response to 205A (2) (B) (3) (A) and §13-5-30 (C) (4) above.

205A (3) (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

To truly minimize alteration, this development must be disallowed.

205A (3) (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

Please see response to 205A (2) (B) (3) (A) above.

205A (3) (D) Encourage those developments that are not coastal dependent to locate in inland areas.

This development is clearly NOT coastal dependent. Residences are more suited to inland locations as salt spray damages the kinds of landscaping that most people desire, prevents cultivation of food plants, fogs windows and causes relentless corrosion.

205A (4) (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

and

205A (4) (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

Please see response to §13-5-30 (C) (4) above.

205A (6) (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;
This site seems to be subject to all of these. Most are obvious. Freshwater flooding of coastal areas will increase as sea level rises because as the level of salt water underlying coastal land rises, storm water cannot drain into the ground as fast, and drains on the surface instead.

205A (7) (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
Please take "maximum extent possible" seriously.

205A (9) (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion
and
§13-5-41 Single family residences; standards. *(a) Single family residential uses, approved by the board shall comply with the design standards contained in Exhibit 4, entitled "Single Family Residential Standards, dated September 9, 2005.*

This law and exhibit both encourage limits on obtrusiveness of homes, but we hope that you will not allow any home to be built in the conservation district. It will set a bad precedent as there has not yet been such development in the conservation

undeveloped coastline, therefore it is not possible for development to be compatible with the surrounding area. Further, the Hawai'i County General Plan and the Puna Community Development Plan list this area as one of scenic beauty that should not be compromised.

(6) The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable;

A large house cannot preserve or improve upon natural beauty and open space.

(8) The proposed land use will not be materially detrimental to the public health, safety and welfare.

A house cannot help but be materially detrimental, due both to the use of imported and toxic materials that have been extracted at the expense of some other place (eg, timber extraction contributing to forest decline in NW N. America) and to the physical obstruction and obliteration inflicted upon the otherwise natural and more perfect coastline.

The applicant shall have the burden of demonstrating that a proposed land use is consistent with the above criteria.

(This will be interesting!)

From HRS, section on Coastal Zone Management:

205A (2) (B) (1) Recreational resources; (A) Provide coastal recreational opportunities accessible to the public.

And

205A (2) (B) (3) (A) Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

In almost every case, houses built on the coast are an impediment to access, both from mauka areas and along the coastline, and this lot has a well-established fisherman's access road at its northwestern boundary, that is either wholly or partially within the subject parcel. Never can one feel as free while walking along an inhabited coastline as it is possible to feel on a natural coastline. More often than not, fishermen and coastline hikers are intimidated by property owners and their fierce dogs, limiting enjoyment of what should be a free and open space.

205A (2) (B) (4) (A) Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Please see response to §13-5-30 (C) (4) above.

205A (2) (B) (6) Coastal hazards; (A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Large chunks of the rocky cliffs along this coast break off during storms, and waves toss boulders inland on the tops of the cliffs. Earthquakes have also caused cliff attrition. There is an increasing danger from tsunami and sea level rise as global warming progresses. Therefore, no further development should be allowed on the coast.

205A (2) (C) (1) (B) (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value

In no way can a residential development, much less a large one, be considered consistent with the purpose of conservation. The lot is 3.92 acres (17,075.52 square feet). A 3,500 square foot house, plus driveway and possibly other hardscape (lanai? pool?) would reduce the allegedly undeveloped area to a little over 14,000 square feet or even less. But construction equipment and activities will damage much more than that. This is not acceptable.

(3) The proposed land use complies with provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management" where applicable; **(see below)**

*(2) The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;(**§13-5-13 Resource (R) subzone.** (a) The objective of this subzone is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas.)*

There is very little coastal development of this type that has reliance on the natural resources, other than to exploit the nice view for the owners, at the expense of the public's view.

4) The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region;

A large house on the coastline has to be considered substantially adverse for the natural resources, for example: There will be loss of habitat for native coastal plants, including the endangered coastal grass, *Ischaemum byrone,* which is more common and healthier in Wa'a wa'a than anywhere else. *Ischaemun byrone* was noted by Malama O Puna in 2007 near the makai boundary of this lot (at the specific location N 19° 32.934' W 154° 52.084'). On a visit to this site on 8/18/09 we attempted to find the plant located previously, but found no mature *Ischaemum byrone.* At this location we did find a shallow hole resulting from recent digging, whereas we found no other evidence of digging along the coastline. We observed a few immature grass plants that could be *Ischaemum byrone* (this can be verified later, as they flower, using our GPS coordinates).

This lot lies on Nanawale Bay, which is a well-known mating place for endangered humpback whales, whose courtship cries can be heard from November to April, and nearly every night throughout January and February. Honu, the threatened green sea turtle, which is adversely impacted by coliforms in the water, is frequently seen here. Along this coastline, endangered i'o soar, and it is a coast still wild enough for the albatross to visit, and for the endangered ope'ape'a, the Hawaiian hoary bat, to be sighted, as hala is one of the few species of trees the bat will roost on when wintering in coastal areas. There are mature hala on this lot and many small hala are also present. Along with hala's importance to the natural ecosystem, is its importance as a salt spray break. A thick coastal hala forest protects the less salt tolerant foliage, such as fruit trees, on the agricultural lots further mauka, from damage by salt spray.

(5)The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels;

This lot borders on the Honolulu Section of the Nanawale State Forest Reserve, and a large home is completely inappropriate on conservation land right on the edge of the reserve. There is no development visible from the subject parcel, only

district in this geographical area. Considering also that this parcel lies between the Forest Reserve and this other stretch of undeveloped conservation land, we have a compelling reason to preserve this contiguous stretch of relatively pristine coastline that is over a mile long.

The conservation district on this coastline is rugged, wild and largely untouched. It was dedicated as conservation district in 1961. There should never have been any owner expectation for development of recently purchased lots. This and all coastlines should be reserved for nature, and respectful human visits. It is not appropriate for homes to be built there.

Sincerely,

René Siracusa

René Siracusa, President
Malama O Puna

cc: Hawaii County Planning Department
Office of Conservation and Coastal Land
Dr. Ron Terry, Geometrician Associates

PHONE (808) 594-1888

FAX (808) 594-1865

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

HRD09/4612

September 8, 2009

Ron Terry, Principal
Geometrician Associates
P.O. Box 396
Hilo, HI 96721

RE: Early consultation for a Draft Environmental Assessment for Single-Family Home in the Conservation District at Wa'awa'a, Puna, Hawai'i Island; TMK (3) 1-4-028:001.

Aloha e Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter, dated August 6, 2009. According to this document, Joan Shafer plans to build a 3,488-square foot home on her 0.392-acre subdivision lot which is located mauka of the shoreline beach reserve property in Wa'awa'a, Puna, Hawai'i. The required Draft Environmental Assessment (EA) is being prepared for this project, along with a Conservation District Use Application because the property lies within the State Land Use Conservation District. OHA has reviewed the proposal and offers the following comments at this time.

Chapter 343 of the Hawaii Revised Statues (HRS) requires that a Draft EA include a Cultural Impact Assessment (CIA). The CIA should include information relating to the traditional and customary practices and beliefs of the area's Native Hawaiians, and the community should be involved in this assessment. Consideration must also be afforded to any individuals accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, Section 7.

OHA requests clarification about whether an archaeological inventory survey for the project will be submitted to the State Historic Preservation Division for review and approval. If so, OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

In addition, OHA recommends that the applicant use native vegetation in her landscaping plan for the subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Thank you for the opportunity to comment. We look forward to reviewing the upcoming Draft EA and CIA. If you have further questions, please contact Heidi Guth by phone at (808) 594-1962, or e-mail her at heidig@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA Hilo Community Resource Coordinator

LINDA LINGLE
GOVERNOR OF HAWAII

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

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

August 3, 2009

Robert B. Rechtman, Ph.D.
Rechtman Consulting, LLC
517-A E. Lanikaula Street
Hilo, Hawaii 96720

LOG NO: 2009.2545
DOC NO: 0908MD06
Archaeology

Dear Dr. Rechtman:

SUBJECT: Chapter 6E-42 Historic Preservation Review – Request for Comment on a CDUA for a 0.392 parcel Wa`awa`a Ahupua`a, Puna District, Island of Hawaii TMK: (3) 1-4-028:001

Thank you for the opportunity to comment on the aforementioned project, which we received on July 27, 2009. We understand that you originally submitted this to our office in August 2008; we have no record of this letter prior to now and apologize for the mistake and the delay it caused you and your clients. The applicants are planning on building a house on the currently vacant parcel. We determine that **no historic properties will be affected** by this project because:

- ☐ Intensive cultivation has altered the land
- ☐ Residential development has altered the land
- ☐ Previous grubbing/grading has altered the land
- ☐ An accepted archaeological inventory survey (AIS) found no historic properties
- ☐ SHPD previously reviewed this project and mitigation has been completed
- ☒ Other: *On June 3, 2005 archaeologists from your firm conducted a site visit to this parcel and found no historic properties; we concur with that assessment.*

In the event that historic resources, including human skeletal remains, cultural materials, lava tubes, and lava blisters/bubbles are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, Hawaii Island Section, needs to be contacted immediately at (808) 933-7653.

If you have questions about this letter please contact Morgan Davis at (808) 933-7650.

Aloha,

Theresa K. Donham, M.A., Lead Archaeologist
Hawaii Island Section, State Historic Preservation Division

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

November 13, 2009
Robert B. Rechtman, Ph.D.
Rechtman Consulting, LLC
507A E. Lanikaula St.
Hilo, Hawaii 96720

LOG NO: 2009.3333
DOC NO: 0911AJ02

Dear Dr. Rechtman:

Subject: **Inadvertent Discovery of Native Hawaiian remains SIHP SITE (50-10-46-27557) located in the Ahupua'a of Wa'awa'a, Puna District, Island of Hawai'i.**
TMK (3) 1-4-028:001

On October 13, 2009 both Theresa Donham, Lead Archaeologist for the State Historic Preservation Division (SHPD) and Analū K. Josephides, SHPD Cultural Historian was notified of an inadvertent discovery of human skeletal remains on the aforementioned above property.

On October 15, 2009, your consultant, Bob Rechtman, and Theresa Donham, SHPD Lead Archaeologist, conducted a site visit; at this time Ms. Donham verified these human remains were located in a cave on your property. Ms. Donham concurred that the remains were of an adult, over 50 years old, and probably of Hawaiian ethnicity based on context as associated with traditional items, its condition and location in a traditional burial area.

Pursuant to the Hawai'i Administrative Rules (HAR) 13-300-40, the department shall have jurisdiction over any inadvertent discoveries of human skeletal remains and any burial goods over 50 years old, regardless of ethnicity.

Pursuant to HAR 13-300-40 (c) (6) SHPD notified the Hawai'i Island Burial Council representative for the Puna district, Ms. Dutchie Kapu Saffery on November 13, 2009. Ms. Saffery has requested na iwi kupuna to be preserved in place. Ms. Saffery also requested that both the department and the land owner make every effort to consult with not only recognized descendants, but any known descendants of the Wa'awa'a, Puna district or nearby ahupua'a.

Pursuant to HAR 13-300-40 (c) (4), the SHPD also notified Jimmy Medeiros, a recognized cultural descendant to various ahupua'a of the Puna district and a member of a Native Hawaiian organization called "Kanaka Council." Mr. Medeiros stated that he will contact the Puna members of the Kanaka Council who may have knowledge and/or information about the oral traditions, burial practices of the families of that area. Mr. Medeiros also agreed that the human skeletal remains should be preserved in place.

Pursuant to HAR 13-300-40 (i), a preservation plan shall be prepared and on Monday November 9, 2009 Bob Rechtman of Rechtman Consulting, LLC prepared a preservation plan for the treatment of the human remains located on the aforementioned property as listed above. The plan concluded that you as the land owner did request to preserve in place the human skeletal remains along with other preservation measures.

Pursuant to HAR 13-300-40 (e), the SHPD concludes with all aforementioned parties in this letter, as well as with you, the land owner to preserve in place the human skeletal remains located on your subject property as listed above.

Pursuant to HAR 13-300-40 (h), the department has ninety days (90) to approve the burial site component of the preservation plan.

Any questions, please contact Analu Kameeiamoku Josephides, SHPD Cultural Historian at 808-933-7652.

Sincerely,

P. Coochie Cayan

Phyllis Coochie Cayan
History and Culture Branch Chief

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ENVIRONMENTAL ASSESSMENT

JOAN SHAFER SINGLE-FAMILY DWELLING IN THE CONSERVATION DISTRICT AT WAʻAWAʻA

TMK (3rd): 1-4-028:001
Waʻawaʻa, Puna, County of Hawaiʻi, State of Hawaiʻi

Appendix 2
Archaeological Assessment/Cultural Impact Assessment

NOTE: BURIAL LOCATION HAS BEEN REDACTED FROM ALL MAPS AT REQUEST OF DLNR-OCCL

RC-0654

Cultural Impact Assessment Associated with the Proposed Construction of a Single-Family Dwelling in the Wa‘awa‘wa Subdivision

(TMK: 3-1-4-028:001)

Wa‘awa‘a Ahupua‘a
Puna District
Island of Hawai‘i

DRAFT VERSION

PREPARED BY:

Robert B. Rechtman, Ph.D
and
Olivier M. Bautista, B.A.

PREPARED FOR:

Joan Shafer
209 Honeysuckle Lane
Maggie Valley, NC 28751

January 2010

RECHTMAN CONSULTING, LLC
507-A E. Lanikaula St. Hilo, Hawaii 96720
phone: (808) 969-6066 fax: (808) 443-0065
e-mail: bob@rechtmanconsulting.com
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

Cultural Impacts Associated with the Proposed Construction of a Single-Family Dwelling in the Waʻawaʻwa Subdivision.

(TMK: 3-1-4-028:001)

Waʻawaʻwa Ahupuaʻa
Puna District
Island of Hawaiʻi

RECHTMAN CONSULTING

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INTRODUCTION

At the request of Joan Shafer (landowner), Rechtman Consulting, LLC has prepared this cultural impact assessment study to accompany an Environmental Assessment and a Conservation District Use Application associated with the proposed construction of a single family dwelling on TMK: (3)-1-4-028:001 in Waʻawaʻwa Ahupuaʻa Puna, Hawaiʻi. (Figures 1 and 2). The 0.392-acre parcel is bounded to the south by the Government Beach Road (Figure 3), to the north by a shoreline beach reserve property, to the east by an undeveloped residential parcel, and to the west by undeveloped state land. Ground surface within the project area consists of *pāhoehoe* bedrock from a 750 to 1,500 year old Kilauea Volcano lava flow (Wolfe and Morris 1996) that has pockets of thin soil in low lying areas. Most of the parcel is covered by a dense growth of beach *naupaka* (*Scaevola sericea*) and wedelia (*Wedelia trilobata*) mixed with *hala* (*Pandanus odoratissimus*), coconut palms (*Cocos nucifera*), octopus trees (*Schefflera actinophylla*), *laua'e* (*Phymatosorus grossus*), guava (*Psidium guajava*), and cane grass (*Pennisetum purpureum*) (Figures 4 and 5). An exposed *pāhoehoe* bedrock shelf and small barren cliff (Parcel 051, shoreline beach reserve property) front the study parcel toward the coast. An informal parking area and coastal access trail are situated on the state land to the west of the study parcel.

The current study was prepared pursuant to Act 50, approved by the Governor on April 26, 2000; and in accordance with the Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impact*, adopted by the Environmental Council, State of Hawaiʻi, on November 19, 1997. Below is a description of the proposed development activities, a detailed cultural and historical background, and a presentation of prior studies; all of which combine to provide the physical and cultural setting and context. A summary of consultation is provided, followed by a discussion of potential cultural impacts and the appropriate actions and strategies to mitigate any potential impacts.

PROPOSED DEVELOPMENT ACTIVITIES

The landowner proposes to construct a 3,488-square-foot single-family dwelling and related improvements. The single-story home would include three bedrooms with a study, garage and *lānai* (Figure 6). The project would also include a pond and minimal landscaping using mostly native or Polynesian species that are found in the area, as well as a driveway and septic system to be located on the *mauka* side of the parcel.

Figure 1. Project area location.

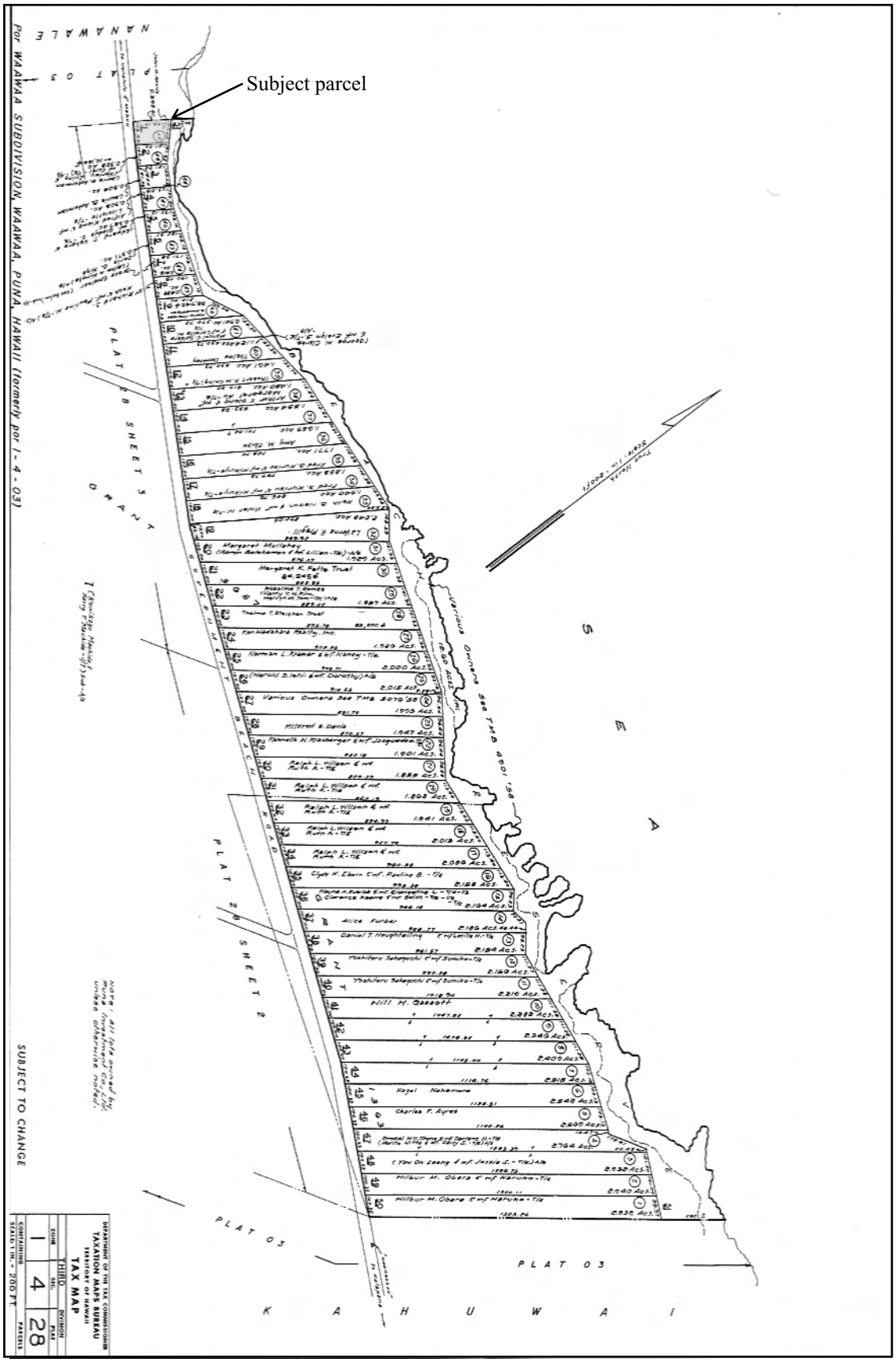

Figure 2. Tax Map Key (TMK): 3-1-4-028 showing study parcel (Parcel 001).

Figure 3. Government Beach Road along the *mauka* boundary of the study parcel.

Figure 4. Typical vegetation within the *makai* portion of the parcel.

Figure 5. Typical vegetation in the *mauka* portion of the parcel.

CULTURE-HISTORICAL BACKGROUND

Archaeologists and historians describe the inhabiting of Hawaiʻi in the context of settlement that resulted from voyages taken across the open ocean. For many years, researchers have proposed that early Polynesian settlement voyages between Kahiki (the ancestral homelands of the Hawaiian gods and people) and Hawaiʻi were underway by A.D. 300, with long distance voyages occurring fairly regularly through at least the thirteenth century. It has been generally reported that the sources of the early Hawaiian population—the Hawaiian Kahiki—were the Marquesas and Society Islands (Cordy 2000; Emory in Tatar 1982:16-18).

For generations following initial settlement, communities were clustered along the watered, windward (*koʻolau*) shores of the Hawaiian Islands. Along the *koʻolau* shores, streams flowed and rainfall was abundant, and agricultural production became established. The *koʻolau* region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal waters. It was around these bays that clusters of houses where families lived could be found (McEldowney 1979:15). In these early times, Hawaiʻi's inhabitants were primarily engaged in subsistence level agriculture and fishing (Handy et al. 1972:287).

Over a period of several centuries, areas with the richest natural resources became populated and perhaps crowded, and by about A.D. 900 to 1100, the population began expanding to the *kona* (leeward side) and more remote regions of the island (Cordy 2000:130). In Kona, communities were initially established along sheltered bays with access to fresh water and rich marine resources. The primary "chiefly" centers were established at several locations—the Kailua (Kaiakeakua) vicinity, Kahaluʻu-Keauhou, Kaʻawaloa-Kealakekua, and Hōnaunau. The communities shared extended familial relations, and there was an occupational focus on the collection of marine resources. By the fourteenth century, inland elevations to around the 3,000-foot level were being turned into a complex and rich system of dryland agricultural fields (today referred to as the Kona Field System). By the fifteenth century, residency in the uplands was becoming permanent, and there was an increasing separation of the chiefly class from the common people. In the sixteenth century the population stabilized and the *ahupuaʻa* land management system was established as a socioeconomic unit (see Ellis 1963; Handy et al. 1972; Kamakau 1961; Kelly 1983; and Tomonari-Tuggle 1985).

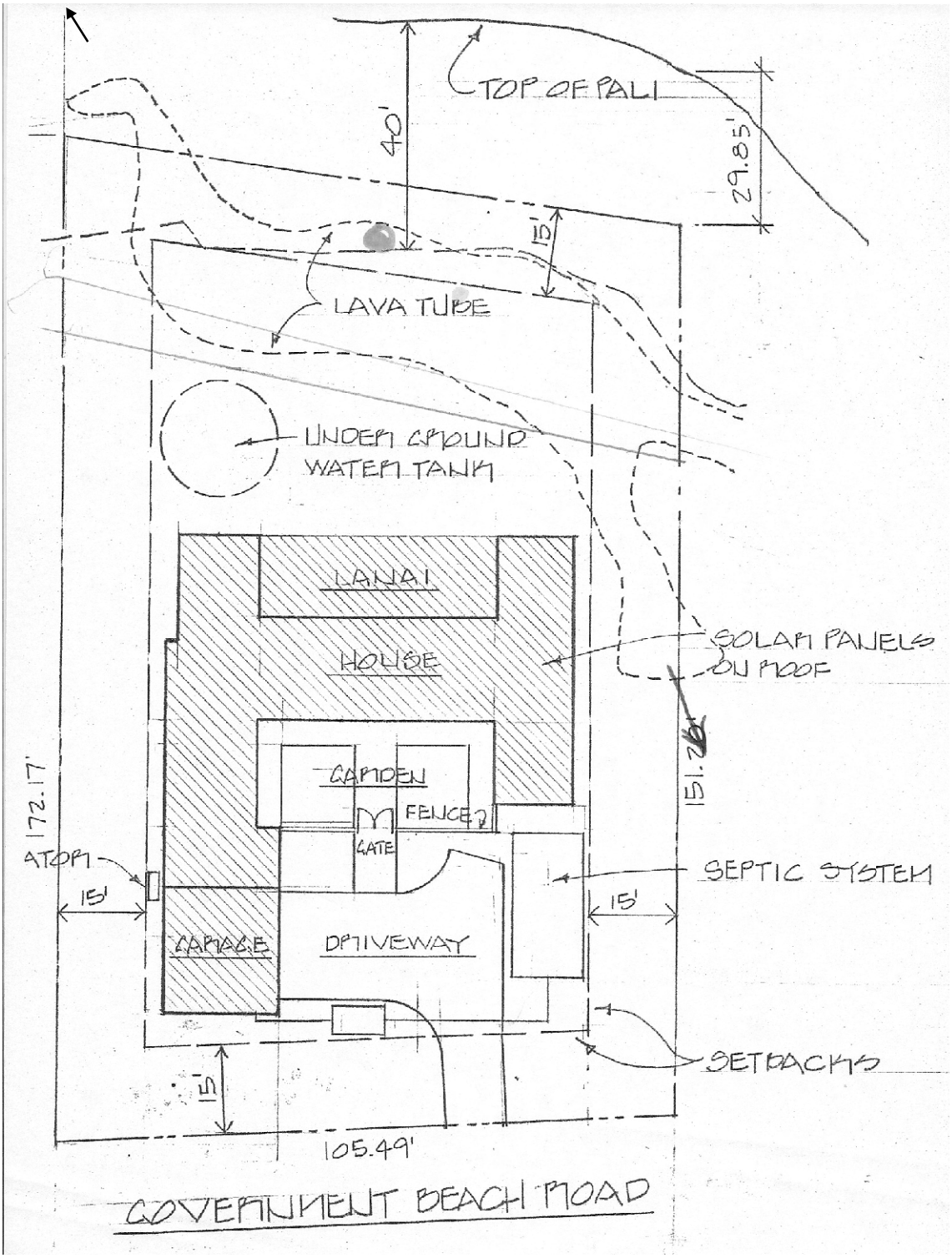

Figure 6. Proposed development plan.

Over the generations, the ancient Hawaiians developed a sophisticated system of land and resources management. By the time ʻUmi-a-Līloa rose to rule the island of Hawaiʻi in ca. 1525, the island (moku-puni) was divided into six districts or moku-o-loko (cf. Fornander 1973–Vol. II:100-102). On Hawaiʻi, the district of Puna is one of six major moku-o-loko within the island.

Puna like other large districts on Hawaiʻi, was subdivided into *ʻokana* or *kalana* (regions of land smaller than the *moku-o-loko*, yet comprising a number of smaller units of land. The *moku-o-loko* and *ʻokana* or *kalana* were further divided into manageable units of land, and were tended to by the *makaʻāinana* (people of the land) (cf. Malo 1951:63-67). Of all the land divisions, perhaps the most significant management unit was the *ahupuaʻa*. *Ahupuaʻa* are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it (thus the name *ahu-puaʻa* or pig altar). In their configuration, the *ahupuaʻa* may be compared to wedge-shaped pieces of land that radiate out from the center of the island, extending to the ocean fisheries fronting the land unit. Their boundaries are generally defined by topography and geological features such as *puʻu* (hills), ridges, gullies, valleys, craters, or areas of a particular vegetation growth.

The *ahupuaʻa* were also divided into smaller individual parcels of land (such as the *ʻili*, *kōʻele*, *māla*, and *kīhāpai*, etc.), generally oriented in a *mauka-makai* direction, and often marked by stone alignments (*kuaiwi*). In these smaller land parcels the native tenants tended fields and cultivated crops necessary to sustain their families, and the chiefly communities with which they were associated. As long as sufficient tribute was offered and *kapu* (restrictions) were observed, the common people, who lived in a given *ahupuaʻa* had access to most of the resources from mountain slopes to the ocean. These access rights were almost uniformly tied to residency on a particular land, and earned as a result of taking responsibility for stewardship of the natural environment, and supplying the needs of the *aliʻi* (see Kamakau 1961:372-377 and Malo 1951:63-67).

Entire *ahupuaʻa*, or portions of the land were generally under the jurisdiction of appointed *konohiki* or lesser chief-landlords, who answered to an *aliʻi-ʻai-ahupuaʻa* (chief who controlled the *ahupuaʻa* resources). The *aliʻi-ʻai-ahupuaʻa* in turn answered to an *aliʻi ʻai moku* (chief who claimed the abundance of the entire district). Thus, *ahupuaʻa* resources supported not only the *makaʻāinana* and *ʻohana* who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms. This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resources management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources.

The current project area is located within Waʻawaʻa Ahupuaʻa, a land unit of the District of Puna, one of six major districts on the island of Hawaiʻi. As McGregor relates, "Puna is where new land is created and new growth and new life sprout. The new land is sacred, fresh, clean, and untouched. After vegetation begins to grow upon it, it is ready for human use." (2007:145. In Precontact and early Historic times the people lived in small settlements along the coast where they subsisted on marine resources and agricultural products. According to McEldowney (1979), six coastal villages were present along the Puna coast between Hilo and Cape Kumakahi (Keaʻau or Haena, Makuʻu, Waiakahiula, Honolulu, Kahuwai, and Kula or Koaʻe. Barrère (1959) summarizes the Precontact geopolitics of the Puna District as follows:

> Puna, as a political unit, played an insignificant part in shaping the course of history of Hawaii Island. Unlike the other districts of Hawaii, no great family arose upon whose support one or another of the chiefs seeking power had to depend for his success. Puna lands were desirable, and were eagerly sought, but their control did not rest upon conquering Puna itself, but rather upon control of the adjacent districts, Kau and Hilo. (Barrère 1959:15)

Despite the perceived lack of importance with respect to the emerging political history of Hawaiian leadership, Puna was a region famed in legendary history for its associations with the goddess Pele and god Kāne (Maly 1998). Because of the relatively young geological history and persistent volcanic activity the region's association with Pele has been a strong one. However, the association with Kāne is perhaps more ancient. Kāne, ancestor to both chiefs and commoners, is the god of sunlight, fresh water, verdant growth, and forests (Pukui 1983). It is said that before Pele migrated to Hawaiʻi from Kahiki, there was "no place in the islands . . . more beautiful than Puna" (Pukui 1983:11). Contributing to that beauty were the groves of fragrant *hala* and forests of *ʻōhiʻa lehua* for which Puna was famous:

> *Puna pāia ʻala i ka hala* (Puna, with walls fragrant with pandanus blossoms).

> Puna, Hawai‘i, is a place of *hala* and *lehua* forests. In olden days the people would stick the bracts of *hala* into the thatching of their houses to bring some of the fragrance indoors. (Pukui 1983:301)

The inhabitants of Puna were likewise famous for their expertise and skill in *lauhala* weaving. In Precontact and early Historic times the people lived in small settlements along the coast where they subsisted on marine resources and agricultural products. According to McEldowney (1979), six coastal villages were present along the coast between Hilo and Cape Kumakahi (Kea‘au or Haena, Maku‘u, Waiakahiula, Honolulu, Kahuwai, and Kula or Koa‘e. The current project area is located between Honolulu and Kahuwai Villages. Each of the villages, McEldowney notes:

> …seems to have comprised the same complex of huts, gardens, windbreaking shrubs, and utilized groves, although the form and overall size of each appear to differ. The major differences between this portion of the coast and Hilo occurred in the type of agriculture practiced and structural forms reflecting the uneven nature of the young terrain. Platforms and walls were built to include and abut outcrops, crevices were filled and paved for burials, and the large numbers of loose surface stones were arranged into terraces. To supplement the limited and often spotty deposits of soil, mounds were built of gathered soil, mulch, sorted sizes of stones, and in many circumstances, from burnt brush and surrounding the gardens. Although all major cultigens appear to have been present in these gardens, sweet potatoes, ti (*Cordyline terminalis*), *noni (Morinda citrifolia*), and gourds (*Lagenaria siceraria*) seem to have been more conspicuous. Breadfruit, pandanus, and mountain apple (*Eugenia malaccensis*) were the more significant components of the groves that grew in more disjunct patterns than those in Hilo Bay. [1979:17]

Following the death of Kamehameha I in 1819, the Hawaiian religious and political systems began a radical transformation; Ka‘ahumanu proclaimed herself "*Kuhina nui*" (Prime Minister), and within six months the ancient *kapu* system was overthrown. Within a year, Protestant missionaries arrived from America (Fornander 1973; I‘i 1959; Kamakau 1996[1961]). In 1823, British missionary William Ellis and members of the American Board of Commissioners for Foreign Missions (ABCFM) toured the island of Hawai‘i seeking out communities in which to establish church centers for the growing Calvinist mission. Ellis recorded observations made during this tour in a journal (Ellis 1963). His writings contain descriptions of residences and practices that are applicable to the general study area:

> As we approached the sea, the soil became more generally spread over the surface, and vegetation more luxuriant. About two p.m. we sat down to rest. The natives ran to a spot in the neighbourhood, which had formerly been a plantation, and brought a number of pieces of sugar-cane, with which we quenched our thirst, and then walked on through several plantations of sweet potato belonging to the inhabitants of the coast . . . (Ellis 1963:182-183)
>
> The population in this part of Puna, though somewhat numerous, did not appear to possess the means of subsistence in any great variety or abundance; and we have often been surprised to find desolate coasts more thickly inhabited than some of the fertile tracts in the interior; a circumstance we can only account for, by supposing that the facilities which the former afford for fishing, induce the natives to prefer them as places of abode; for they find that where the coast is low, the adjacent water is usually shallow.
>
> We saw several fowls and a few hogs here, but a tolerable number of dogs, and quantities of dried salt fish, principally albacores and bonitos. This latter article, with their *poë* [*poi*] and sweet potatoes, constitutes nearly the entire support of the inhabitants, not only in this vicinity, but on the sea coasts of the north and south parts of the island.
>
> Besides what is reserved for their own subsistence, they cure large quantities as an article of commerce, which they exchange for the vegetable productions of Hilo and Mamakua [Hāmākua], or the *mamake* and other tapas of Ora [‘Ōla‘a] and the more fertile districts of Hawaii.

> When we passed through Punau [Pānau], Leapuki [Laeapuki], and Kamomoa [Kamoamoa], the country began to wear a more agreeable aspect. Groves of coca-nuts ornamented the projecting points of land, clumps of kou-trees appeared in various directions, and the habitations of the natives were also thickly scattered over the coast . . . (Ellis 1963:190-191)

One year after Ellis' tour, the ABCFM established a base church in Hilo. From that church (Hāili), the missionaries traveled to the more remote areas of the Hilo and Puna Districts. David Lyman who came to Hawai'i in 1832, and Titus Coan who arrived in 1835 were two of the most influential Congregational missionaries in Puna and Hilo. As part of their duties they compiled census data for the areas within their missions. In 1835, 4,800 individuals are recorded as residing in the district of Puna (Schmitt 1973); the smallest total district Population on the island of Hawai'i. In 1841, Titus Coan recorded that most of the 4,371 recorded residents of Puna, lived near the shore, though there were hundreds of individuals who lived inland (Holmes 1985). In that same year, Commander Charles Wilkes of the United States Exploring Expedition, toured the Hawaiian Islands (Wilkes 1845). His expedition traveled through lower Puna not far from the current study area:

> Almost all of the hills or craters of any note have some tradition connected with them; but I found that the natives were now generally unwilling to narrate these tales, calling them "foolishness." After leaving the *pahoihoi* [pāhoehoe] plain, we passed along the line of cone-craters towards Point Kapoho, the Southeast part of the island.
>
> Of these cone-craters we made out altogether, large and small, fifteen, trending about east-northeast. The names of the seven last are Pupukai, Poholuaokahowele [Pu'u-hōlua-o-Kahawali], Punomakalua, Kapoho, Puukea, Puuku, and Keala. On some of these the natives pointed out where there had formerly been slides, an amusement or game somewhat similar to the sport of boys riding down hill on sleds. These they termed *kolua* [*hōlua*].
>
> This game does not appear to be practiced now, and I suppose that the chiefs consider themselves above such boyish amusements. The manner in which an old native described the velocity with which they passed down these slides was, by suddenly blowing a puff; according to him, these amusements were periodical, and the slides were usually filled with dried grass.
>
> As we approached the seashore, the soil improved very much, and was under good cultivation, in taro, sweet potatoes, sugar cane, and a great variety of fruit and vegetables. At about four o'clock, we arrived at the house of our guide, Kekahunanui, who was the "head man." I was amused to find that none of the natives knew him by this name, and were obliged to ask him . . .the view from the guide's house was quite pretty, the eye passing over well-cultivated fields to the ocean, whose roar could be distinctly heard. (Wilkes 1845 Vol. IV:186)
>
> During the night, one of the heaviest rains I had experienced in the island, fell; but the morning was bright and clear—every thing seemed to be rejoicing around, particularly the singing-birds, for the variety and sweetness of whose notes Hawaii is distinguished.
>
> Previous to our departure, all the tenantry, if so I may call them, came to pay their respects, or rather to take a look at us. We had many kind wishes, and a long line of attendants, as we wended our way among the numerous taro patches of the low grounds, towards Puna; and thence along the sea-coast where the lava entered the sea, at Nanavalie [Nānāwale]. The whole population of this section of the country was by the wayside, which gave me an opportunity of judging of their number; this is much larger than might be expected from the condition of the country, for with the exception of the point at Kapoho, very little ground that can be cultivated is to be seen. The country, however, is considered fruitful by those who are acquainted with it, notwithstanding its barren appearance on the roadsides. The inhabitants seemed to have an abundance if bread-fruit, bananas, sugar-cane, taro, and sweet-potatoes.

> The latter, however, are seen to be growing literally among heaps of stones and pieces of lava, with scarcely soil enough to cover them; yet they are, I am informed, the finest on the island…
>
> In some places they have taken great pains to secure a good road or walking path; thus, there is a part of the road from Nanavalie to Hilo which is built of pieces of lava, about four feet high and three feet wide on the top; but not withstanding this, the road is exceedingly fatiguing to the stranger, as the lumps are so arranged that he is obliged to take a long and short step alternately; but this the natives do not seem to mind, and they pass over the road with great facility, even when heavy laden…(Wilkes 1970, Vol. IV:188-193)

In 1846, Chester S. Lyman, "a sometime professor" at Yale University visited Hilo, Hawai‘i, and stayed with Titus Coan (Maly 1998). Traveling the almost 100 mile long stretch of the "Diocese" of Mr. Coan, Lyman reported that the district of Puna had somewhere between 3,000-4,000 inhabitants (Maly 1998). Entering Puna from Hilo, and traveling to Kea‘au along the coast, Lyman offered the following observations:

> …The groves of Pandanus were very beautiful, and are the principal tree of the region. There is some grass and ferns, and many shrubs; but the soil is very scanty. Potatoes are almost the only vegetable that can be raised, and these seem to flourish well amid heaps of stone where scarcely a particle of soil could be discovered. The natives pick out the stones to the depth often of from 2 to 4 feet, and in the bottom plant the potato–how it can expand in such a place is a wonder.
>
> Nearly all Puna is like this. The people are necessarily poor—a bare subsistence is all they can obtain, and scarcely that. Probably there are not $10 in money in all Puna, and it is thought that not over one in five hundred has a single cent. The sight of some of these potatoe patches would make a discontented N.E. farmer satisfied with his lot. Yet, I have nowhere seen the people apparently more contented & happy. (Maly 1998:35)

In Precontact Hawai‘i, all land and natural resources were held in trust by the high chiefs (*ali‘i ‘ai ahupua‘a* or *ali‘i ‘ai moku*). The use of lands and resources were given to the *hoa‘āina* (native tenants), at the prerogative of the *ali‘i* and their representatives or land agents (*konohiki*), who were generally lesser chiefs as well. In 1848, the Hawaiian system of land tenure was radically altered by the *Māhele ‘Āina*. This change in land tenure was promoted by the missionaries and the growing Western population and business interests in the island kingdom. Generally these individuals were hesitant to enter business deals on leasehold land.

By the middle of the nineteenth century the ever-growing population of Westerners forced socioeconomic and demographic changes that promoted the establishment of a Euro-American style of land ownership, and the *Māhele* became the vehicle for determining ownership of native lands. The *Māhele* defined the land interests of Kamehameha III (the King), the high-ranking chiefs, and the *konohiki*. As a result of the *Māhele*, all land in the Kingdom of Hawai‘i came to be placed in one of three categories: (1) Crown Lands (for the occupant of the throne); (2) Government Lands; and (3) Konohiki Lands (Chinen 1958:vii, Chinen 1961:13). The chiefs and *konohiki* were required to present their claims to the Land Commission to receive awards for lands provided to them by Kamehameha III. They were also required to provide commutations to the government in order to receive royal patents on their awards. The lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This process expedited the work of the Land Commission (Chinen 1961:13).

The "Enabling" or "*Kuleana* Act" (December 21,1849) laid out the frame work by which native tenants could apply for, and be granted fee-simple interest in "*kuleana*" lands, and their rights to access and collection of resources necessary to their life upon the land in their given *ahupua‘a*. The lands awarded to the *hoa‘āina* (native tenants) became known as "*Kuleana* Lands." All of the claims and awards (the Land Commission Awards or LCA) were numbered, and the LCA numbers remain in use today to identify the original owners of lands in Hawai‘i.

As a result of the *Māhele*, Wa‘awa‘a Ahupua‘a was retained as Government Land. The entire *ahupua‘a* was later commuted as four separate grant parcels: Grant No. 997 to Haole in 1852, Grant No. 1363 to Pakaka in 1854, Grant No. 2687 to Manamana in 1860, and Grant No. 3687 to R. A. Lyman in 1894 (Figure 7). The current project area is located *makai* of Grant No. 997 to Haole, but was part of Grant No. 3687 to Lyman. No Land Commission Award claims were made in Wa‘awa‘a Ahupua‘a (Haun and Henry 2004).

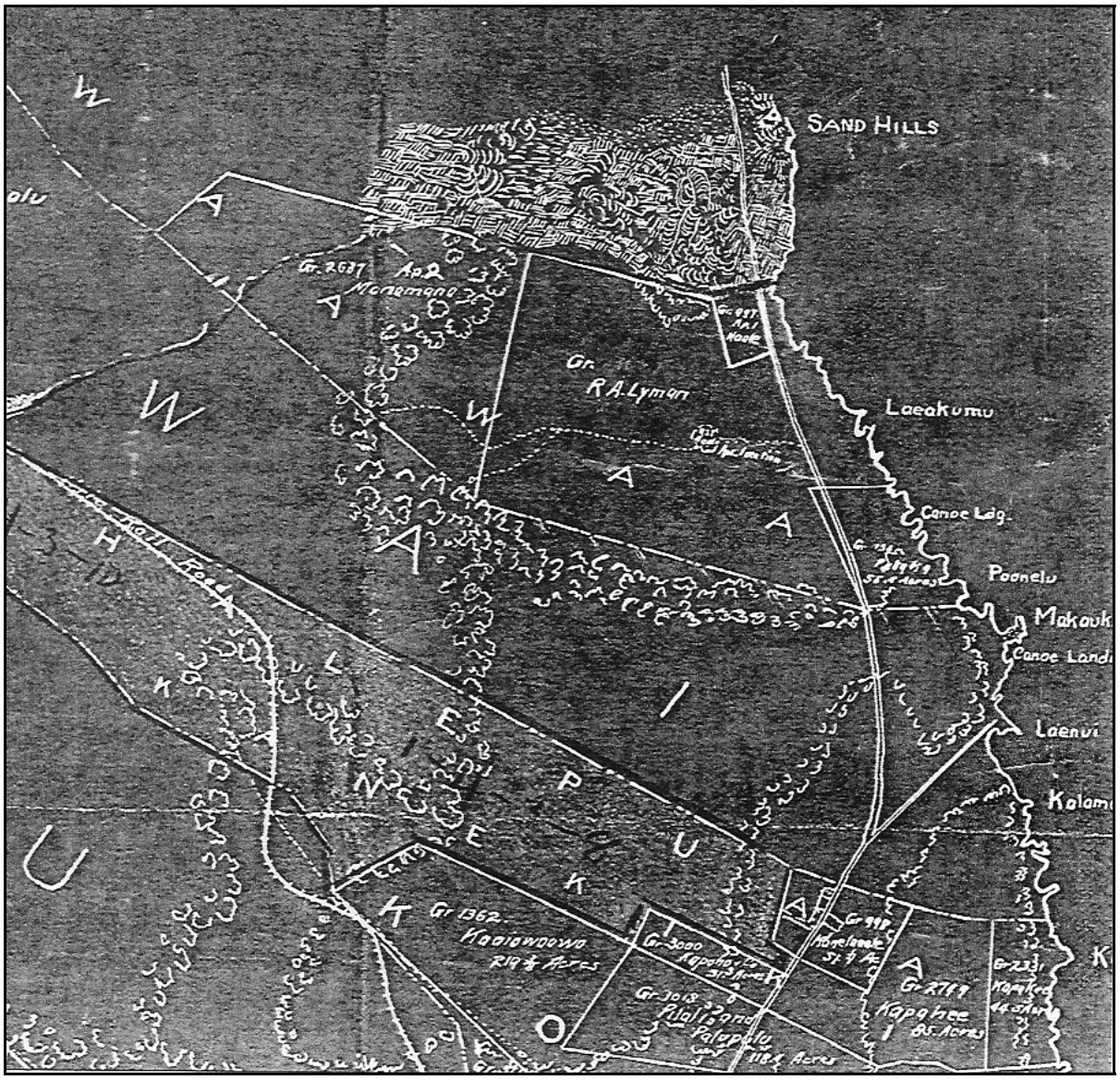

Figure 7. Portion of Wall's 1902 map of Puna District showing grant parcels (from Haun and Henry 2004).

In 1862, the Commission of Boundaries (Boundary Commission) was established in the Kingdom of Hawai‘i to legally set the boundaries of all the *ahupua‘a* that had been awarded as a part of the *Māhele*. Subsequently, in 1874, the Commissioners of Boundaries were authorized to certify the boundaries for lands brought before them. The primary informants for the boundary descriptions were old native residents of the lands, many of which had also been claimants for *kuleana* during the *Māhele*. This information was collected primarily between A.D. 1873 and 1885 and was usually given in Hawaiian and transcribed in English as they occurred. As Wa‘awa‘a was retained as government land, it boundaries were not set by the land commission.

The population of Puna declined during the early nineteenth century and Hawaiians maintained marginalized communities outside of the central population centers. These communities were located in "out-of-the-way" places. In the aftermath of the *Māhele*, economic interests in the region swiftly changed from the traditional Hawaiian land tenure system of subsistence farming and regional trading networks to the more European based cash crops including coffee, tobacco, sugar, and pineapple, and emphasized dairy and cattle ranching.

During the latter part of the nineteenth century land use within Wa‘awa‘a Ahupua‘a began to change. Yent and Ota note that the "native agricultural system began to decline around 1840 as the population declined"

(1982:11). The inland portions of the *ahupuaʻa* (portions of Grant No. 2687 and 3687) appear to have been used for cattle ranching and possibly sugarcane cultivation. Between 1890 and 1931 the area from Waʻawaʻa to Puralaʻa (likely including Grant No. 3687 to R. A. Lyman in 1894) was ranched by the Lyman Estate. The lease for cattle was transferred to Kamau in 1931 (Yent and Ota 1982:11). Other portions of the *ahupuaʻa* may have been used for sugarcane cultivation. The Puna Sugar Company operated in the Waʻawaʻa from 1900 until the 1980s (Haun and Henry 2004:7). The current project area does not appear to have been used for either purpose.

In more recent times small-scale agriculture, including the cultivation of orchids and papayas, has replaced the cattle and sugarcane operations (Yent and Ota 1982). In 1958, a large portion of Waʻawaʻa Ahupuaʻa, from the coast to the *mauka* boundary of Grant No. 3687, was subdivided into 177 residential lots (the Waʻawaʻa Residential Subdivision). This is when the current study parcel was created.

PRIOR STUDIES

While we were unable to locate any prior cultural studies conducted for the immediate Waʻawaʻa area, we did review a cultural assessment study (Maly 1998) for the Puna *ahupuaʻa* of ʻAhalanui, Laepāoʻo and Oneloa located to the east of the current study area. That project area contains numerous archaeological and burial sites, and is a locus of cultural practices associated resources collection and stewardship. Maly reported that based on the commitments of the landowner to preserve and protect the resources, the cultural interviewees felt that the then proposed project would "have no adverse effect on the lands of Ahalanui, Laepāoʻo and Oneloa." (1999:iii).

Additionally, three previous archaeological studies have been conducted at coastal parcels within the Waʻawaʻa Subdivision to the east of the current project area (Clark and Rechtman 2006; Haun and Henry 2002, 2004). Each of these previous studies is discussed in detail below.

Haun and Henry (2002) conducted an archaeological inventory survey of TMK: 3-1-4-028:038 (see Figure 2). The survey identified five sites containing a total of 37 features. The recorded sites included a ranch wall (Site 23389), three agricultural complexes (Sites 23390, 23391, and 23393), and a habitation terrace (Site 23392). Feature types identified at these sites included twenty-four planting depressions, five modified outcrops, three terraces, two enclosures, a wall, a platform, and a possible cairn. In addition to these features, Haun and Henry (2002) also identified a portion of a Historic road, but did not assign a site number to it.

Haun and Henry (2004) conducted an archaeological inventory survey of TMKs: 3-1-4-028:033 and 034 (see Figure 2). The survey identified six sites containing a total of 42 distinct features. The recorded sites included two permanent habitation complexes (Sites 23997 and 23998), a ranch wall (Site 23999), a permanent habitation enclosure (Site 24000), a burial platform (Site 24001), and an agricultural complex (Site 24002). Feature types identified at these sites consisted of fourteen excavated pits, eight enclosures, eight modified outcrops, six terraces, five walls, and one platform. Within the platform, Haun and Henry (2004) discovered a vaulted crypt that contained human skeletal remains. The agricultural features were similar to those recorded by Haun and Henry (2002). The habitation features recorded on these parcels consisted of:

> …eight enclosures, two terraces, and several wall segments. The tested habitation features yielded volcanic glass flakes, charcoal, and marine shell. The excavation at Site 23997, Feature A, also produced a glazed ceramic fragment indicating the historic use of the feature. The wall segments and at least two of the features of Site 23997 (Features A and B), which are interpreted as yard enclosures, probably represent early historic features occupied after the free-ranging cattle became a problem in the early 1800s. If the Site 23999 connects to the Site 23389 noted by Haun and Henry (2002), then it may be part of a larger enclosure that functioned like the Kuakini Wall in Kona to keep cattle out of the coastal settlements and gardens. The presence of volcanic glass at two of the sites indicates prehistoric to early historic age, prior to the widespread use of metal cutting tools. The radiocarbon sample from Feature A at Site 23998 produced two potential age ranges: 1530-1550 and 1630-1960+. The absence of historic artifacts suggests that the site's occupation was prehistoric, but there is no basis to determine whether the former 1500s age range, or the 1630 to early 1800s portion of the latter age range, is the correct one.

> The relatively large number of habitation features (14) in the project area compared to a nearby parcel surveyed by Haun and Henry (2002) is probably related to the presence of a sheltered cove at the coast that would have permitted canoe access to the area, at least at times of calm weather. The other parcel, although half the area of the current project area, only had a single habitation feature. The shoreline of the adjacent parcel consisted of a low bluff that would have precluded a canoe landing. (Haun and Henry 2004:34).

Clark and Rechtman (2006) conducted an archaeological inventory survey of TMK: 3-1-4-028:041 (see Figure 2). As a result of the survey five archaeological sites were recorded on the study parcel: two agricultural complexes (Site 25516 and 25520), a core-filled wall (Site 25517), a raised trail (Site 25518), and a habitation complex (Site 25519). The identified feature types included five modified depressions, a modified outcrop, a wall, a raised walkway, a terrace, and two enclosures. The sites were all interpreted as being from the Precontact and continued early Historic Hawaiian use of the project area for habitation and agricultural purposes.

The current study parcel and the adjacent parcel (Parcel 002) to the east were subject to archaeological investigation (Rechtman 2008; Clark and Rechtman 2008, respectively), both were negative results. Subsequently, while conducting a botanical study of the subject parcel, a section of dense *naupaka* was cleared and the opening to a lava tube was discovered (Figure 8). The biologists contacted Rechtman Consulting, LLC to investigate the tube.

With the landowner's permission, Rechtman Consulting, LLC conducted a thorough examination of the lava tube and discovered a single set of badly preserved human skeletal remains; skeletal elements observed included teeth, cranial fragments, phalanges, and poorly preserved long bones. This inadvertent discovery of human skeletal remains was reported to DLNR-SHPD, and the tube was mapped and its extent projected to the ground surface (Figure 9). The projection was overlaid on to the single-family site plan as it was then proposed (Figure 10). As can be seen in this figure one corner of the proposed structure is on top of the tube. It is the landowner's intent to preserve the remains in place. Given this intent, Rechtman Consulting, LLC recommend to the landowner to shift the proposed single-family home as far *mauka* as possible to avoid constructing directly above the lava tube. The landowner had her architect redraw the plans, shifting the house *mauka* to the 15 foot setback boundary and thus no longer directly on top of the tube (Figure 11).

Figure 8. Lava tube opening.

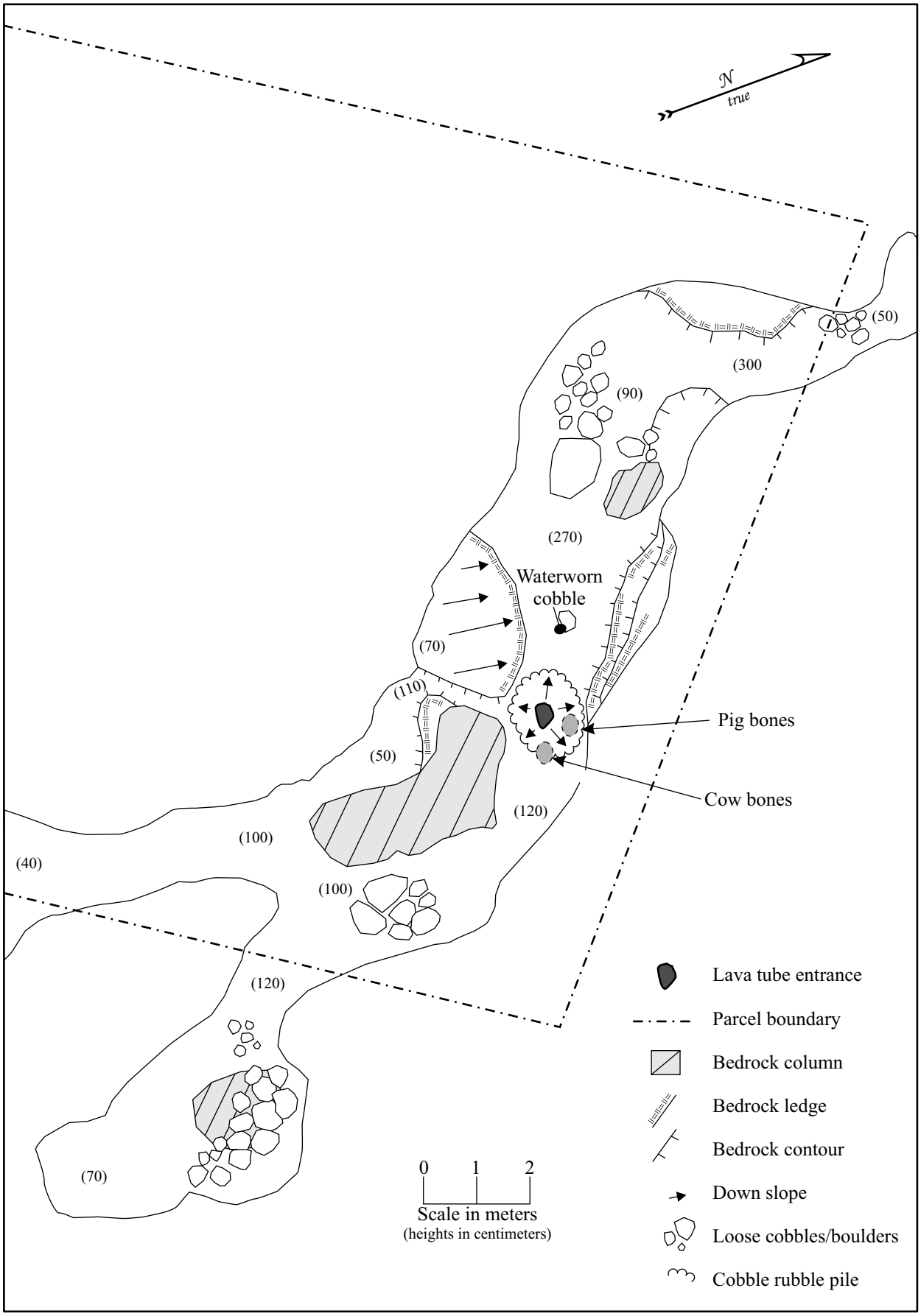

Figure 9. Plan view of lava tube.

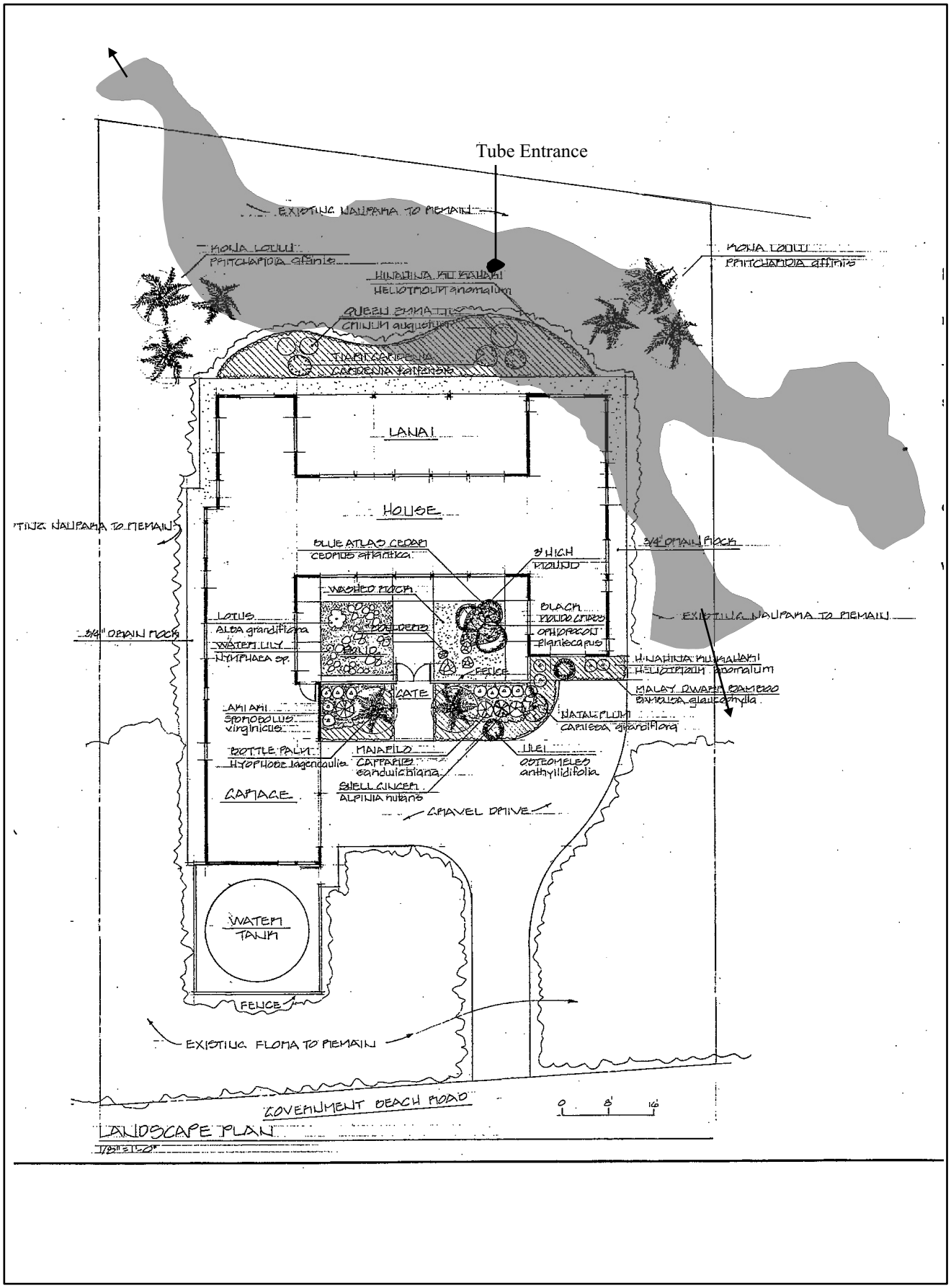

Figure 10. Original house plan and projected lava tube.

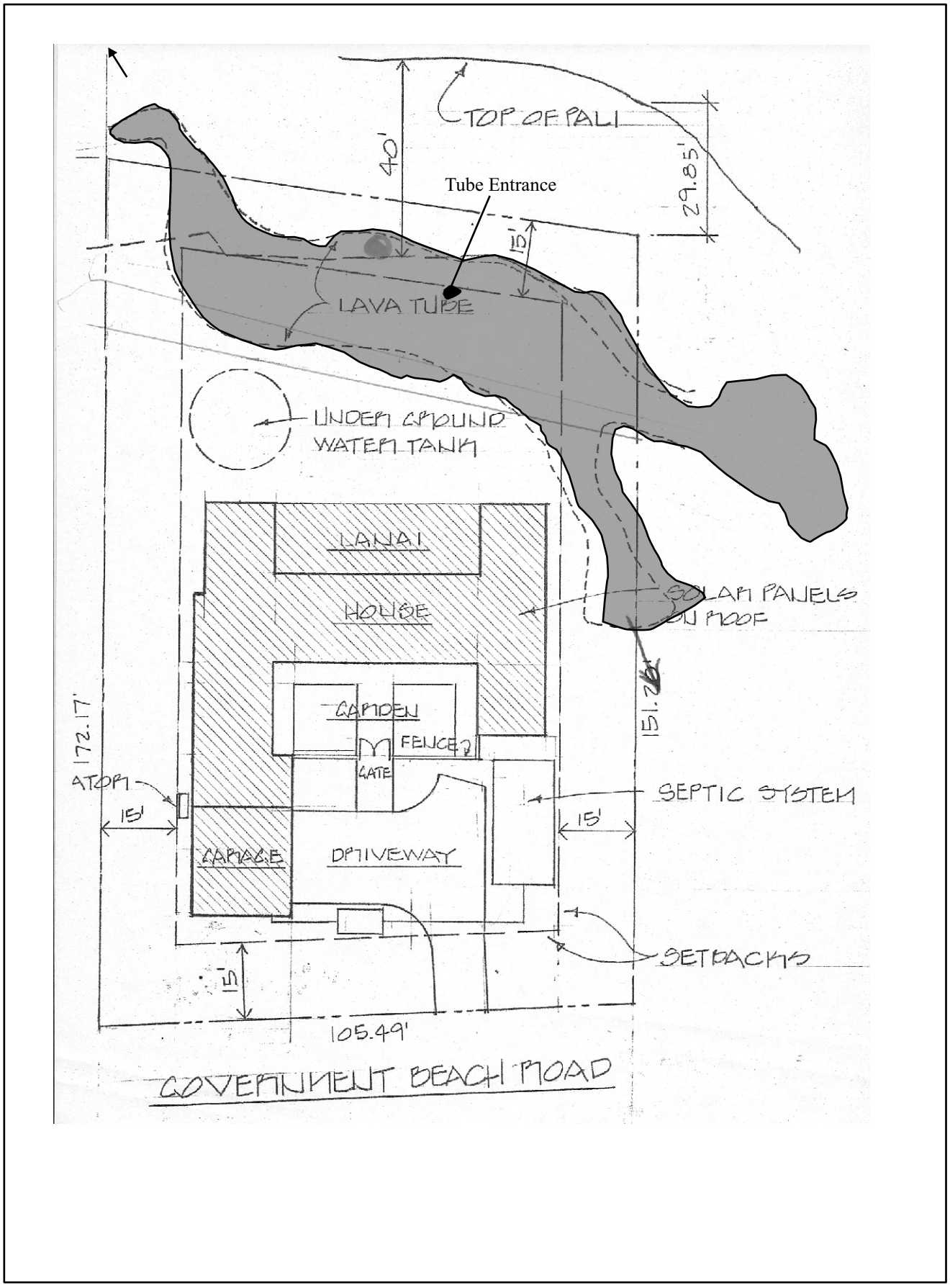

Figure 11. Redesigned house plan and projected lava tube.

With respect to the inadvertent discovery made on TMK: 3-1-4-028:001 the proposed treatment is preservation in place. The closest portion of the proposed house will be 40 feet from the tube entrance and roughly 60 feet from the skeletal remains. An underground water tank is also proposed for the property; it will be roughly 35 feet from the tube opening and roughly 30 feet from the skeletal remains. The *makai* 35 feet of the parcel (roughly 7,420 square feet) will be formally recorded as a preservation easement. Prior to any construction activities construction fencing will be placed at the *mauka* edge of this easement extending the width of the parcel. The landowner also proposes to have a single slab of *pāhoehoe* placed over the lava tube opening to both conceal and protect the burial and to provide for a safe ground surface. There will be no signs identifying the site, and aside from the addition of a few *loulu* (*Pritchardia affinis*), no planting will occur in the vicinity of the lava tube. Access to this burial site for religious or cultural practice will be granted to any native Hawaiian descendants who have been formally recognized by the Hawaii Island Burial Council and DLNR-SHPD. The proposed access route will follow the existing public access path that extends *makai* from the Government Beach Road on state land adjacent to and west of the subject property, then along the *makai* property boundary for roughly 70 feet, then directly *mauka* for about 15 feet to the lava tube entrance (see Figure 11).

CONSULTATION

When assessing potential cultural impacts to resources, practices, and beliefs; input gathered from community members with genealogical ties and/or long-standing residency relationships to the study area is vital. It is precisely to these individuals for whom meaning and value are ascribed to traditional resources and practices. Community members may also retain traditional knowledge and beliefs unavailable elsewhere in the historical or cultural record of a place. As part of the current assessment the following individuals were consulted.

On Sept 10, 2009, an informal consultation was conducted with Jesse Kawaaloa at his job site in Pahoa. This individual has strong genealogical ties to the area having descended from Hawaiians residing in Kalapana dating from pre *Māhele* times, and likely Precontact times. Jesse's personal recollection of the current study area extends back to the 1950s, when he was a small boy walking the trails and roads to his Auntie and Uncle's house in Waʻawaʻwa to go fishing and swimming in the warm pond. He explained that before the Hawaiian Beaches Subdivision was created that the coastal area of Waʻawaʻwa was a great place for fishing and the gathering *limu* and *ophi.* Access to Waʻawaʻwa from his home in Kalapana was by way of trails and the Old Government Road. Jesse stated, "when we were young we used to walk the whole way" stopping only to swim in the warm pond which he said "the pond was great! It was the only warm pond with white sand, but the owners started charging 10 cents then they raised it to 25 cents that's when we stopped coming because a quarter was a lot of money in those days". When asked how he felt about the construction of the single family dwelling, Jesse indicated that as long as the house was not an "eyesore," that ocean access is never denied to people wanting to fish, and that no cultural sites are impacted then it would be alright.

As a result of the reported inadvertent discovery, DLNR-SHPD requested that consultation occur with two previously identified cultural descendants of the Puna area, Nicole Lui and Jim Medeiros Sr. Ms. Lui was contacted and she explained that she was very busy with other cultural issues and declined involvement deferring to Mr. Medeiros. Jim Medeiros Sr. was contacted and a field visit to the parcel was conducted on January 24, 2010. Mr. Medeiros is also a member of a Native Hawaiian cultural organization known as the Kananka Council. Two other Kanaka Council members (Palikapu Dedman and Rocky Jensen) were also present during the January 24th field visit. The proposed development plans were shared with all of those present along with the proposed preservation treatment for the burial and lava tube. Jimmy, Palikapu, and Rocky, all offered their support for the proposed development plan along with their *mahalo* for the in-place preservation of the burial and associated lava tube. Palikapu wanted the landowner to understand the she has now accepted the *kuleana* for the care and maintenance of the burial site, and Rocky added that he felt the "proper" thing was being done. Jimmy expressed his desire to see that the proposed preservation would be identified in perpetuity, and that somehow the immediate location of the burial be acknowledged so as to restrict foot traffic from occurring directly on top of the portion of the tube the contains the burial.

POTENTIAL CULTURAL IMPACTS

The Office of Environmental Quality Control (OEQC) guidelines identify several possible types of cultural practices and beliefs that are subject to assessment. These include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The guidelines also identify the types of potential cultural resources, associated with cultural practices and beliefs that are subject to assessment. Essentially these are natural features of the landscape and historic sites, including traditional cultural properties. A working definition of traditional cultural property is:

> "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, lifeways, 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.

It is however with the definition of "Property" wherein there lies an inherent contradiction, and corresponding difficulty in the process of identification and evaluation of potential Hawaiian traditional cultural properties, because it is precisely the concept of boundaries that runs counter to the traditional Hawaiian belief system. The sacredness of a particular landscape feature is often times cosmologically tied to the rest of the landscape as well as to other features on it. To limit a property to a specifically defined area may actually partition it from what makes it significant in the first place. A further analytical framework for addressing the preservation and protection of customary and traditional native practices specific to Hawaiian communities resulted from the *Ka Paʻakai O Kaʻāina* v. Land Use Commission court case. The court decision established a three-part process relative to evaluating such potential impacts: first, to identify whether any valued cultural, historical, or natural resources are present; and identify the extent to which any traditional and customary native Hawaiian rights are exercised; second, to identify the extent to which those resources and rights will be affected or impaired; and third, specify any mitigation actions to be taken to reasonably protect native Hawaiian rights if they are found to exist.

There were no traditional cultural practices identified specific to the current study property based on the archival research or oral consultations. One cultural/archaeological resource was identified to exist on the study parcel, a lava tube containing a single set of human skeletal remains. As the lava tube and burial site will be preserved in accordance with a DLNR-SHPD approved treatment plan, the proposed development activities will not negatively affect the identified resource. The landowner does recognize the responsibility for the perpetual preservation of the burial site, and in addition to those measures specified in the treatment plan and in compliance with the desires of consulted parties, will construct a low (maximum 2 feet) six foot square stacked stone marker on the ground surface directly over the projected location of the subterranean burial.

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