DRAFT ENVIRONMENTAL ASSESSMENT

Pu‘ukapu Hybrid Water System

TMK (3rd.) 6-4-004: 009-010, 032-051, and 053-054
South Kohala District, Hawai‘i Island, State of Hawai‘i

October 2009

Prepared for:
State of Hawai‘i
Department of Hawaiian Home Lands
Hale Kalanianaole
91-5420 Kapolei Parkway
Kapolei, Hawai‘i 96707

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Waimea, South Kohala District, Hawai‘i Island, State of Hawai‘i

PROPOSING/
APPROVING AGENCY:

State of Hawai‘i
Hawaiian Home Lands Commission
Hale Kalanianaole
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Kapolei, Hawai‘i 96707

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CLASS OF ACTION:

Use of State Land
Use of State Funds

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).

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

SUMMARY OF THE PROPOSED ACTION, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The Department of Hawaiian Home Lands (DHHL) proposes a water system improvement to provide potable water for domestic and stock watering use for 184 ranch lots that exist or are in planning in the southern portion of the Pu‘ukapu Hawaiian Home Lands subdivision. The project consists of three phases with a total of 70,050 linear feet of 3-inch and 6-inch high-density polyethylene (HDPE), polyvinylchloride (PVC), or ductile iron pipe. Other components include two reservoirs totaling 132,000 gallons, four tanks for fire-fighting purposes and two booster stations, and a 12,000-gallon pressure-breaker tank. Tanks will be made of corrugated steel with an interior liner. Currently, about 30 of Pu‘ukapu’s 184 lots nearer the center of Waimea are serviced by the County Department of Water Supply, but that supply is restricted for cattle use during times of drought and is considered to be non-potable, as the system is not approved or monitored by the Department of Health. Its limited supply is often inadequate and its pressure too low for fire-fighting purposes. Water catchment systems in the area are considered inadequate because of the low annual rainfall of 30 to 40 inches.

The water system will be installed over land previously disturbed by ranching and other activities, and archaeological and biological survey have determined that no valuable biological, historic or cultural resources are present or will be affected. The contractor will coordinate construction of booster stations and tanks and pipeline installation to minimize inconvenience to homesteaders and other members of the public. Where disturbed, roads will be restored to their original condition.

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PART 1: PROJECT DESCRIPTION, PURPOSE AND NEED AND ENVIRONMENTAL ASSESSMENT PROCESS

1.1 Project Location and Description

The Hawai‘i State Department of Hawaiian Home Lands (DHHL) proposes a water system improvement to provide potable water for domestic and stock watering use for 184 ranch lots that exist or are in planning in the southern portion of the Pu‘ukapu Hawaiian Home Lands subdivision (Figures 1-4). These lots will consist of lots that are currently identified as, or are in the process of being subdivided from, TMKs (3rd) 6-4-004: 009-010, 032-051, and 053-054 (Figures 2a-b). The project consists of three phases with a total of 70,050 linear feet of pipe, including 30,800 linear feet (l.f.) of 6-inch pipe and 39,250 l.f. of 3-inch pipe. The pipe material will be either high-density polyethylene (HDPE), polyvinylchloride (PVC), or ductile iron. Other components include two reservoirs totaling 132,000 gallons, four tanks for fire-fighting purposes and two booster stations, and a 12,000-gallon pressure-breaker tank. Tanks will be made of corrugated steel with an interior liner. Table 1 shows the breakdown of the components for each of the three phases of the project, and Figure 4 illustrates the location of the components.

Table 1. Project Components by Phase

Phase	Number of Lots	Reservoirs	Booster Stations	Fire Tanks	Pipeline
I	34	1 – 73,000 gallon	1	0	10,300 linear feet of 6-inch
II	41	2 – 59,000 gal. and 12,000 gal.*	1	1	20,500 l.f. of 6-inch 4,250 l.f. of 3-inch
III	109	none	0	3	35,000 l.f. of 3-inch

* pressure-breaker tank

Phase I work includes installation of two pumps, one powered by diesel with a capacity of 50 gallons per minute and the other a 20 gpm solar pump, installation of 10,2300 linear feet of 6-inch transmission pipe and construction of a 73,000-gallon storage tank. Phase II work includes installation of 20,500 feet of transmission pipe connecting an existing storage tank to the Phase I system and approximately 4, 250 feet of 3-inch distribution pipe to provide water to individual lots. That phase also includes construction of a storage tank and fire truck connection for firefighting purposes. Phase III involves installation of additional distribution lines to individual lots and three additional firefighting storage tanks with fire truck connections.

In 2002, Engineering Surveyors Hawai‘i, Inc prepared the *Pu‘ukapu Pasture Lot Water Strategy* that outlined water service alternatives. The study concluded that a potable system meeting Hawai‘i County Department of Water Supply (DWS) standards was not feasible because of cost, and that a non-DWS or hybrid system would be necessary. In 2006, the firm of Akinaka and Associates was hired to design the system. The design was completed in 2007 and $2.2 million was included in DHHL’s 2009 fiscal year budget for initial phases of the hybrid water system (Lalamilo/Pu‘ukapu Regional Plan 2008).

Figure 1. Island Location Map

The source for the proposed hybrid water system is the Waimea well, which also provides water for DHHL's Lalamilo system. The estimated total cost of the system is $3.6 million. DHHL anticipates beginning Phase I in 2010, with both that and Phase II expected to be completed by 2012 at a cost of $2.2 million. Construction on Phase III is contingent on funding.

1.2 Purpose and Need

The purpose of the Pu'ukapu Hybrid Water System is to provide potable water for ranching activities and associated farm-dwelling uses in the Department of Hawaiian Home Lands Pu'ukapu Ranch Lots, which the agency has designated as a high-priority project. The water system will also provide separate storage tanks and fire truck connections for fire-fighting use. Currently, about 30 of Pu'ukapu's 184 lots nearer the center of Waimea are serviced by the County Department of Water Supply, but that supply is restricted for cattle use during times of drought and is considered to be non-potable as the system is not approved or monitored by the Department of Health. Its limited supply is often inadequate and its pressure too low for fire-fighting purposes. Water catchment systems in the area are considered inadequate because of the low annual rainfall of 30 to 40 inches.

Figure 2a. Subdivision Map

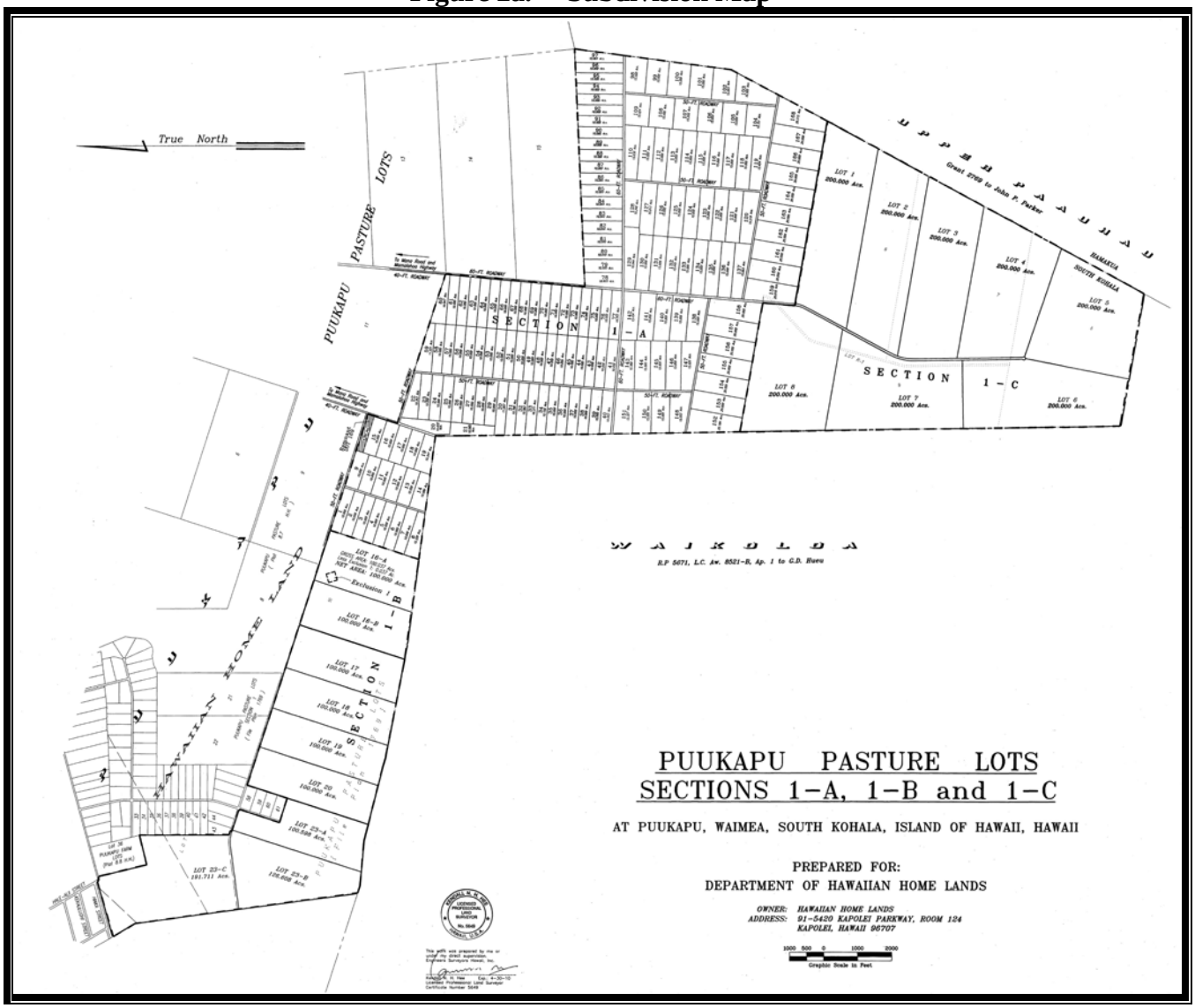

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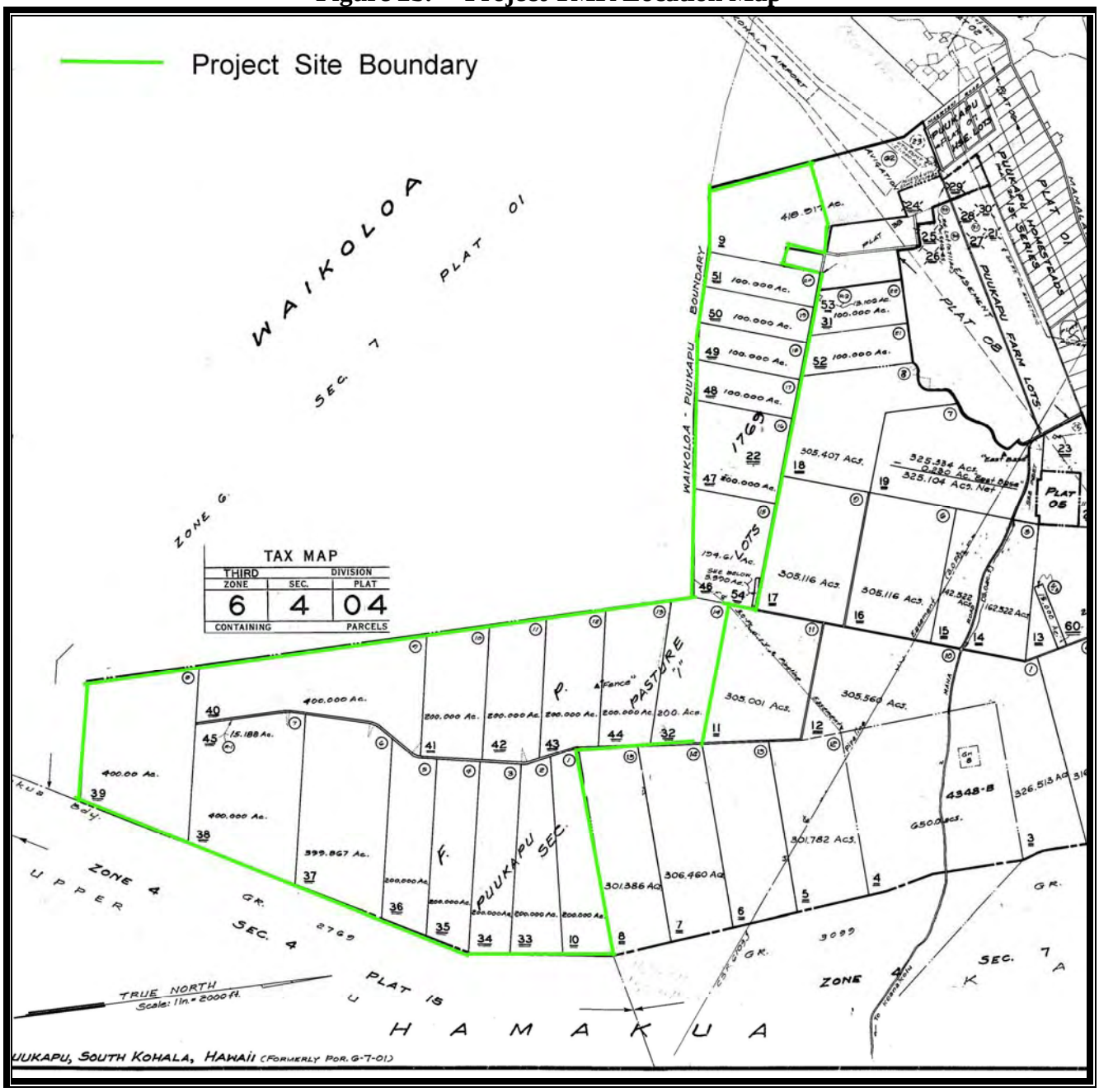
Figure 2b. Project TMK Location Map

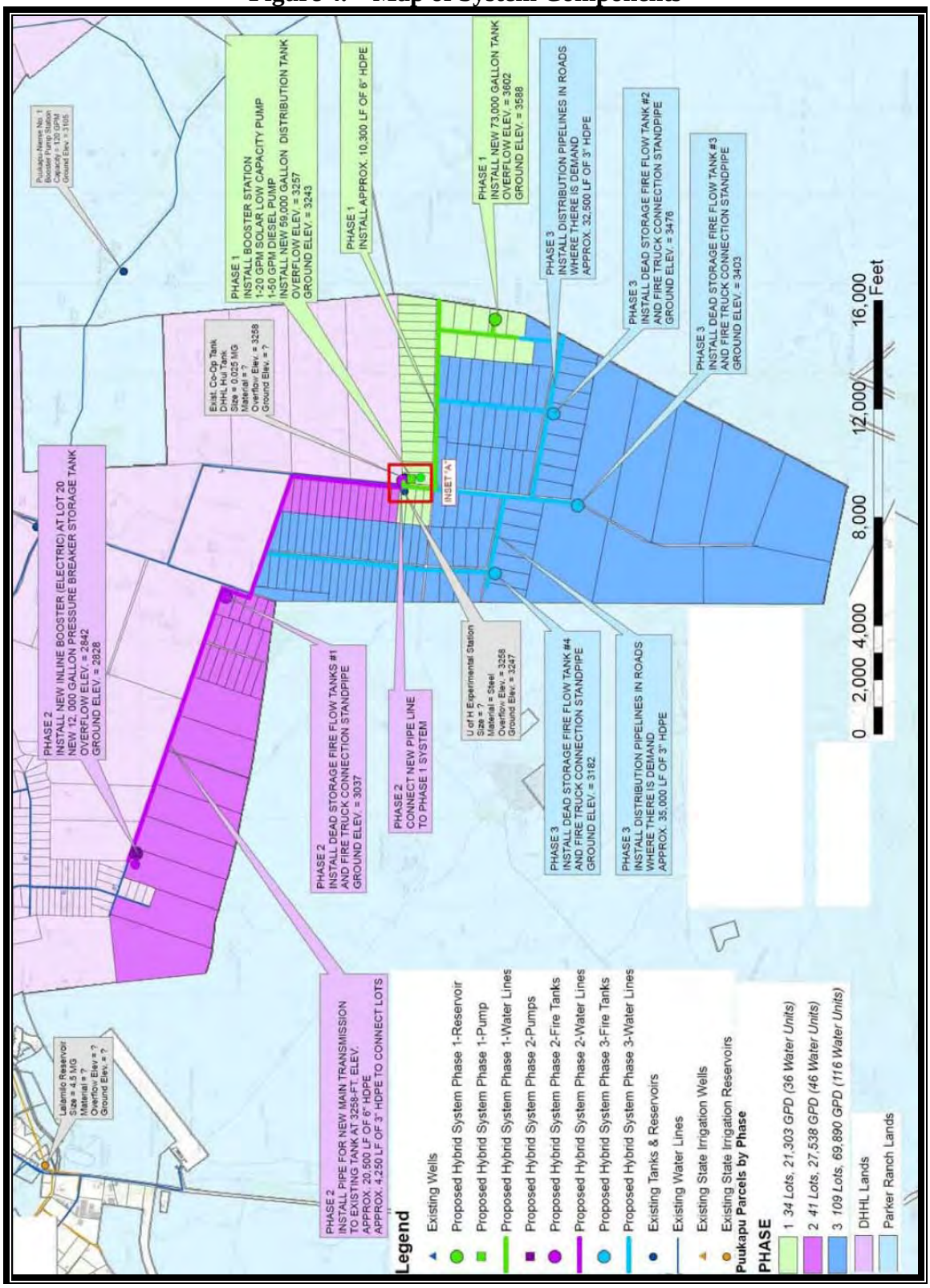


Source: Hawai'i County Tax Maps, portion of Plat 6-4-04. Ownership information removed.

Figure 3. Project Site Photographs

Typical Landscapes, Lower Section (▲) and Upper Section (▼)

Figure 4. Map of System Components



1.3 Environmental Assessment Process

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawai‘i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai‘i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai‘i. 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 finding (anticipated finding, in the Draft EA) that no significant impacts are expected to occur; Part 5 lists each criterion and presents the findings (preliminary, for the Draft EA) for each made by the Hawai‘i State Department of Hawaiian Home Lands and the Hawaiian Home Lands Commission, the proposing/approving agency (the Commission is the official approving agency). If, after considering comments to the Draft EA, the agency concludes that, as anticipated, no significant impacts would be expected to occur, then the agency issues a Finding of No Significant Impact (FONSI), and the action is permitted to occur. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) is prepared.

1.4 Public Involvement and Agency Coordination

The following agencies and organizations were consulted in development of the environmental assessment:

State:
- Department of Health
- Office of Hawaiian Affairs, Honolulu and Kailua-Kona offices
- Department of Land and Natural Resources

County:
- Police Department
- Planning Department
- Public Works Department
- County Council

Private:
- Sierra Club
- South Kohala Traffic Safety Committee
- Waimea Community Association
- Waimea Hawaiian Homesteaders Association

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

PART 2: ALTERNATIVES

2.1 No Action

Under the No Action Alternative, the development of the Pu‘ukapu Hybrid Water System would not be undertaken. Current and prospective lessees of the DHHL property would continue to suffer from limited or no water service and from the lack of water for fire emergencies. Because of safety and other concerns associated with a lack of water service, DHHL considers the No Action Alternative undesirable.

2.2 Alternative Locations or Strategies

As discussed in Section 1.1, a systematic evaluation of water service alternatives for this area was conducted in 2002. The State Department of Agriculture Waimea Irrigation System was considered as a possible source for irrigation supply. A review of planned projects for expanding this system concluded that neither irrigation water nor livestock water could be provided until DHHL contributed $5 million (in 2002 dollars). This investment for water that is not suitable for human consumption would not be cost effective for the number of lots and demand involved. A standard domestic system was also studied. Using DWS design standards, which provides a system meeting both domestic needs and fire flow, the total cost of the system in 2002 dollars was approximately $19 million (as opposed to $3.6 million for the hybrid system). The study concluded that the proposed system, which involves one set of distribution lines for potable water and a separate for fire support, furnished from strategically located dead storage tanks, was the only cost-effective means to provide a potable water system. The Department of Hawaiian Home Lands has identified the hybrid water system to be a high priority, and the best use of funding to provide potable water to homesteaders there. As there do not appear to be any environmental or other disadvantages associated with the particular proposed site, no alternative strategies have been advanced in this Environmental Assessment.

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Basic Geographic Setting

The ranch lots within Pu‘ukapu Hawaiian Home Lands in which the water system would be developed and the roadways that provides access to them are referred to throughout this EA as the *project site*. The term *project area* is used to describe the general environs of this part of Waimea.

The project site consists of about 4,600 acres within 21 existing ranch lots that are being subdivided into 184 lots in the easternmost part of the 10,979-acre Pu‘ukapu Hawaiian Home Lands Subdivision (see Figure 2a for lot plan). This portion of the subdivision is located between about two and six miles from the Mamalahoa Highway, and the center of Waimea. This portion of Pu‘ukapu is dedicated to ranching use, with the residential areas of Kuhio Village and Pu‘u Pulehu located in the northwestern and northeastern corners of Pu‘ukapu, respectively.

3.1 Physical Environment

3.1.1 Climate, Geology, Soils and Geologic Hazards

Environmental Setting

The climate in the area is cool, with an average annual rainfall of about 35 inches (U.H. Hilo-Geography 1998:57). Geologically, the site is located at an elevation ranging from 2,735 to approximately 3,600 feet above sea level on the flanks of the Mauna Kea volcano. The surface consists of ash-covered lava flows from 65,000 to 250,000 years before the present (Wolfe and Morris 1996). The majority of the soil on the project site is classified by the U.S. Natural Resources Conservation Service (formerly Soil Conservation Service) as being in the Kikoni series, predominately Kikoni very fine sandy loam (KXC), a well-drained soil usually found on slopes of 3 to 12 percent. The surface layer is typically about six inches thick with a subsoil of about 44 inches in depth. The surface can be extremely stony in places. Permeability is moderately rapid, runoff is slow and erosion hazard slight. The capability subclass is IIIe, which means such soils are typically used for pasture. Also found in the area are Maile silt loam (MLD) and Waimea very fine sandy loam (WMC), soils with similar characteristics.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of Waimea is zone 8, on a scale of ascending risk from 9 to 1 (Heliker 1990:23). The low hazard risk is based on the fact that Mauna Kea is a dormant volcano, and most zone 8 areas have not been affected by lava flows in the past 10,000 years. As such, there is a low risk of lava inundation over relatively short time scales in the project area.

In terms of seismic risk, the entire Island of Hawai‘i 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, as the 6.7-magnitude quake of October 15, 2006, demonstrated. 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, and the proposed project is not imprudent to construct. All design will take into account the soil's physical and chemical characteristics, which are not unsuitable for construction of a water system, including reservoirs, with proper engineering to accommodate bearing loads, erosion and sedimentation issues. The facilities also will be designed in accordance with regulations related to its seismic setting.

3.1.2 Drainage, Water Features and Water Quality

Existing Environment

No natural perennial surface water bodies are located in or near the water line routes and the tank and reservoir sites have no known areas of local (non-stream related) flooding. Various gulches and several man-made reservoirs are present within 1,000 feet to a mile of these sites. The area is not mapped within the 100-year floodplain on the Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRM), and therefore the area is considered Flood Zone X, outside the 100-year floodplain.

Impacts and Mitigation Measure

Because the project will disturb more than one acre of soil and will involve discharge of hydrotesting and disinfection water (see below), a National Pollutant Discharge Elimination System (NPDES) permit must be obtained by the contractor before the project commences. This permit requires the completion of a Storm Water Pollution Prevention Plan (SWPPP). In order to properly manage storm water runoff, the SWPPP will describe the emplacement of a number of best management practices (BMPs) for the project. These BMPs may include, but will not be limited to, the following:

- For any work off paved surface, minimization of soil loss and erosion by revegetation and stabilization of slopes and disturbed areas of soil, possibly using hydromulch, geotextiles, or binding substances, as soon as possible after working;
- Minimization of sediment loss by emplacement of structural controls possibly including silt fences, gravel bags, sediment ponds, check dams, and other barriers in order to retard and prevent the loss of sediment from the site;
- Minimizing disturbance of soil during periods of heavy rain;
- Phasing of the project in order to disturb a minimum necessary area of soil at a particular time;

- Application of protective covers to soil and material stockpiles;
- Use of drip pans beneath vehicles not in use in order to trap vehicle fluids;
- Routine maintenance of BMPs by adequately trained personnel; and
- Cleanup of significant leaks or spills and disposal at an approved site, if they occur.

3.1.3 Flora, Fauna and Ecosystems

Existing Environment, Impacts and Mitigation Measures

The project site consists primarily of land that has been grazed by Parker Ranch for over a hundred years and continues in grazing use. Although the original vegetation was likely a mesic forest/shrubland (Gagne and Cuddihy 1990), the long history of grazing has eliminated all native trees and only a few native shrubs, herbs, grasses and sedges that are somewhat resistant to grazing pressure remain.

The western, lower portions of the project site are typical of the rolling, 3,000-foot elevation pastures familiar to passersby in Waimea (see Figure 3), dominated by kikuyu grass (*Pennisetum clandestinum*) with some common roadside weeds such as owī (*Verbena litoralis*), common vetch (*Vicia sativa*), fireweed (*Senecio madagascariensis*) and narrow-leaved plantain (*Plantago lanceolata*).

As the elevation rises in the eastern part of the project site (to a maximum of about 3,600 feet), the land also becomes rockier and topographically rugged. Native species become more common, and in a few locations are actually dominant, forming a shrubland. The most common native species are ʻakia (*Wikstroemia pulcherrima*), aʻaliʻi (*Dodonaea viscosa*), ilima (*Sida fallax*) and ʻaheahea (*Chenopodium oahuense*). The area with the greatest concentration of natives was the slopes of the puʻu where the highest reservoir is planned, although even here, no rare native species or unusual native vegetation was present. In addition to the common weeds found in lower sections, fountain grass (*Pennisetum setaceum*) and hairy cat's ear (*Hypochoeris radicata*) are common.

Throughout the project site, roadside plantings by residents involve a number of mostly introduced ornamental trees, shrubs and herbs.

A biological reconnaissance including a botanical survey of the site was conducted in April 2009 by biologists Patrick J. Hart, Ph.D., Ron Terry, Ph.D., and Karen Wessels, B.A. The primary purpose of the survey was to identify rare and threatened or endangered (T&E) species, but all species encountered were identified (Table 2). No T&E species were noted on or near the project site. Because of the lack of native ecosystems, or threatened or endangered plant species, no adverse impacts to botanical resources would occur as a result of building the water system.

Fauna of the area is typical of that found in pastures around Waimea. The most common birds observed during the botanical survey were all introduced species, including pigeons, ring-necked pheasants, and turkeys. A full list of bird species observed during the biological reconnaissance is included in Table 3.

Table 2
Plant Species Identified on Project Site

Scientific Name	**Family**	**Common Name**	**Life Form**	**Status**
Acacia koa	Fabaceae	Koa	Tree	E
Agave americana	Agavaceae	Century plant	Shrub	A
Amaranthus spinosus	Amaranthaceae	Spiny amaranth	Herb	A
Amaranthus viridis	Amaranthaceae	Slender amaranth	Herb	A
Anagallis arvensis	Primulaceae	Scarlet pimpernel	Herb	A
Araucaria heterophylla	Araucariaceae	Norfolk Island pine	Tree	A
Argemone glauca	Papaveraceae	Pua kala	Shrub	E
Bidens pilosa	Asteraceae	Beggar's tick	Herb	A
Bromus catharticus	Poaceae	Rescue grass	Grass	A
Casuarina equisetifolia	Casuarinaceae	Ironwood	Tree	A
Cenchrus ciliaris	Poaceae	Buffel grass	Grass	A
Centaurium erythraea	Gentianaceae	Bitter herb	Herb	A
Chenopodium oahuense	Chenopodiaceae	ʻAheahea	Shrub	E
Cocculus orbiculatus	Menispermaceae	Huehue	Vine	I
Conyza bonariensis	Asteraceae	Hairy horseweed	Herb	A
Cupressus lusitanica	Cupressaceae	Mexican cypress	Tree	A
Cyperus polystachyos	Cyperaceae	Cyperus	Sedge	I
Dactylis glomerata	Poaceae	Cocksfoot	Grass	A
Dodonaea viscosa	Sapindaceae	ʻAʻaliʻi	Shrub	I
Eleusine indica	Poaceae	Wire grass	Herb	A
Eragrostis pectinacea	Poaceae	Carolina lovegrass	Grass	A
Eucalyptus sp.	Myrtaceae	Eucalyptus	Tree	A
Geranium homeanum	Geraniaceae	Geranium	Herb	A
Hypochoeris radicata	Asteraceae	Hairy cat's ear	Herb	A
Ilex aquifolium	Aquifoliaceae	English holly	Shrub	A
Ipomoea indica	Convolvulaceae	Koali	Vine	I
Lantana camara	Verbenaceae	Lantana	Shrub	A
Lepidium virginicum	Brassicaceae	Pepperwort	Shrub	A
Leptecophylla tameiameiae	Epacridaceae	Pukiawe	Shrub	I
Malva parviflora	Malvaceae	Cheeseweed	Herb	A
Medicago polymorpha	Fabaceae	Bur clover	Herb	A
Metrosideros polymorpha	Myrsinaceae	ʻOhiʻa	Tree	E
Myoporum sandwicense	Myoporaceae	Naio	Tree	I
Nicandra physalodes	Solanaceae	Apple of Peru	Shrub	A
Olea europaea subsp. cuspidata	Oleaceae	African olive	Tree	A
Opuntia ficus-indica	Cactaceae	Panini	Shrub	A
Osteomeles anthyllidifolia	Rosaceae	ʻUlei	Shrub	I
Pennisetum clandestinum	Poaceae	Kikuyu grass	Grass	A
Pennisetum setaceum	Poaceae	Fountain grass	Grass	A

Table 2, continued				
Scientific Name	**Family**	**Common Name**	**Life Form**	**Status**
Pinus sp.	Pinaceae	Pine	Tree	A
Plantago lanceolata	Plantaginaceae	Narrow-leaved plantain	Herb	A
Pluchea symphytifolia	Asteraceae	Sourbush	Shrub	A
Pseudognaphalium sandwicensium	Asteraceae	ʻEnaʻena	Herb	E
Rhynchelytrum repens	Poaceae	Natal Red top	Grass	A
Ricinus communis	Euphorbiaceae	Castor Bean	Shrub	A
*Scaevola taccada**	Goodeniaceae	Naupaka	Shrub	I
Schinus molle	Anacardiaceae	Pepper tree	Tree	A
Senecio madagascariensis	Asteraceae	Fireweed	Herb	A
Sida fallax	Malvaceae	Ilima	Shrub	I
Sida rhombifolia	Malvaceae	Cuba jute	Shrub	A
Sonchus oleraceus	Asteraceae	Sow thistle	Herb	A
Sophora chrysophylla	Fabaceae	Mamane	Tree	E
Sporobolus indicus	Poaceae	West Indian Dropseed	Grass	A
Tribulus terrestris	Zygophyllaceae	Goat head	Vine	A
Trifolium arvense	Fabaceae	Rabbit foot clover	Herb	A
Verbena litoralis	Verbenaceae	Ōwī	Herb	A
Vicia sativa	Fabaceae	Common vetch	Herb	A
Waltheria indica	Sterculiaceae	ʻUhaloa	Herb	I
Wikstroemia pulcherrima	Thymelaeaceae	ʻAkia	Shrub	E
Yucca gloriosa	Agavaceae	Spanish bayonet	Shrub	A

Notes: Alien (A), Indigenous (I), Endemic (E); Landscaped species

Table 3
Bird Species Identified on or Near Project Site

Scientific Name	Common Name	Status
Acridotheres tristis	Common Myna	Alien Resident
Alauda arvensis	Sky Lark	Alien resident
Bubulcus ibis	Cattle egret	Alien resident
Cardinalis cardinalis	Northern Cardinal	Alien Resident
Carpodacus mexicanus	House Finch	Alien Resident
Geopelia striata	Zebra Dove	Alien Resident
Leiothrix lutea	Red-billed Leiothrix	Alien Resident
Lonchura punctulata	Nutmeg Mannikin	Alien Resident
Phasianus colchicus	Ring-necked Pheasant	Alien Resident
Pluvialis fulva	Pacific Golden Plover	Indigenous
Pterocles exustus	Chestnut-bellied Sandgrouse	Alien resident
Streptopelia chinensis	Spotted Dove	Alien Resident
Zosterops japonicus	Japanese White-Eye	Alien Resident

Native birds observed included the Pacific Golden Plover (*Pluvialis fulva*), an indigenous migratory species regularly seen throughout the State between August and April each year. Not observed but undoubtedly present is the Short-eared Owl or Pueo (*Asio flammeus sandwichensis*), a native resident breeding species considered an endemic sub-species of this near-cosmopolitan diurnal owl species. This species is currently widespread in the area and does not have special protective status under either the State or federal endangered species statutes.The development of the water system may temporarily displace or disturb individual Short-eared Owls, but any such disturbance will be of a temporary nature, as there is abundant additional suitable habitat within the Waimea plains area for any displaced owls to move into.

It is also possible that small numbers of the endangered endemic Hawaiian Petrel (*Pterodroma sandwichensis*), or ua‘u, and the threatened Newell’s Shearwater (Puffinus auricularis newelli), or ‘a‘o, overfly the project area between the months of May and November. Both species were formerly common on the island of Hawai‘i. The Hawaiian Petrel is a pelagic seabird that reportedly nested in large numbers on the slopes of Mauna Loa and in the saddle between Mauna Loa and Mauna Kea, as well as at the mid- to high elevations of Hualalai. Within recent historic times it has been reduced to relict breeding colonies located at high elevations on Mauna Loa and, possibly Hualalai. Newell’s Shearwaters breed on Kaua‘i, Hawai‘i and Moloka‘i in extremely small numbers. Newell’s Shearwater populations have dropped precipitously since the 1880s. This pelagic species nests high in the mountains in burrows excavated under thick vegetation, especially uluhe fern. Biologists believe that the leading cause of death for both these species in Hawai‘i is predation by alien mammals at the nesting colonies, followed by collision with man-made structures. Exterior lighting disorients these night-flying seabirds, especially fledglings, as they make their way from land to sea during the summer and fall. When disoriented, seabirds often collide with manmade structures and, if not killed outright, the dazed or injured birds are easy targets for feral mammals. There is no suitable nesting habitat within the project area for these birds. The development of the water system will not involve lighting and is not likely to involve any impacts to these or any other listed threatened or endangered bird species.

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or ‘ope‘ape‘a, all terrestrial mammals currently found on the island of Hawai‘i are alien species. Most are ubiquitous, and none are of conservation concern. During the biological reconnaisance, domestic cattle and horses were observed, along with the alien mongoose. The endangered Hawaiian hoary bat may forage in the area but would not find the project site suitable roosting habitat, as trees or large shrubs are largely absent. The water system development would not impact the Hawaiian hoary bat.

3.1.4 Air Quality, Noise and Scenic Resources

Environmental Setting

The strong and steady winds of this part of Kohala contribute to excellent air quality by generally dispersing human-derived pollutants as well as volcano-induced vog. In areas with bare surfaces, however, the strong winds may also exacerbate dust problems.

Noise on the project site is moderate and derived mainly from nearby residential and agricultural activities and motor vehicles, with occasional noise from road use and maintenance activities.

The project area is one of the highly scenic old ranching areas of Waimea, and contains within its backdrop views of the Kohala Mountains that are noted for their scenic character in the Hawai‘i County General Plan.

Impacts and Mitigation Measures

The proposed action will not measurably affect air quality or noise levels except minimally during construction activities. In order to minimize impacts from dust, the contractor will consult with the Department of Health (DOH) and, if required, will prepare a dust control plan compliant with provisions of Hawai‘i Administrative Rules, Chapter 11-60.1, “Air Pollution Control,” Section 11-60.1-33, “Fugitive Dust.”

Development would entail limited excavation, compressors and jackhammers, and vehicle and equipment engine operation. These activities may generate noise exceeding 95 decibels at times. In cases where construction noise is expected to exceed the DOH “maximum permissible” property-line noise levels, contractors must obtain a permit per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. DOH reviews the proposed activity, location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures, such as restriction of equipment type, maintenance requirements, restricted hours and portable noise barriers.

Although the project does involve construction of reservoirs and tanks with a maximum height of 20 feet, no important viewplanes or scenic sites recognized in the Hawai‘i County General Plan would be permanently affected by the project, and visual impacts would be negligible.

3.1.5 Hazardous Substances, Toxic Waste and Hazardous Conditions

Environmental Setting, Impacts and Mitigation Measures

No professional evaluation such as a Phase I Environmental Site Assessment (ESA) was performed for the project site. To DHHL officials’ knowledge, there have been no spills or other incidents involving hazardous or toxic substances, and no such materials are stored on the site of the proposed construction. The installation of a water system does not pose any unreasonable risk in terms of worker or public exposure to such materials.

3.2 Socioeconomic and Cultural

3.2.1 Socioeconomic Characteristics

The project generally affects and benefits the community of Waimea, in particular the residents of Pu‘ukapu Hawaiian Home Lands. Table 4 provides information on the socioeconomic characteristics of Waimea along with those of Hawai‘i County as a whole for comparison, from the United States 2000 Census of Population. Waimea has a diverse population of about 7,000, and Hawai‘i County is among the 100 fastest-growing counties in the U.S.

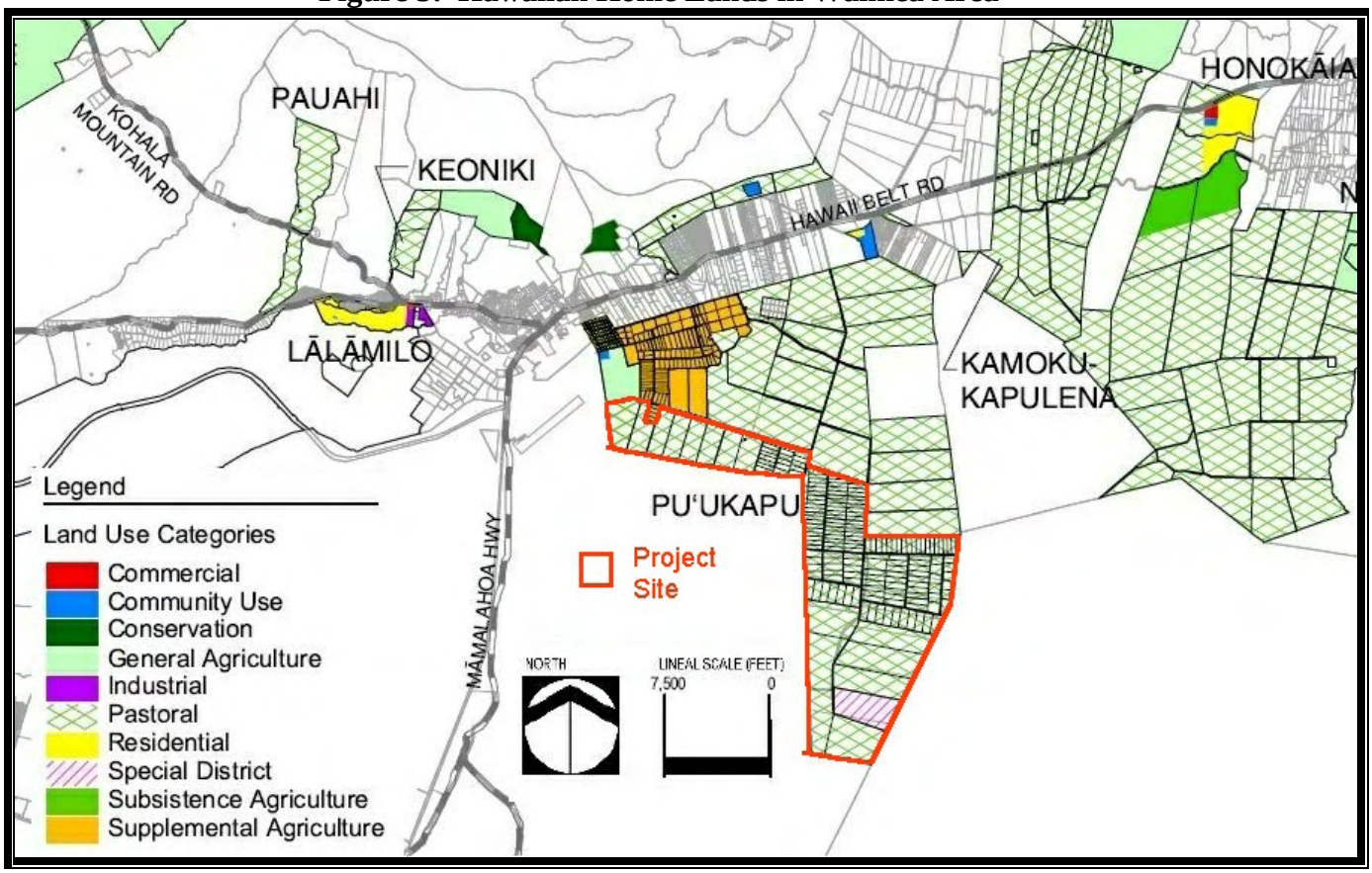
The primary goal of DHHL, as authorized by the Hawaiian Homes Commission Act of 1920, is to place Native Hawaiians (defined for the purposes of the Act as those with 50 percent or more Hawaiian blood) on leased lands that eventually should develop into self-sufficient Hawaiian communities. DHHL has over 117,000 acres on the island of Hawai‘i; the largest of these homesteads is the Pu‘ukapu subdivision with over 13,054 acres (DHHL 2002:7). Awards for the homestead lots in the Waimea area began in 1949, and the Pu‘ukapu subdivision was opened in 1962. Some of these lots have already been passed on to the second and third generation family members, and a few of the leases have been sold to non-family members. Originally, the lessees who were granted pastoral lots were also awarded a residential lot in Kuhio Village.

In 1976, DHHL began planning for homestead pastoral use for a portion of Pu‘ukapu. In 1982 a plan was developed for a 4,600-acre subdivision consisting of 22 lots. It included six 100-acre lots, 12 200-acre lots and four 400-acre lots. However, in response to surveys that showed that most potential lessees preferred “rural lifestyle lots” that would provide enough acreage for subsistence ranching, that plan was altered in 1990 to transform the 4,600 acres into 184 pastoral lots with a combination of subsistence lots as small as 15 acres, supplemental lots and commercial lots. Under the Acceleration Program recommended by a federal-State task force on the Hawaiian Homes Commission, the 184-lot subdivision was created without immediate improvements such as roads, water, sewer and electricity.

Impacts

By improving the services of the Department of Hawaiian Home Lands, the proposed project would benefit homesteaders and, indirectly, public welfare in the Waimea area. The proposed project action would provide a public benefit by providing potable water for the purposes of ranching homesteaders, which will indirectly expand housing opportunities, food production and other economic factors for the public. No relocation of businesses or homes or any other social impacts are involved in the proposed action. Because construction will occur almost exclusively on DHHL property, there will be minimum temporary construction impacts for the general public and no disruption of local traffic patterns or effects to neighborhood character or integrity.

Figure 5: Hawaiian Home Lands in Waimea Area



Source: Adapted from Hawaii Island DHHL Plan

3.2.2 Cultural and Historic Resources

Historical and Cultural Background

The project site is located in the Kohala moku (district) of Hawai‘i Island in the town of Waimea, which translates to “reddish water” (Pukui et al. 1974:226). It is further located in the ahupua‘a (traditional Hawaiian land area) of Waimea, or more precisely, it is located in the ‘ili kupono (independent land units within an ahupua‘a) of Pu‘ukapu, which extends north along the crest of the Kohala mountains. A low, elongated ridge marks the boundary of Pu‘ukapu and Waimea’s other ‘ili kupono of Waikoloa. This hill is known locally as Pu‘u Ho‘olelelupe, translated as “kite-flying hill.”

Although an actual hill named Pu‘u Kapu, which means sacred hill, has not been identified on early maps, the name suggests its possible traditional significance for Native Hawaiians. Early missionaries described Pu‘ukapu Village as one of three population centers in the Waimea area (Ellis 1825:217), although by the mid 19th-century very few people apparently remained. An ethnographic study by Maly (1999) that consulted Boundary Commission and Land Commission Awards (LCA) included accounts from farmers that emphasize the cultural value of the land in Pu‘ukapu.

Table 4
Selected Socioeconomic Characteristics

CHARACTERISTIC	Hawai‘i County	Waimea
Total Population	148,677	7,028
Percent White	31.5	30.6
Percent Asian	26.7	20.3
Percent Hawaiian	9.7	15.0
Minority	68.5	69.4
Percent Two or More Races	28.4	32.3
Median Age (Years)	38.6	36.5
Percent Under 18 Years	26.1	29.7
Percent Over 65 Years	13.5	10.1
Percent Households with Children	37.5	44.3
Average Household Size	2.75	2.95
Percent Graduated High School	84.6	88.6
Percent 19-64 Years with Disability	19.2	16.1
Percent Born in State of Hawai`i	63.3	64.1
Percent Housing Vacant	15.5	8.4
Percent Over Age 16 in Labor Force	61.7	68.5
Percent Households Earning Between $35,000 and $100,000	45.3	59.6
Median Household Income	$39,805	$51,150
Percent Below Poverty Level	15.7	6.0

Source: U.S. Bureau of the Census. May 2001. *Profiles of General Demographic Characteristics, 2000 Census of Population and Housing, Hawai‘i.* (U.S. Census Bureau Web Page).

Given the dense nature of settlement and the esteem in which the land was held, traditional farming and gathering practices and perhaps wahi pana, or storied places, were probably common in or near Pu‘ukapu. Few traditional practices persisted into the 20th century because of Waimea’s long and intense commercialization period and the severe depopulation experienced by Hawaiians exposed to Western diseases (McEldowney 1983:432). The written history from the late 19th to the early 20th century largely deals with new settlers, religious endeavors and commercial pursuits in the region.

As detailed in Appendix 2, an archaeological letter report on the project by Rechtman Consulting, there are two noteworthy events associated with early Hawaiian settlement and use of Waimea. The first was the invasion of Hawai‘i Island by Kama-lālā-walu, ruler of Maui Island. According to Kamakau (1961), Kama-lālā-walu’s men landed at Puakō and went up to the grass-covered plains of Waimea:

> “After Kama-lala-walu’s warriors reached the grassy plain, they looked seaward on the left and beheld the men of Kona advancing toward them. The lava bed of Kaniku and all the land up to

> Hu‘ehu‘e was covered with the men of Kona. Those of Kau and Puna were coming down from Mauna Kea, and those of Waimea and Kohala were on the level plain of Waimea. The men covered the whole of the grassy plain of Waimea like locusts. Kama-lala-walu with his warriors dared to fight. The battle of Puoaoaka was outside of the grassy plain of Waimea, but the men of Hawaii were afraid of being taken captive by Kama, so they fled to the waterless plain lest Maui’s warriors find water and hard, waterworn pebbles. The men of Hawaii feared that the Maui warriors would find water to drink and become stronger for the slinging of stones that would fall like raindrops from the sky. The stones would fall about with a force like lightening, breaking the bones into pieces and causing sudden death as if by bullets.
>
> Maui almost won in the first battle because of Hawaii’s lack of a strong champion. Makaku-i-ka-lani [representing Maui] was first on the field and defied any man on Hawaii to match strength with him. Maka-ku-i-ka-lani tore Hawaii’s champion apart. When Puapua-kea arrived later by way of Mauna Kea, those of Hawaii rejoiced at having their champion. Maka-ku-i-ka-lani and Puapua-kea matched their strength in club fighting on the battle site before the two sides plunged into the fight” (Kamakau 1961:58-59).

Once he reached Waimea, Kama-lālā-walu positioned himself on Hōkū‘ula, the hill that he was told would serve as a refuge for him and his men (Fornander 1959). In Fornander’s description, the battlefield would have extended across Pu‘ukapu:

> Kamalalawalu, upon arrival thereon, found on reconnoitering that there were neither stones nor trees, but only dirt [on Hōkū‘ula]. While they were engaged in a conversation with Kumaikeau together with Kumakaia[1], at that time messengers were sent to summon Lonoikamakahiki and Pupuakea. At Kealakekua, in Kona, was the place where Lonoikamakahiki lived. When the messenger appeared before him, he said to Lonoikamakahiki: “Kamalalawalu and Makakuikalani have come to give battle to you both . . . When Lonoikamakahiki heard these things, he questioned the messenger: “Where is the battle to take place?” The messenger replied: “There, at Waimea, on top of that hill, Hokuula, where Kamalalawalu and all Maui are stationed” (Fornander 1959:188).

During that night and including the following morning the Kona men arrived and were assigned to occupy a position from Puupa to Haleapala. The Kau and Puna warriors were stationed from Holoholoku to Waikoloa. Those of Hilo and Hamakua were located from Mahiki to Puukanikanihia [Puukakanihia], while those of Kohala guarded from Momoualoa to Waihaka (Fornander 1959:229).

Puapua-kea was the eventual victor of this fight and the warriors of Maui were put to flight (Kamakau 1961:60). After Kama-lālā-walu was defeated, Hawai‘i was invaded by Alapa‘i-nui, also of Maui. Alapa‘inui was the only chief recorded as having lived in Waimea. Alapa‘i dwelt in Hilo for a year and then went to live in Waipi‘o. Shortly after, he and the chiefs moved to Waimea and others went by canoe to Kawaihae. From Waimea, he went to Lanimaomao, where he fell ill (Kamakau 1961:77).

[1] Kumaikeau and Kumakaia, two men from Kawaihae, served as advisors to Kama-lālā-walu. They deliberately deceived Kama into thinking that Hōkū‘ula hill would serve as a refuge.

A second traditional native Hawaiian event or activity that is significantly associated with Waimea is the Waimea Field System. This agricultural complex was one of three large-scale Precontact agricultural systems on the leeward side of Hawai‘i Island. The other two were located at Kona and Kohala. According to Burtchard and Tomonari-Tuggle (2002), the Waimea Agricultural System is best known for: 1) spatially limited residential sites; 2) linear, low earthen ridges; and 3) irrigation ditches located along [Waikoloa Stream] on the eastern margins of the system. The authors suggest that the area was exploited for forest resources possibly as early as the 13th and 14th centuries, followed by agriculture and prolonged residence in the 16th century. According to Barrére, “the cultivating places at Waimea were first expanded to supply the chiefs’ needs while sojourned there and at Kawaihae” (Barrére 1983:27).

Kamehameha I gave management rights of much of Waimea to Isaac Davis, who later passed it to his son Hueu Davis. Early historical sources chronicle scattered settlement along lower parts of Waikoloa Stream. Even as late as 1823, after disease had likely decimated the population, as many as 1,200 people lived in the three miles between ‘Ouli and Pu‘u Kapu, with perhaps 300 in Waimea town itself (Ibid: 11). With a network of irrigation canals (‘auwai) and relatively good soil, irrigated agriculture of taro, sweet potatoes and sugar cane was successfully practiced. Hundreds of parcels were claimed in Waimea as part of the Land Commission Awards (LCAs) associated with the Mahele in the mid-19th century, many near Waikoloa Stream.

Most Land Use Commission awards for kuleana in Waimea were issued to persons with non-Hawaiian surnames, such as James Hall (LCA 672), John Davis (LCA 989), Edmund Bright (LCA 986), and William French (LCA 4885; 4886). The change in land use and ownership was very deliberate and strategic. Once land became a monetary commodity, Hawaiians were often forced off their houselots and thus deprived of their livelihoods simply because they lacked the cash with which to make the purchase of the land or pay the newly imposed property tax. McEldowney (1983) discussed how this gradual process eventually led to the displacement of the Hawaiian community as cattle ranching became fully established in Waimea. As time went on, ranching appropriated more and more land, including the project area, and traditional place names were lost and traditional practices discontinued.

Although there were evidently many Hawaiian residents of Waimea who possessed land capable of supporting traditional Hawaiian land use, the institution of a Western monetary system undermined the traditional economic basis and dramatically altered society. The harvest of wild sandalwood in the early 19th century and of pulu (the fluffy orange coating around tree fern shoots, which served as a stuffing for mattresses and pillows) later in the century were both economically and environmentally disastrous. Chinese immigrants began growing and milling sugar cane in Waimea in the early 1830s. This production tapped into the existing ‘auwai system. Plantation leases and mills were bought and sold, and the net result was to displace many Hawaiians who had lived in areas desired for fields. Cotton farming and ginning, sawmills, and various other economic ventures had their day on the landscape of Waimea, but the venture that brought lasting change was cattle.

The cattle brought by Captain Vancouver in 1793 and 1794, protected by a kapu placed on them by Kamehameha, multiplied rapidly. By the time the kapu was lifted a few years later, wild cattle had

become rampant throughout the island, disturbing native gardens and damaging streams, grasslands and forests. Foreign bullock hunters were then employed to keep the herds under control. Although the meat was eaten, the main economic products were the hides. John Parker worked for Governor Kuakini as a bullock hunter in 1831, and before long had founded the famous ranch that still bears his name. By 1847, as Reverend Lorenzo Lyons noted, "two thirds of Waimea has been converted into a government pasture land" (quoted from Doyle 1945:48 in IARII 1997:19). Cattle ranching profoundly changed life in Waimea by displacing native agriculture, firmly establishing a monetary economy, altering the landscape and forests through direct and indirect means, and bringing in foreigners. During the 19th and 20th centuries, the project site area was likely used for cattle ranching and harvesting wood for fuel.

Although ranching is not necessarily a traditional cultural practice, it is certainly part of the culture, lifestyle and identity of Waimea. The cowboys, or paniolos, many but not all of whom are Hawaiian, form a unique subculture that reflects a combination of both its Hawaiian and western roots. The older, and certainly the original, residents of Kuhio Village and Pu'ukapu are very much a part of this paniolo subculture. Parker Ranch, at one time the biggest cattle ranch in the entire United States, which at one time included the project site, is still a primary landowner and continues to operate a cattle ranch. Other ventures, however, now provide the income for the organization, which has turned into a charitable foundation. Various historical and modern features can be found throughout the town of Waimea that pay tribute to the ranching heritage of the area. The Parker Ranch Museum is a major tourist attraction and serves as a repository for historical artifacts of the ranching tradition. Older ranch style homes, commercial buildings, stables, etc., reflect the town's ranching-cowboy culture. Waimea is one of the few areas in Hawai'i where horseback riding is not a purely recreational activity – it is still a means of transportation for those who work the ranch lands. Perhaps most important are the rodeos for which Waimea is famous.

To some extent the ethnic traditions of other cultures have been incorporated into the general cultural milieu of Waimea and are celebrated by all. The Waimea Cherry Blossom Heritage Festival is held each year in February and presents one facet of the unique cultural blend in Waimea that includes rodeo, taiko drums, hula and cherry blossom viewing. The Aloha Festival, conducted throughout the State, holds many prominent events in Waimea. Other periodic events include cowboy-oriented falsetto and storytelling events, parades and historical festivals sponsored by local schools.

After the Hawaiian Homes Commission Act of 1920, Hawaiians began resettling some portion of the land which was formerly lost to them. In some cases, they reconnected with traditional land practices and renewed traditions, and in others they established new places and practices that could eventually become traditions of their own. Sometimes the lessees of the newly forming Hawaiian communities may have little ancestral connection with the land in which they receive their award. Because Pu'ukapu was settled beginning in 1949, some of these lots have already been passed on to the second and third generation family members, and a few of the leases have been sold to non-family members.

Pu‘ukapu Hawaiian Home Lands

The Pu‘ukapu community was created by a legislative act and many occupants have little direct historical and lineal ties to the land. Though sharing a common cultural heritage, most residents are not closely related. Only those who have inherited the lease from earlier generations are kin. What distinguishes Pu‘ukapu is that the community is set aside for and made up of Native Hawaiians. Although residents of Hawaiian Home Lands do not necessarily practice “traditional” subsistence activities, the living Hawaiian culture, as expressed in music, dance, social behavior, language, and agriculture is often prominent in everyday life. Such practices are also common in other communities in the Waimea-Kohala region. Ultimately, if in some ways Pu‘ukapu is not highly distinct from some non-Hawaiian communities, there are some unique cultural considerations by virtue of the fact that every leaseholder in Pu‘ukapu is of Hawaiian descent.

Hawaiian Home Lands have been established to help Native Hawaiians gain lands on which they can make their livelihood. Although not traditional land units, their award is considered a form of justice. The sentiment of many Pu‘ukapu residents is that these lands form one significant “cultural unit,” and there is a sense of a community that is to some extent unified by being Hawaiian and residing on Hawaiian Home Lands.

Archaeological and Cultural Resources in Project Site

Several archaeological studies have been conducted in the current project area of Pu‘ukapu and neighboring Waikoloa Ahupua‘a (see Appendix 2 for details). Collectively, these studies have documented Precontact settlement and agricultural use of the area beginning in the thirteenth century. By the 1600s this use intensified and continued to intensify into the late 1700s. Following European contact, the Waimea area became a center of population that was primarily focused on cattle ranching; as a result, the traditional residential and agricultural areas were abandoned. With respect to the Precontact use of the general project area, Clark (1987) offered a regional settlement pattern model that includes four elevationally delimited environmental zones: Coastal Zone, Intermediate Zone, Kula Zone, and Wilderness Zone. The Coastal Zone extends up to about 150 feet elevation, and was used for permanent and temporary habitation, coastal resource exploitation, and limited agriculture. The Intermediate Zone extends from the Coastal Zone to about 1,900 feet elevation. This zone was used primarily for seasonal agriculture with associated short-term occupation, typically situated near intermittent drainages. The Kula Zone extends from the Intermediate Zone to about 2,700 feet elevation (and to 3,200 feet in certain areas). This was the primary agricultural and residential area, with extensive formal fields and clustered residential complexes. The Wilderness Zone extends above the Kula Zone to the mountaintops, and was a locus for the collection of wild floral and faunal resources. The current project site, situated at elevations ranging from 2,735 feet to 3,680 feet, is perhaps at the interface of Clark’s (1987) Kula and Wilderness Zones, but clearly extends into the Wilderness Zone.

Based on the location and the specific history of the project area land use, the results of the background research, and a review of archaeological work previously conducted in the general vicinity, the

archaeological expectations for the current study were limited. It is remotely possible that Precontact sites, including trails, temporary habitations, and resource procurement sites may have been present within the current project area. However, the extensive land use throughout the late nineteenth and twentieth centuries has significantly altered the landscape. Ranching related features in the project area may include boundary markers, walls, and enclosures; while some of these features may date from the 1920s and 1930s, other may date from the 1950s or 1960s.

On March 26 and April 3, 2009, archaeologists Matthew R. Clark, B.A., Ashton K. Dircks, B.A, and Robert B. Rechtman, Ph.D. carried out the archaeological fieldwork for the current project. The proposed infrastructure corridors were surveyed in their entirety employing a combination of pedestrian transecting and visual inspection from slow moving vehicle. The survey boundaries were clearly identifiable following already developed roads, existing buried utility corridors, and pasture areas. No historic properties such as walls, platforms, modified caves, enclosures or artifact scatters, were identified as a result of the fieldwork.

Aside from archaeological features, other types of valued natural, cultural and historical resources are still present in various parts of Waimea. These include sites of battles and burial sites for ʻiwi kupuna, including caves. Many of the puʻu (cinder cone hills) in Waimea have cultural significance as sites of historical or legendary events. Gathering of resources is also important. As discussed above, Waimea has been settled by non-Hawaiians for almost two centuries and the cultural landscape contains historical buildings and acts as the site for cultural celebrations that express the paniolo and Japanese culture, among others. The roadsides and limited areas away from the roads that will be used for the project do not appear to contain traditional cultural sites. Although native plants may be gathered from the landscape, the native plants that are present are common throughout the region, and the land on which such gathering might occur currently or will soon be controlled by lessees who are utilizing the land for pastoral purposes. In any case, the project will not affect gathering resources.

As part of the early consultation process, various agencies, including the Waimea Community Association and the Honolulu and Kailua-Kona offices of the Office of Hawaiian Affairs, were contacted about the project. No information was received about natural, cultural or historical resources of concern on the project site, much of which was previously disturbed by ranching activities.

Impacts

Given the absence of features detected in the archaeological survey, the consulting archaeologist concluded that the proposed project would not impact any known historic properties, and recommended no further work. The State Historic Preservation Division (SHPD) was consulted by letter on the project, and concurred with the findings in a letter of September 1, 2009 (see Appendix 2).

As the project site appears to contain no resources of a potential traditional cultural nature (i.e., landform, vegetation, etc.), and no evidence of any traditional gathering uses or other cultural practices, the proposed installation of a water system would not likely impact any historic sites or culturally valued resources or cultural practices. SHPD, the Office of Hawaiian Affairs, and the Waimea Hawaiian Homesteaders Association has been supplied a copy of the EA for their comments.

Mitigation Measures

In the unlikely event that human skeletal remains, undocumented archaeological resources, or cultural or traditional remains are encountered during future development activities within the current study area, work in the immediate area of the discovery shall be halted and the State Historic Preservation Division contacted as outlined in Hawai‘i Administrative Rules 13§13-275-12.

3.3 Infrastructure

3.3.1 Utilities

Existing Facilities and Services, Impacts and Mitigation Measures

About 30 of Pu‘ukapu’s 184 pastoral lots are currently serviced with water through a County Department of Water Supply meter, but that supply is considered to be non-potable as the system is not approved or monitored by the Department of Health Safe Drinking Water Branch and is also inadequate for fire-fighting purposes. The proposed system will upgrade and replace the current distribution lines for those lots.

The Hawai‘i State Commission on Water Resources Management in a memo of April 2, 2009 (see Appendix 1a) recommended that DHHL work with the County to have the project incorporated in the Hawai‘i County Water Use and Development Plan, and with the Engineering Division of the Hawai‘i State DLNR for inclusion in the State Water Projects Plan. DHHL will work with these agencies.

Electric and fiber-optic telephone-internet utilities have been installed but are not currently active. Future utilities may include electrical lines. The project will not affect or disrupt service for these utilities. Contractors will be made explicitly aware of all underground lines and will be required to avoid them during construction.

3.3.2 Roadways and Traffic

Existing Facilities and Impacts

The Pu‘ukapu Hawaiian Home Lands subdivision is accessed from State Route (SR) 19, also known as Mamalahoa Highway and the Hawai‘i Belt Road, and served by an internal roadway system. The project site itself is about two miles from SR 19 and extends along Poliahu Alanui and a system of numbered roadways with the prefix “FR” (Fire Road).

Long-standing plans to build a bypass around the center of Waimea through Pu‘ukapu Hawaiian Home Lands have been placed on indefinite hold, according to the state Department of Transportation and Department of Hawaiian Home Lands. The agencies cited difficulties in finding a route through Pu‘ukapu acceptable to the homesteaders as the primary reason (*West Hawai‘i Today* 2/26/09).

Although construction of the Waimea Bypass would likely improve access to the Pu‘ukapu Ranch Lots, the routes advanced to date would otherwise not likely to affect them, as they do not pass within the project site.

Project representatives met with the South Kohala Traffic Safety Committee on April 14, 2009 (see agenda at end of Appendix 1a). The group expressed concerns about restoring roads to their original conditions, and requested a copy of the Draft EA when it was prepared, which has been supplied.

The proposed water system will involve construction of reservoirs and other tanks, booster stations and pipelines that may cause very temporary delays in access to some homestead lots. Access to all properties will be maintained during construction. The proposed water lines will be enclosed underground and those areas will be restored to the existing condition once installation is complete, and no adverse effects are expected.

3.4 Secondary and Cumulative Impacts

Because the purpose of the project is to provide water to an existing homestead subdivision already partially served by the county Department of Water Supply, the proposed project would not involve major secondary impacts, such as population changes or effects on public facilities. Although the project would provide short-term construction jobs, these would largely be filled by local residents and would not induce in-migration.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. The adverse effects of the project – minor and temporary disturbance to air quality, noise or visual quality during construction – are very limited in severity, nature and geographic scale. No other construction, agriculture or forestry projects are occurring or planned in or near this part of Pu‘ukapu. The small-scale ranching and home construction projects gradually being undertaken by individual lessees are not of a scale or number as to interact with the water project.

3.5 Required Permits and Approvals

The following permits and approvals would be required

- Hawai‘i County Building Division Approval and Building Permit
- Hawai‘i County Planning Department Plan Approval
- Hawai‘i County Public Works Department Grading Permit
- County of Hawai‘i, Department of Public Works, Permit for Work in County Right-of-Way
- State of Hawai‘i, Department of Health, National Pollutant Discharge Elimination System Permit

3.6 Consistency With Government Plans and Policies

3.6.1 Hawai‘i State Plan

Adopted in 1978 and last revised in 1991 (Hawai‘i Revised Statutes, Chapter 226, as amended), the Plan establishes a set of themes, goals, objectives and policies that are meant to guide the State's long-run growth and development activities. The three themes that express the basic purpose of the *Hawai‘i State Plan* are individual and family self-sufficiency, social and economic mobility and community or social well-being. The proposed project would promote these goals by enhancing water service on the Island of Hawai‘i, thereby enhancing quality-of-life and community and social well-being.

3.6.2 Hawai‘i State Land Use Law

All land in the State of Hawai‘i is classified into one of four land use categories – Urban, Rural, Agricultural, or Conservation – by the State Land Use Commission, pursuant to Chapter 205, HRS. The property is in the State Land Use Agricultural District. The proposed use is consistent with intended uses for this Land Use District.

3.6.3 Hawai‘i County Zoning and General Plan

Hawai‘i County General Plan Land Use Pattern Allocation Guide (LUPAG). The LUPAG map component of the *General Plan* is a graphic representation of the Plan's goals, policies, and standards as well as of the physical relationship between land uses. It also establishes the basic urban and non-urban form for areas within the planned public and cultural facilities, public utilities and safety features, and transportation corridors. The General Plan LUPAG designation for the properties in Pu‘ukapu is Important Agricultural Lands or Extensive Agriculture. The project is consistent with these designation.

Hawai‘i County Zoning and SMA. Zoning for nearly all the properties in this portion of the Pu‘ukapu Hawaiian Home Lands is currently A-40a (Agriculture, 40-acre minimum lot size). Water supply systems are permitted in the Agriculture district according to Section 25-5-72(a)(17) of the Hawai‘i County Zoning Code, which states that "Public uses and structures which are necessary for agricultural practices" are allowed, and also according to Section 25-4-11(a), which states: "Communication, transmission, and power lines of public and private utilities and governmental agencies are permitted uses within any district." The property is not situated within the County's Special Management Area (SMA).

The *General Plan* for the County of Hawai‘i is a policy 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 (Hawai‘i County Planning Department). The *General Plan* itself 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. Most relevant to the proposed project are the following Goals, Policies, and Standards:

PUBLIC UTILITIES – GOALS

- Ensure that properly regulated, adequate, efficient and dependable public and private utility services are available to users.
- Maximize efficiency and economy in the provision of public utility services.
- Design public utility facilities to fit into their surroundings or concealed from public view.

PUBLIC UTILITIES – POLICIES

- Public utility facilities shall be designed to complement adjacent land uses and shall be operated to minimize pollution or disturbance.
- Provide utilities and service facilities that minimize total cost to the public and effectively service the needs of the community.
- Utility facilities shall be designed to minimize conflict with the natural environment and natural resources.
- Improvement of existing utility services shall be encouraged to meet the needs of users.
- Encourage the clustering of developments in order to reduce the cost of providing utilities.
- Develop short and long range capital improvement programs and plans for public utilities within its jurisdiction that are consistent with the General Plan.

WATER – POLICIES

- Water system improvements shall correlate with the County's desired land use development pattern.
- All water systems shall be designed and built to Department of Water Supply standards.
- Improve and replace inadequate systems.
- Water system improvements should first be installed in areas that have established needs and characteristics, such as occupied dwellings, agricultural operations and other uses, or in areas adjacent to them if there is need for urban expansion.
- The fire prevention systems shall be coordinated with water distribution systems in order to ensure water supplies for fire protections purposes.
- Cooperate with appropriate State and Federal agencies and the private sector to develop, improve and expand agricultural water systems in appropriate areas on the island.

WATER – STANDARD

- Public and private water systems shall meet the requirements of the Department of Water Supply and the Subdivision Control Code.

AGRICULTURE – GOALS

- Identify, protect and maintain important agriculture lands on the island of Hawai‘i.
- Preserve the agricultural character of the island.
- Preserve and enhance opportunities for the expansion of Hawai‘i’s Agriculture Industry.

AGRICULTURE – POLICIES

- Implement new approaches to preserve important agricultural land.
- Assist in the development of basic resources such as water, roads, transportation and distribution facilities for the agricultural industry.
- Assist other State agencies, such as the University of Hawaii, College of Tropical Agriculture and Human Resources, University of Hawaii at Hilo, College of Agriculture, Forestry and Natural Resources Management, Department of Business, Economic Development and Tourism, Office of Planning, Department of Land and Natural Resources and Department of Agriculture, on programs that aid agriculture.
- Coordinate and encourage efforts to solve the problems of the agricultural industry in the County of Hawaii.
- Designate, protect and maintain important agricultural lands from urban encroachment.
- Ensure that development of important agricultural land be primarily for agricultural use.
- Support the development of private and State agricultural parks to make agricultural land available for agricultural activities.
- Assist in the development of agriculture.
- Assist in the development of water for agricultural purposes.

Discussion: The General Plan notes that the availability of water is crucial to any type of development, whether urban, rural or agricultural. It notes that changes in land use, population density and development usually generate changes in the demand and supply of utilities and the proposed action is designed to provide a supply of water for a priority Hawaiian Home Lands pastoral subdivision. Although the system will not meet DWS standards and thus cannot be dedicated to the County, it is the only practical solution for providing domestic water that meets the projected domestic, stock watering, and fire protection needs of this area. The cost to build a water system to current DWS standards for the Pu‘ukapu Ranch Lots would make the project infeasible. DHHL would not be able to justify the magnitude of cost required for a DWS standard system for the number of homestead lots it would serve. The subdivision covers a very large area, requiring long distribution mains, with low residential density. As noted in the General Plan’s discussion of agriculture in South Kohala, there are almost 120,000 acres zoned for agriculture in the district. Although some of the most potentially productive land in the County, there is a need to develop a more reliable agricultural water system in Waimea to fully utilize this potential.

3.6.4 South Kohala Community Development Plan

The South Kohala Community Development Plan (CDP) encompasses the judicial district of South Kohala, and was developed under the framework of the February 2005 County of Hawai‘i General Plan. Community Development Plans are intended to translate broad General Plan Goals, Policies, and Standards into implementation actions as they apply to specific geographical regions around the County. CDPs are also intended to serve as a forum for community input into land-use, delivery of government services and any other matters relating to the planning area. The General Plan now requires that a Community Development Plan shall be adopted by the County Council as an "ordinance," giving the CDP the force of law. This is in contrast to plans created over past years, adopted by "resolution" that served only as guidelines or reference documents to decision-makers. In November 2008, the South Kohala CDP was adopted by the County Council. The version referenced in this Environmental Assessment is at: http://www.hcrc.info/community-planning/community-development-plans/south-kohala/skcdpfinaldraft11.18.08.pdf.

The Plan has many elements and wide-ranging implications, but there are several major strategies that embody the guiding principles related to land use, housing, public facilities, infrastructure and services, and transportation.

The Pu‘ukapu Hybrid Water System is generally consistent with all aspects of the South Kohala CDP. Under Section 2.4.1, Economic Characteristics, the plan notes that "Services such as schools, fire, police, medical, and various social services as well as more infrastructure, including roads, sewer, water, and electricity will need to be provided." In particular, in Appendix D, under General Plan Courses of Action for Water under Public Utilities, subsection "b" specifies the need to "improve and replace inadequate distribution mains and steel tanks." Under General Policy No. 5, the plan states that government agencies shall evaluate uses of natural resources to ensure they are consistent with the sustainable long-term health of the eco-system.

The plan also states in Section 2.5.5 (Water Delivery Systems) that improvements to the Waimea Water System have increased water capacity and enlarged distribution pipelines. It notes further that repairs are planned for the two reservoirs damaged in the October 2006 earthquake that have reduced the storage capacity of the Waimea system, the source for the new Pu‘ukapu hybrid water system. That $1.9 million repair project has begun (*West Hawai‘i Today*, Feb. 10, 2009).

The project is also consistent and/or not inconsistent with other goals, objectives and policies of the South Kohala CDP, and in particular with the policies that seek to guide planning for the district as a whole and for the four communities of Waimea, Waikoloa Village, Kawaihae and Puako. Those policies include preserving South Kohala's culture and "sense of place," providing for transportation and circulation needs, protecting the community from natural hazards, providing affordable and workforce housing and promoting environmental stewardship and sustainability.

PART 4: DETERMINATION

The Hawai‘i State Department of Hawaiian Home Lands expects to determine that the proposed project will not significantly alter the environment, as impacts will be minimal, and intends to 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.

PART 5: FINDINGS AND REASONS

Chapter 11-200-12, Hawai‘i Administrative Rules, outlines those factors agencies must consider when determining whether an Action has significant effects:

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 resources would be committed or lost. The project site, Pu‘ukapu Hawaiian Home Lands, is designed for agricultural homestead use and is already partly served by water lines.
2. *The proposed project will not curtail the range of beneficial uses of the environment.* The proposed project expands and in no way curtails beneficial uses of the environment.
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 fulfills aspects of these policies calling for an improved social and economic environment. 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 will benefit the economic and social welfare of the community by enhancing Pu‘ukapu’s water supply and therefore improving its public utilities system.
5. *The proposed project does not substantially affect public health in any detrimental way.* The proposed project will benefit public health by improving the supply of water.
6. *The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities*. No adverse secondary effects are expected to result from the proposed action. The project will not enable development, as the DHHL development is already subdivided, but will instead help assure improved and safer public utilities.
7. *The proposed project will not involve a substantial degradation of environmental quality*. The implementation of best management practices for construction will ensure that the project will not degrade the environment in any substantial way.
8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* No endangered species of flora or fauna are present on the project site or would be affected in any way by the project.
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 project is not related to additional activities in the region in such a way as to produce adverse cumulative effects or involve a commitment for larger actions.

10. *The proposed project will not detrimentally affect air or water quality or ambient noise levels.* No adverse effects on these resources would occur. Mitigation of construction-phase impacts will preserve water quality. Ambient noise impacts due to construction will be temporary and restricted to reasonable daytime hours.
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.* Although the project is located in an area with volcanic and seismic risk, the entire Island of Hawai‘i shares this risk, and the project is not imprudent to construct, and employs design and construction standards appropriate to the seismic zone.
12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* No scenic vistas or viewplanes identified in the Hawai‘i County General Plan will be adversely affected by the project, and visual impacts will be negligible.
13. *The project will not require substantial energy consumption*. The project involves only minor energy use and no adverse effects are expected.

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

REFERENCES

Barrère, D. 1983. "Notes on the Lands of Waimea and Kawaihae." Report 2, in Jeffrey T. Clark and Patrick V. Kirch (eds.), *Archaeological Investigations of the Mudlane-Waimea- Kawaihae Road Corridor, Island of Hawai'i*, pp. 25-38. Department Report 83-1. Dept. of Anthropology, Bernice P. Bishop Museum, Honolulu.

Burtchard, G. and M. Tomonari-Tuggle. 2002. "The Waimea Agricultural System Reconsidered: Implications of the Waimea Town Center Project." Paper presented at the Society for Hawaiian Archaeology, Kaua'i, October 11-13, 2002.

_____. 2003. "Seeking Waimea's Past: Archaeological Data Recovery at Waimea Town Center, Kamuela-Waimea, South Kohala, Hawaii Island." Report prepared by International Archaeological Research Institute, Inc., for the Parker Ranch Foundation Trust, Kamuela, Hawai'i.

Clark, J. 1987. *Waimea-Kawaihae, a Leeward Hawaii Settlement Pattern*. Unpublished Ph.D. dissertation. Department of Anthropology, University of Illinois at Urbana- Champaign.

Ellis, W. 1963. *Journal of William Ellis, Narrative of a Tour of Hawaii, or Owhyee...* Honolulu: Advertiser Publishing Co.

Engineering Surveyors Hawaii, Inc. 2002. DHHL Puukapu Pasture Lots Water Strategy. Prep. with Waimea Water Services for the Department of Hawaiian Home Lands. Honolulu.

Fornander, A. 1959. *Selections from Fornander's Hawaiian Antiquities and Folk-Lore*. S. Elbert, editor. Honolulu: The University Press of Hawai'i.

Gagne, W., and L. Cuddihy. 1990. "Vegetation," pp. 45-114 in W.L. Wagner, D.R. Herbst, and S.H. Sohmer, eds., *Manual of the Flowering Plants of Hawai'i.* 2 vols. Honolulu: University of Hawai'i Press.

Handy, E.S.C., and E. Handy. 1972. *Native Planters in Old Hawai'i. B.P. Bishop Museum Bulletin 233*. Bishop Museum Press, Honolulu. (With M.K. Pukui).

Hawai'i County Planning Department. 2005. *The General Plan, County of Hawai'i.* Hilo.

Heliker, C. 1990. *Volcanic and Seismic Hazards on the Island of Hawai'i.* Washington: U.S. GPO.

International Archaeological Research Institute, Inc. (IARII). 1997. *The Kuleana Lots at Pukalani, Waimea Town Center Project Area, Waimea, Hawai'i Island*. Prep. for Parker Ranch. Honolulu: IARI.

Kelly, M. 1974 “Historical Survey of the Waimea to Kawaihae Road Corridor, Island of Hawaii.” In *Archaeological and Historical Surveys of the Waimea to Kawaihae Road Corridor, Island of Hawaii*, ed. by W. Barrera, Jr. and M. Kelly, Part 2. Hawaii Historic Preservation Report 74-1. Department of Transportation, State of Hawai‘i in cooperation with Federal Highway Administration, U.S. Department of Transportation and Department of Land and Natural Resources, State of Hawai‘i, Honolulu.

Hawai‘i State Department of Hawaiian Home Lands. 2008. *Lalamilo/Pu‘ukapu Regional Plan*. Honolulu. http://hawaii.gov/dhhl/publications/regional-plans/hawai-i-regional-plans/Lalamilo%20Regional%20Plan%20October%202007.pdf/

Kamakau, S. 1961 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu.

Maly, K. 1999. *Na Ala Hele Ma Kai O Kohala Hema (The Coastal Trails of South Kohala): Archival-Historical Documentary Research, Oral History—Consultation Study and Limited Site Preservation Plan Kawaihae-‘Anaeho‘omalu Trail Section*. Report prepared for Na Ala Hele, Hilo, Hawaii. Kumu Pono Associates, Hilo, Hawai‘i.

McEldowney, H. 1983 “A Description of Major Vegetation Patterns in the Waimea-Kawaihae Region During the Early Historic Period.” Report 16, in Jeffrey T. Clark and Patrick V. Kirch (eds.), *Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai‘i*, pp.407-445. Department Report 83-1. Department of Anthropology, Bernice P. Bishop Museum, Honolulu.

Miller, E. Feb. 10, 2009. “Earthquake repairs begin on reservoirs.” *West Hawai‘i Today*.

Pukui, M.K., Elbert, S.H., and E.T. Mookini. 1974 *Place Names of Hawaii*. 2nd ed.. Honolulu: University of Hawai‘i Press.

U.S. Dept. of Commerce, Bureau of the Census. 2001. http://factfinder.census.gov/ .

U.S. Soil Conservation Service. 1973. *Soil Survey of Island of Hawai‘i, State of Hawai‘i.* Washington: U.S.D.A. Soil Conservation Service.

University of Hawai‘i at Hilo, Dept. of Geography. 1998. *Atlas of Hawai‘i.* 3rd ed. Honolulu: University of Hawai‘i Press.

West Hawai‘i Today, February 26, 2009: “Waimea bypass plans stall”.

Wolfe, E.W., and J. Morris. 1996. *Geologic Map of the Island of Hawai‘i.* USGS Misc. Investigations Series Map i-2524-A. Washington, D.C.: U.S. Geological Survey.

ENVIRONMENTAL ASSESSMENT

Pu‘ukapu Hybrid Water System

TMK (3rd.) 6-4-004: 009-010, 032-051, and 053-054
South Kohala District, Hawai‘i Island, State of Hawai‘i

State of Hawai‘i
Department of Hawaiian Home Lands

APPENDIX 1a
Comments in Response to Early Consultation

William P. Kenoi
Mayor

Harry S. Kubojiri
Police Chief

Paul K. Ferreira
Deputy Police Chief

County of Hawai'i

POLICE DEPARTMENT
349 Kapi'olani Street • Hilo, Hawai'i 96720-3998
(808) 935-3311 • Fax (808) 961-2389

March 13, 2009

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

Dear Mr. Terry:

RE: Early Consultation for Environmental Assessment for Pu'ukapu Hybrid Water System, Island of Hawai'i

Staff has reviewed the Early Consultation for Environmental Assessment for the Pu'ukapu Hybrid Water System being proposed for the Hawai'i State Department of Hawaiian Home Lands and has no objections or comments to offer at this time.

Thank you for the opportunity to comment. Should you have any questions, please contact Captain James Sanborn, Commander of the South Kohala District, at 887-3080.

Sincerely,

HARRY S. KUBOJIRI
POLICE CHIEF

HENRY J. TAVARES JR.
ASSISTANT POLICE CHIEF
AREA II OPERATIONS

JS:dmv

William P. Kenoi
Mayor

BJ Leithead Todd
Planning Director

County of Hawaii

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

March 24, 2009

Mr. Ron Terry
Geometrician Associates, LLC
PO Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

Subject: **Early Consultation for Draft Environmental Assessment**
Project: **Puukapu Hawaiian Home Lands Water System Improvement Project**
TMK: **(3) 6-4-004: Various Parcels; Puukapu, South Kohala, Hawaii**

Thank you for your letter dated March 5, 2009, requesting comments from this office regarding the preparation of a Draft Environmental Assessment.

According to the system map provided, the subject properties are zoned A-40a (Agricultural-40 acre minimum lot size). The properties are situated within the State Land Use Agricultural District. The subject area is not within the Special Management Area (SMA). In addition, the properties are owned and leased by the State of Hawaii Department of Hawaiian Home Lands.

Please note that the proposed water system is intended to serve 184 lots. However, the development will require the appropriate Land Use Designations as well as other Planning Department requirements, such as Final Subdivision Approval.

We have no further comments to offer, at this time. However, please keep us informed and provide our department with a copy of the Final Environmental Assessment for our records.

If you have any further questions or if you need further assistance, please feel free to contact this office.

Sincerely,

BJ LEITHEAD TODD
Planning Director

BJM:cs
P:\wpwin60\Bethany\General Zoning Inquiries\preconsultdrafteaPuukapu.doc

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 31, 2009

Geometrician Associates, LLC
Box 396
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Ladies and Gentlemen:

Subject: Early Consultation for Pu'ukapu Hybrid Water System

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

Other than the comments from Division of Forestry & Wildlife, Land Division-Hawaii District, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Morris M. Atta
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

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

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 6, 2009

MEMORANDUM

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

FROM: for Morris M. Atta
SUBJECT: Early Consultation for Pu'ukapu Hybrid Water System
LOCATION: South Kohala, Hawaii, TMK: (3) 6-4-4:
APPLICANT: Geometrician Associates, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 30, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: Paul J. Conry
Date:

PAUL J. CONRY, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
MAR 10 2009

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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March 6, 2009

MEMORANDUM

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STATE OF HAWAII
DEPARTMENT OF LAND & NATURAL RESOURCES

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

FROM: for Morris M. Atta
SUBJECT: Early Consultation for Pu'ukapu Hybrid Water System
LOCATION: South Kohala, Hawaii, TMK: (3) 6-4-4:
APPLICANT: Geometrician Associates, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 30, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 3/11/09

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 1, 2009

Geometrician Associates, LLC
Box 396
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Ladies and Gentlemen:

Subject: Early Consultation for Pu'ukapu Hybrid Water System

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

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

Sincerely,

Charlene D. Unoki
for Morris M. Atta
Administrator

...NDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 6, 2009

MEMORANDUM

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

FROM: for Morris M. Atta
SUBJECT: Early Consultation for Pu'ukapu Hybrid Water System
LOCATION: South Kohala, Hawaii, TMK: (3) 6-4-4:
APPLICANT: Geometrician Associates, LLC

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STATE OF HAWAII

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 30, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: Edwin T. Sakai
Date: 4.1.09

RECEIVED
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STATE OF HAWAII

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

April 1, 2009

REF: Puukapu

TO: Morris Atta, Administrator
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Early Consultation for Puukapu Hybrid Water System

FILE NO.: n/a
TMK NO.: (3) 6-4-4

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

Our comments related to water resources are checked off below.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☐ OTHER:

If there are any questions, please contact Jeremy Kimura at 587-0269.

L[illegible]DA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 2, 2009

Geometrician Associates, LLC
Box 396
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Ladies and Gentlemen:

Subject: Early Consultation for Pu'ukapu Hybrid Water System

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

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

Sincerely,

Morris M. Atta
Administrator

L...)A LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 6, 2009

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
~~Div. of Boating & Ocean Recreation~~
x Engineering Division
x ~~Div. of Forestry~~ & Wildlife
Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division –Hawaii District

FROM: Morris M. Atta
SUBJECT: Early Consultation for Pu'ukapu Hybrid Water System
LOCATION: South Kohala, Hawaii, TMK: (3) 6-4-4:
APPLICANT: Geometrician Associates, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 30, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 3/19/09

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD\MorrisAtta
REF.:EarlyConsultPuukapuHybridWaterSystem
Hawaii.425

COMMENTS

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

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

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

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

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

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

( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.

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

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

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

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

( ) Additional Comments:_____

_____

( ) Other:_____

_____

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

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER

Date: 3/19/08

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 9, 2009

Geometrician Associates, LLC
Box 396
Hilo, Hawaii 96721

Attention: Mr. Ron Terry

Ladies and Gentlemen:

Subject: Early Consultation for Pu'ukapu Hybrid Water System

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

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

Sincerely,

Morris M. Atta
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

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

RECEIVED
LAND DIVISION
2009 APR -9 A 10:01

AQUATIC RESOURCES:

DIRECTOR	
COMM. FISH.	
AQ RES/ENV	
AQ REC	
PLANNER	
STAFF SVCS	
RCUH/UH	
STATISTICS	
AFRC/FED AID	
EDUCATION	
SECRETARY	
OFFICE SVCS	
TECH ASST	
Return to:	
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Copies to:	
Due Date:	

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HILO, HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 6, 2009

MEMORANDUM

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

RECEIVED
MAR 10
RESOURCES

FROM: for Morris M. Atta
SUBJECT: Early Consultation for Pu'ukapu Hybrid Water System
LOCATION: South Kohala, Hawaii, TMK: (3) 6-4-4:
APPLICANT: Geometrician Associates, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 30, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 26 March 2009

RECEIVED
MAR 13 2009
DAR - HILO

LINDA LINGLE
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
EPO-09-041

April 20, 2009

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

Dear Mr. Terry:

SUBJECT: Pre-Assessment Consultation for Pu'ukapu Hybrid Water System
Island of Hawaii, Hawaii
TMK (3) 6-4-004: various parcels

Thank you for allowing us to review and comment on the subject application. The application was routed to the various branches of the Environmental Health Administration. We have the following Clean Water Branch and General comments.

Clean Water Branch

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

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

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

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

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

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting the applicable Notice of Intent (NOI) form:

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

   b. Discharges of hydrotesting water.

   c. Discharges of construction activity dewatering.

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

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

4. You must also submit a copy of the NOI or NPDES permit application to the State DLNR, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. You should specify if any impacted State waters are listed in the Clean Water Act, Section 303(d) list of impaired water bodies in Chapter IV of the *2006 State of Hawaii Water Quality Monitoring and Assessment Report*.

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

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

General

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

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

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
CWB
EH-Hawaii

SOUTH KOHALA TRAFFIC SAFETY COMMITTEE

LOCATION: Waimea Civic Ctr. Conference Room, Waimea HI 96743

AGENDA FOR REGULAR MEETING OF April 14, 2009

CALL TO ORDER: 4:00 PM
ATTENDANCE: Please sign in and give your email address if it's not on file.
MINUTES OF PREVIOUS MEETING: Acceptance of March 10, 2009 Minutes as circulated.
ANNOUCEMENTS:

STATE REPORT: Stanley Tamura 5 minutes

1. Kawaihae Rd. and Queen Ka'ahumanu HWY intersection project. – Construction Bid (January 2010) & Construction about Summer 2010.
2. Kawaihae Road Resurfacing east end to Wai'aka bridge improvements – Completion Update
3. Waiaka Bridge Project Public Meeting in April/May 2009.
4. Stimulus and STIP Funding Update

COUNTY REPORT: Ron Thiel, Warren Lee – DPW & (Transit Agency) 5 minutes

Active

1. Feedback on traffic calming devices on La'e La'e road and Smart Sign Kawaihae Road
2. Lalamilo EA Study – Status
3. Student drop off on Kawaihae Rd. – removal of posts.
4. Design Waikoloa Road/Paniolo Ave - climbing lane and other improvements with $250,000 Budget appropriation.
5. Tree trimming Saddle Road
6. Federal Economic Stimulus funds for south Kohala District

No Action by County Administration

7. Prioritized road resurfacing list request.
8. Waikoloa Emergency Road - Pedestrian/Bike Use recommendation.
9. Waimea Circulation Study - Plan and schedule.
10. Waikoloa Village- Wehilani (Castle & Cook) Development extension of Kila Kila Rd to Waikoloa Road.
11. Access plan for Kawaihae Road near Waiaka Bridge.
12. Lindsey Road Bridge Project – ROW, consultant selection, schedule, design?
13. Hand Held Cell Phone requested ordinance

POLICE REPORT: Captain James Sanborn & CP Officer Bugado 5 minutes

1. Traffic incidents, citations and announcements.

UNFINISHED BUSINESS 15 minutes **(after new business)**

1. PR Connector Road – Update – Diane Quitiquit
2. Hand Held Cell phone use while driving Co. ordinance – No response to 2 letters to Mayor
3. Ordinance amending Co. Code relating to inattention to driving – Hand Held devices April 21 hearing.
4. STIP Revision #5 & Future revision #6 – Update –letter
5. Donkeys crossing Waikoloa Road – Mitigation Update– Anika Glass
6. Tree Trimming on Saddle Road near Waikiki Ranch – Letter
7. Requests for comment on hybrid water system improvements for Puu Kapu DHHL Homesteads.

NEW BUSINESS 30 minutes

1. Presentation by Geometrician on District projects –
2. School Drop Off alternate traffic routing –Carol Yurth
3. Zoning application for rerouting Lindsey Road
4. Highway Safety Grant Program

NEXT MEETING: May 12, 2009 meeting at 4:00 PM- Waimea Civic Ctr. Conf. Rm: Presentation by Waikoloa Mauka Ranchland – Paniolo/Waikoloa Road Intersection – Sid Fuke
ADJOURN Drive Safe, Drive Defensively!

11:37:18 AM
4/14/2009

South Kohala Traffic Safety Committee
P.O. Box 383375
Waikoloa, HI 96738

Mr. R. Terry
Geometrician Associates, LLC
P. O. Box 396
Hilo, HI 96721
866 316-6988 Fax
rterry@hawaii.rr.com

April 21, 2009

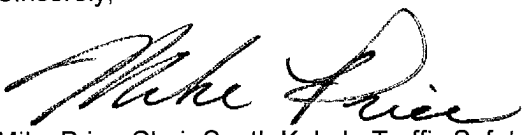
Ref: Comment on EA for Puukapu Hybrid Water System, Waimea, HI

At the regular meeting of the committee on April 14, 2009 the membership (25 attendees) approved the following comments for your consideration in drafting the EA;

The Committee thanks you for your presentation and explanation of this project at the above meeting. After discussion and input from the membership the following comments are submitted for your consideration. The Puukapu Pastoral Homestead Lots need the water system to make the farming and ranching activities sustainable for the beneficiaries. Most of the roads affected are unimproved gravel surfaces. Mitigation of delay and road closure impacts to local users needs consideration. Coordination and prior notification of road closures with the local residents is essential. The Committee is also concerned that trenching for the water line will result in an uneven surface along and across roadways due to the pipe line trenching and settling of the backfill material. The Committee requests measures to assure the repaired roads are brought to existing level, smooth, safe surface condition at a minimum by the contractor(s). Past district projects have been weak in enforcing provisions that bring the road back to at least the existing condition.

Thank you for this opportunity to comment. We request a copy of the draft EA upon report completion. I can be contacted at 883-2918 or whao@hawaii.rr.com .

Sincerely,



Mike Price-Chair South Kohala Traffic Safety Committee

CC: SKTSC
Linda Chinn – DHHL Lands Management Division Administrator
James W. Du Pont – DHHL Homestead District Supervisor
Warren Lee – Director Hawaii County Department of Public Works
Councilman Pete Hoffmann – Hawaii County Council

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

HRD09/4214

May 15, 2009

Ron Terry
Geometrician Associates
PO Box 396 Hilo, Hawai'i 96721

RE: Request for comments on early consultation Pu'ukapu hybrid water system, Hawai'i.

Aloha e Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated March 5, 2009. OHA has reviewed the project and offers the following comments.

From the limited information provided to us in this early review, we see that the Department of Hawaiian Homelands is proposing a water system improvement project for the Pu'ukapu Hawaiian Home Lands Naturally we wish to support our sister agency in their endeavors and we look forward to commenting on materials as they become available.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA CRC Hilo

ENVIRONMENTAL ASSESSMENT

Pu‘ukapu Hybrid Water System

TMK (3rd.) 6-4-004: 009-010, 032-051, and 053-054
South Kohala District, Hawai‘i Island, State of Hawai‘i

State of Hawai‘i
Department of Hawaiian Home Lands

APPENDIX 2
Archaeological Letter Report

RC-0404

An Archaeological Assessment Survey for the DHHL Pu‘ukapu Hybrid Water System

(TMKs: 3-6-4-04: 009, 010, 032-051, 053, 054)

Pu‘ukapu Ahupua‘a
South Kohala District
Island of Hawai‘i

DRAFT VERSION

PREPARED BY:

Robert B. Rechtman, Ph.D.

PREPARED FOR:

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

May 2009

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

RC-0404

An Archaeological Assessment Survey for the DHHL Pu‘ukapu Hybrid Water System

(TMKs: 3-6-4-04: 009, 010, 032-051, 053, 054)

Pu‘ukapu Ahupua‘a
South Kohala District
Island of Hawai‘i

RECHTMAN CONSULTING

EXECUTIVE SUMMARY

At the request of Dr. Ron Terry of Geometrician Associates, LLC, Rechtman Consulting, LLC conducted an archaeological assessment survey for a proposed water system within the Department of Hawaiian Home Lands (DHHL) Pu‘ukapu Pasture Lots (TMKs: 3-6-4-04: 009, 010, 032-051, 053, 054) in Pu‘ukapu Ahupua‘a, South Kohala, Hawai‘i. According to Hawai‘i Administrative Rules 13§13-284-5, when no archaeological resources are discovered during an archaeological survey the production of an Archaeological Assessment report is appropriate. The entire project area was surveyed employing a combination of pedestrian transects and visual inspection from slow moving vehicle. The survey boundaries were clearly identifiable following already developed roads, buried utilities, and flagged pasture areas. No historic properties were identified as a result of the fieldwork.

Given the negative findings of the current study, it is concluded that development of the proposed DHHL Pu‘ukapu Hybrid Water System will not significantly impact any known historic properties. It is recommended that no further historic preservation work is needed.

CONTENTS

FIGURES

INTRODUCTION

At the request of Dr. Ron Terry of Geometrician Associates, LLC, Rechtman Consulting, LLC conducted an archaeological assessment survey for a proposed water system within the Department of Hawaiian Home Lands (DHHL) Puʻukapu Pasture Lots (TMKs: 3-6-4-04: 009, 010, 032-051, 053, 054) in Puʻukapu Ahupuaʻa, South Kohala, Hawaiʻi. (Figures 1 and 2). This survey was undertaken in accordance with Hawaiʻi Administrative Rules 13§13–284, and was performed in compliance with the Rules Governing Minimal Standards for Archaeological Inventory Surveys and Reports as contained in Hawaiʻi Administrative Rules 13§13–276. According to 13§13-284-5 when no archaeological resources are discovered during an archaeological survey the production of an Archaeological Assessment report is appropriate. Compliance with the above standards is sufficient for meeting the historic preservation review process requirements of both the Department of Land and Natural Resources–State Historic Preservation Division (DLNR–SHPD) and the County of Hawaiʻi Planning Department. The current study was prepared in support of an Environmental Assessment compliant with HRS Chapter 343.

This report contains background information outlining the project area's physical and cultural contexts, a presentation of previous archaeological work in the area and current survey expectations based on that previous work, along with an explanation of the project methods and results.

BACKGROUND

To generate expectations regarding the nature of the historic properties that might exist on the study parcel, and to provide an appropriate background to assess any resources that are encountered, the specific as well as general physical and cultural contexts are presented along with prior archaeological studies relevant to the project area.

Proposed Development Action and Project Area Description

DHHL plans to develop a water system providing potable water for both domestic and stock watering usage servicing existing and planned ranch lots in the southern portion of the Puʻukapu Hawaiian Home Lands subdivision (Figure 3). The development project is planned in three phases with a total of 70,050 linear feet of pipe that will be buried mostly within existing roadways. Other components include two reservoir tanks totaling 132,000 gallons, four tanks for fire-fighting purposes, two booster stations, and a 12,000-gallon pressure-breaker tank. While the overall project site consists of about 4,600 acres, the areas of surface and subsurface involvement only include the linear pipeline corridors tank and booster station locations. This portion of the Puʻukapu Subdivision is located between two and six miles from Māmalahoa Highway, and the center of Waimea Town, and is currently dedicated to ranching use.

The climate in the project area is generally cool, with an average annual rainfall of about 35 inches (Juvik and Juvik 1998:57). Located at elevations ranging from 2,735 to 3,680 feet above sea level on the northern flanks of the Mauna Kea, the surface consists of ash-covered lava flows dating from 65,000 to 250,000 years before the present (Wolfe and Morris 1996). The primary soil within the project area is classified by the U.S. Natural Resources Conservation Service as Kikoni very fine sandy loam (KXC), a well-drained soil usually found on slopes of 3 to 12 percent. Also found in the area are Maile silt loam (MLD) and Waimea very fine sandy loam (WMC), soils with characteristics similar to that of the KXC.

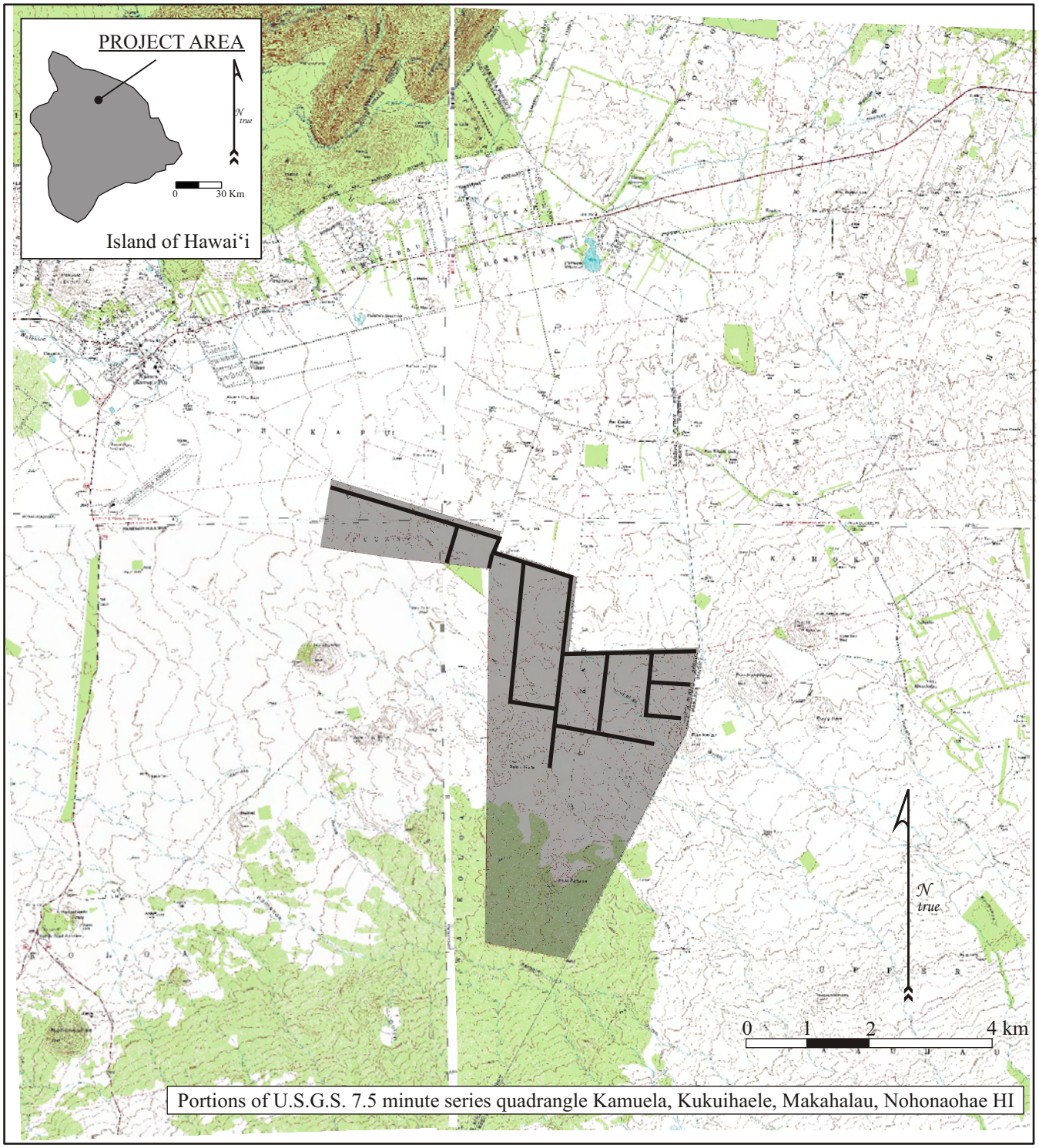


Figure 1. Project area location.

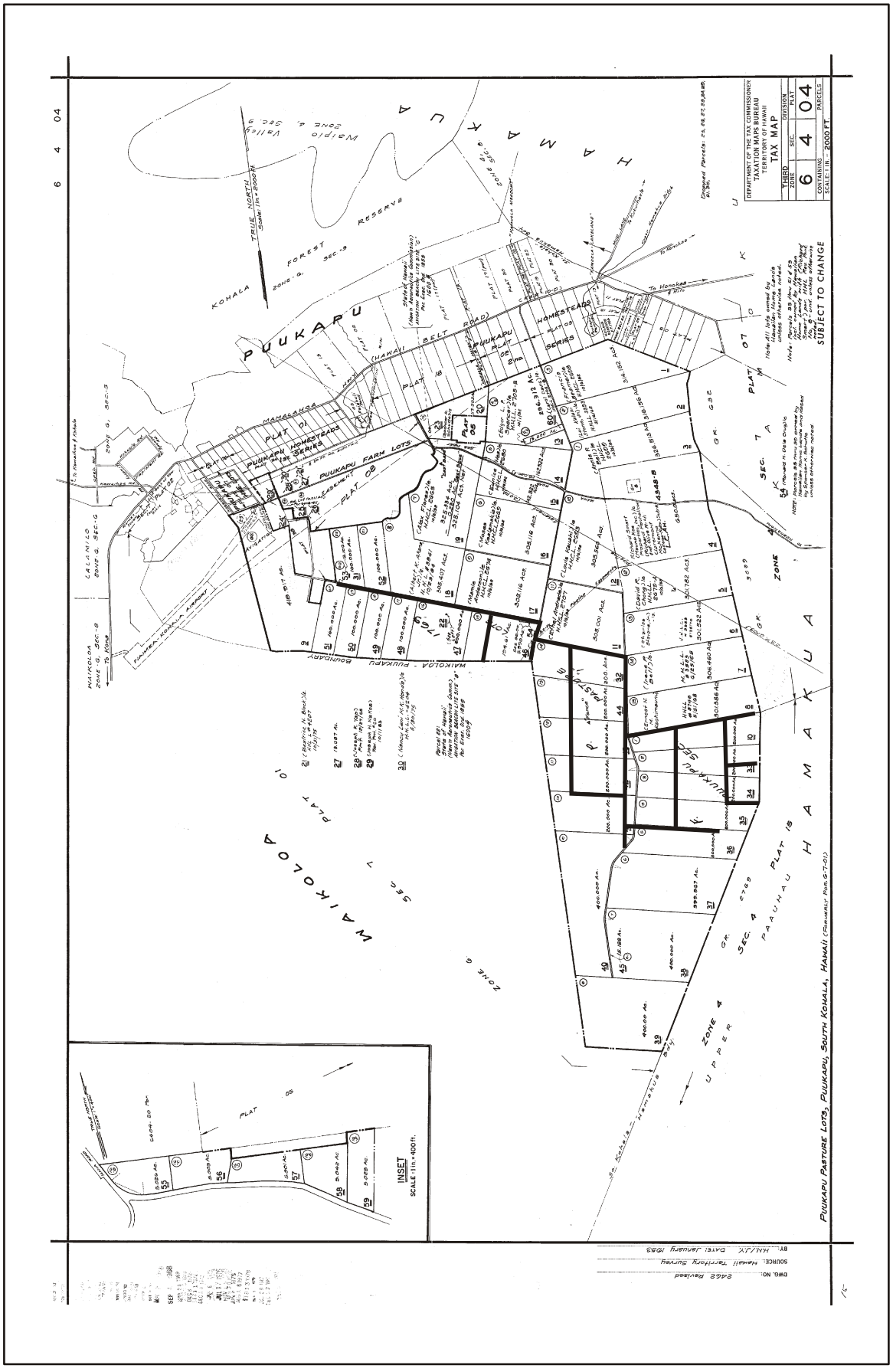


Figure 2. Tax map Key (TMK): 3-6-4-04 showing general study area and proposed waterline locations (bold).

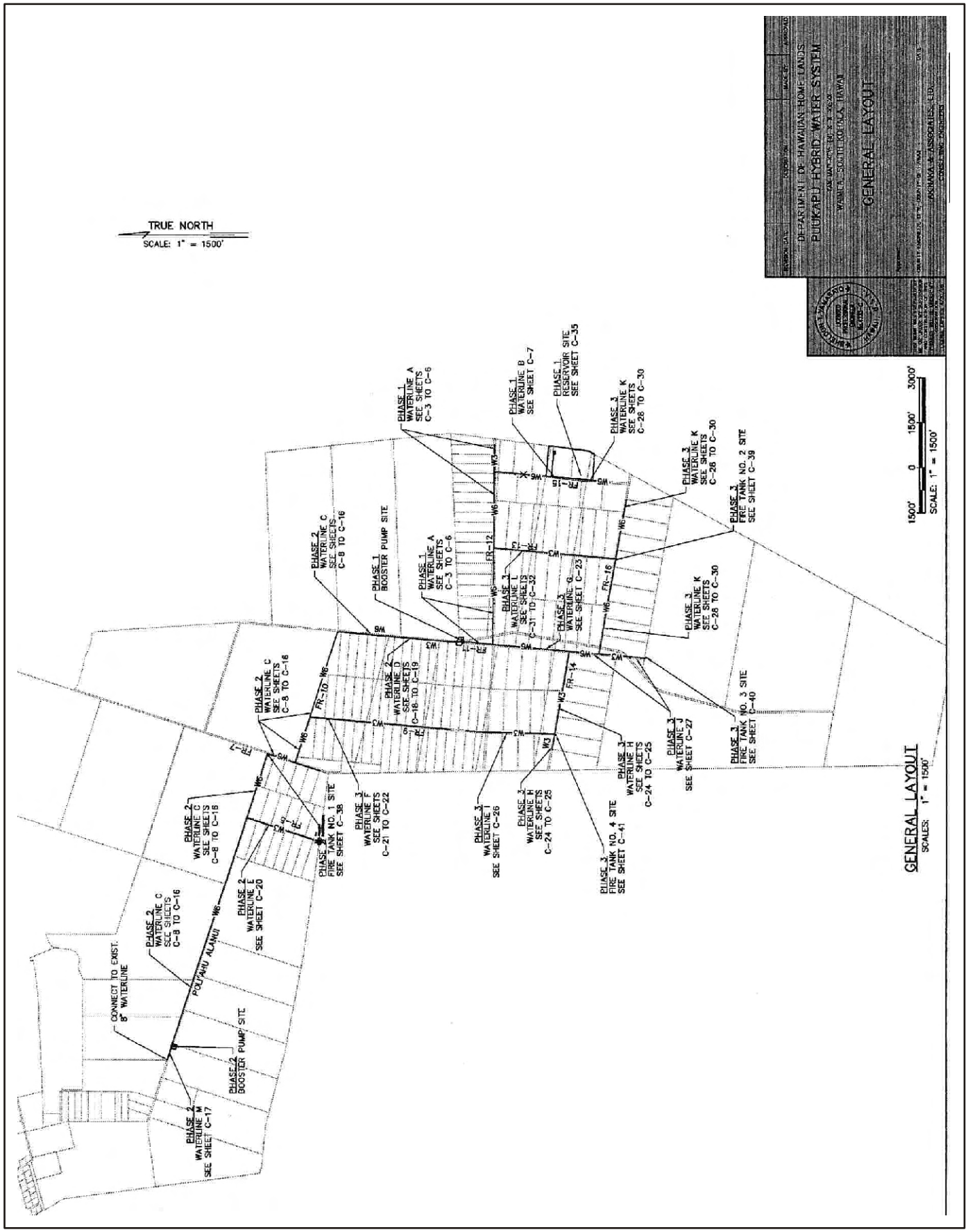


Figure 3. Proposed water system general layout.

Having been consistently grazed for over a hundred years, the original vegetation within the project area, likely a mesic forest/shrubland (Gagne and Cuddihy 1990), has been all but eliminated; only a few native shrubs, herbs, grasses and sedges that are somewhat resistant to grazing pressure remain. The bulk of the project area vegetation consists of non-native pasture grasses and weeds. The western, lower portions of the project area are dominated by kikuyu grass (*Pennisetum clandestinum*) with intermittent eucalyptus windbreaks (Figure 4). As the elevation rises in the eastern part of the project area the land also becomes rockier and topographically rugged (Figure 5). Native species like *ʻakia* (*Wikstroemia pulcherrima*), *aʻaliʻi* (*Dodonaea viscosa*), *ʻilima* (*Sida fallax*) and *ʻaheahea* (*Chenopodium oahuense*) become more common. Throughout the project area, introduced ornamental trees, shrubs and herbs are to be found planted along the roadside by the various land occupants. The proposed water pipeline generally follows existing ranch roads (Figures 6, 7, 8, and 9) and already established subsurface utility corridors (Figure 10). In most instances, the reservoir tanks will be situated adjacent to the roadways, either near existing tanks or in pasture areas.

Figure 4. Grassy pastureland in the western portion of the project area.

Figure 5. Topographically rugged eastern portion of the project area.

Figure 6. Ranch road and proposed waterline corridor in the western portion of the study area.

Figure 7. Ranch road and proposed waterline corridor in the central portion of the study area.

Figure 8. Ranch road and proposed waterline corridor in the northeastern portion of the study area.

Figure 9. Ranch road and proposed waterline corridor in the southeastern portion of the study area.

Figure 10. Marker indicating existing buried utilities in the central portion of the study area.

Culture-Historical Context

This section of the report presents the cultural history of the project area, as gathered from oral interviews and archival documentary research. Interviews were completed with area residents, *kūpuna* and individuals in official capacity representing past and present land use of the project area. Information was also obtained from previous oral histories completed in the vicinity of the project area. Archival research was completed at the Hawai'i State Archives, the Bureau of Conveyances, State Survey Division, and the Mission Houses Museum.

Known Traditions and Early History of Waimea

The project area is former Crown land, and as such has limited written recordation about its previous land use and cultural history. However, there are two noteworthy events associated with early Hawaiian settlement and use of Waimea. The first is the invasion of Hawai'i Island by Kama-lālā-walu, ruler of Maui Island. According to Kamakau (1961), Kama-lālā-walu's men landed at Puakō and went up to the grass-covered plains of Waimea:

> After Kama-lala-walu's warriors reached the grassy plain, they looked seaward on the left and beheld the men of Kona advancing toward them. The lava bed of Kaniku and all the land up to Hu`ehu`e was covered with the men of Kona. Those of Kau and Puna were coming down from Mauna Kea, and those of Waimea and Kohala were on the level plain of Waimea. The men covered the whole of the grassy plain of Waimea like locusts. Kama-lala-walu with his warriors dared to fight. The battle of Puoaoaka was outside of the grassy plain of Waimea, but the men of Hawaii were afraid of being taken captive by Kama, so they fled to the waterless plain lest Maui's warriors find water and hard, waterworn pebbles. The men of Hawaii feared that the Maui warriors would find water to drink and become stronger for the slinging of stones that would fall like raindrops from the sky. The stones would fall about with a force like lightening, breaking the bones into pieces and causing sudden death as if by bullets.
>
> Maui almost won in the first battle because of Hawaii's lack of a strong champion. Maka-ku-i-ka-lani [representing Maui] was first on the field and defied any man on Hawaii to match strength with him. Maka-ku-i-ka-lani tore Hawaii's champion apart. When Puapua-kea arrived later by way of Mauna Kea, those of Hawaii rejoiced at having their champion. Maka-ku-i-ka-lani and Puapua-kea matched their strength in club fighting on the battle site before the two sides plunged into the fight (Kamakau 1961:58-59).

Once he reached Waimea, Kama-lālā-walu positioned himself on Hōkū'ula, the hill that he was told would serve as a refuge for him and his men (Fornander 1959). In Fornander's description, the battlefield would have extended across Pu'ukapu:

> Kamalalawalu, upon arrival thereon, found on reconnoitering that there were neither stones nor trees, but only dirt [on Hōkū'ula]. While they were engaged in a conversation with Kumaikeau together with Kumakaia[1], at that time messengers were sent to summon Lonoikamakahiki and Pupuakea. At Kealakekua, in Kona, was the place where Lonoikamakahiki lived. When the messenger appeared before him, he said to Lonoikamakahiki: "Kamalalawalu and Makakuikalani have come to give battle to you both . . . When Lonoikamakahiki heard these things, he questioned the messenger: "Where is the battle to take place?" The messenger replied: "There, at Waimea, on top of that hill, Hokuula, where Kamalalawalu and all Maui are stationed" (Fornander 1959:188).
>
> During that night and including the following morning the Kona men arrived and were assigned to occupy a position from Puupa to Haleapala. The Kau and Puna warriors were

[1] Kumaikeau and Kumakaia, two men from Kawaihae, served as advisors to Kama-lālā-walu. They deliberately deceived Kama into thinking that Hōkū'ula hill would serve as a refuge.

> stationed from Holoholoku to Waikoloa. Those of Hilo and Hamakua were located from Mahiki to Puukanikanihia [Puukakanihia], while those of Kohala guarded from Momoualoa to Waihaka (Fornander 1959:229).

Puapua-kea was the eventual victor of this fight and the warriors of Maui were put to flight (Kamakau 1961:60). After Kama-lālā-walu was defeated, Hawai'i was invaded by Alapa'i-nui, also of Maui. Alapa'i-nui was the only chief recorded as having lived in Waimea.

> Alapa'i dwelt in Hilo for a year and then went to live in Waipi'o. Shortly after, he and the chiefs moved to Waimea and others went by canoe to Kawaihae. From Waimea, he went to Lanimaomao, where he fell ill (Kamakau 1961:77).

A second traditional native Hawaiian event or activity that is significantly associated with Waimea is the Waimea Field System. This agricultural complex was one of three large-scale Precontact agricultural systems on the leeward side of Hawai'i Island. The other two were located at Kona and Kohala. According to Burtchard and Tomonari-Tuggle (2002), the Waimea Agricultural System is best known for: 1) spatially limited residential sites; 2) linear, low earthen ridges; and 3) irrigation ditches located along [Waikoloa Stream] on the eastern margins of the system. The authors suggest that the area was exploited for forest resources possibly as early as the 13th and 14th centuries, followed by agriculture and prolonged residence in the 16th century. According to Barrére, "the cultivating places at Waimea were first expanded to supply the chiefs' needs while sojourned there and at Kawaihae" (Barrére 1983:27).

Soon after the arrival of foreigners, the landscape of Waimea began to change dramatically; initially through deforestation from the collection of sandalwood, followed by the introduction of cattle to these lands. Although for a time, agricultural products from Waimea replenished the cargo ships at Kawaihae Harbor, commercial ventures soon replaced traditional agricultural practices. Because of Waimea's long and intense commercialization period, it is unlikely that many traditional practices and associated features remained into the 20th century. This is in stark contrast with neighboring Kawaihae, where many of the features associated with traditional customary practices remain as part of the cultural landscape (Prasad 2003:7). The Waimea landscape has been substantially altered as a result of post-contact change.

The written history from the late 19th to the early 20th century largely reflects news of new settlers, religious endeavors, and commercial pursuits in the region. McEldowney (1983) discusses changes in land use and land ownership before and after the *Māhele*, with the eventual displacement of the Hawaiian community as cattle ranching became fully established in Waimea. An 1848 description of the Waimea population is as follows: "it can scarcely be said that there is any native population at all" (McEldowney 1983:432). Of the land commission awards reviewed by Kelly and Nakamura (1975:30), over 20% were issued to persons with non-Hawaiian surnames, such as James Hall (LCAw. 672), John Davis (LCAw. 989), Edmund Bright (LCAw. 986), and William French (LCAw. 4885 and 4886). The change in land use and ownership was very deliberate and strategic. Once land became a monetary commodity, Hawaiians were often forced off their house lots (and livelihoods) simply because they lacked the cash with which to make the purchase [of land] or pay the property tax.

Pu'ukapu, meaning 'sacred hill', is both the name of a traditional land division and a homestead community (Pukui et al. 1974:198). Burtchard and Tomonari-Tuggle (2003:20) describe it as a 'low knoll'. As a land unit, Pu'ukapu incorporates one of the largest traditional land parcels in the District of South Kohala. Early missionaries described Pu'ukapu Village as one of the three population centers in the Waimea area. Maps, some dating to the early 1800s, provide a temporal history of the changes that occurred round Pu'ukapu and Waimea. In 1853, Coulter estimated that the population of Hawai'i Island totaled 24,450 (Coulter 1931:3-4). His map (Figure 11) indicates that settlement was primarily along the coastal areas; as shown by the 'absence' of dots, there were very few inhabitants in the Waimea area by the time that Coulter arrived.

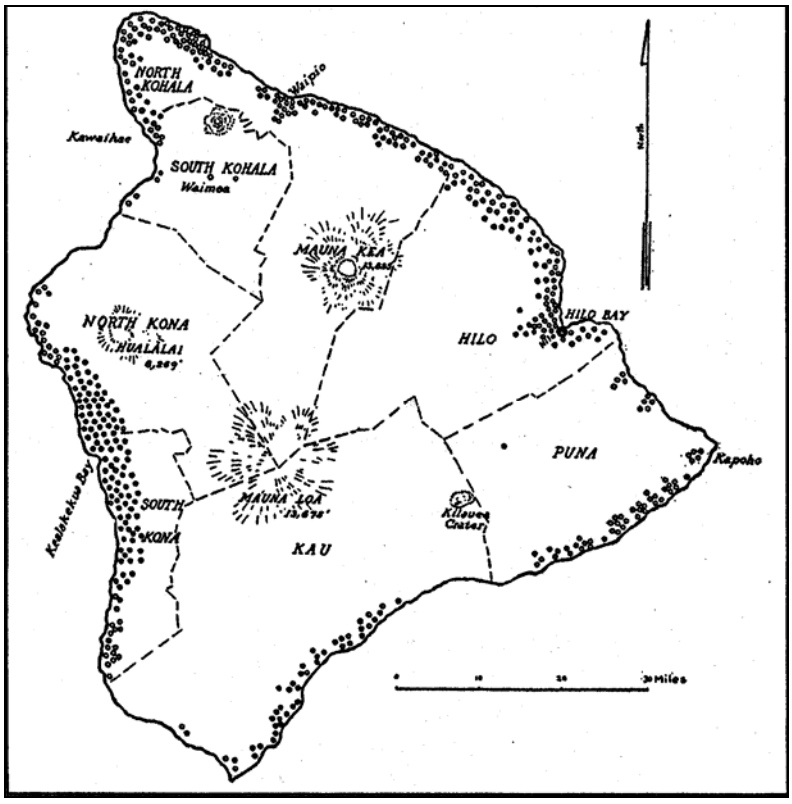


Figure 11. Population of the Island of Hawai‘i in 1853 (Coulter 1931:28).

Although early maps do not show a *pu‘u* or hill by the name Pu‘u Kapu, the name clearly demonstrates traditional significance for native Hawaiians. Proceedings of the Boundary Commission and *Māhele* records provide a little more history about the area. Most importantly, they record oral testimonies from the primary land users—the Native Hawaiians. The following proceedings (taken from Maly 1999:82-91) provide Native testimonies about the cultural landscape of Pu‘ukapu and Waimea.

> Volume B, the Ahupuaa of Kawaihae 2nd, District of South Kohala, Island of Hawaii 3d. J.C. November 15, 1873.
> (Kalualukea) The land of Puukapu does not cut Kawaihae off. It is about one and a half miles from Kahialepo to the boundary of Waipio, at a pool of water called Ulu, at the foot of the water fall, but the boundary runs along on the top of the *pali* above the falls, leaving the *pali* at the head of Waipio valley.
>
> (Kalua) I know the place called Kalualepo, it is a hole with yellow soil, it is near the Waihoolana. Puukapu an *ili* of Waimea bounds Kawaihae 2nd Thence to Waihoolana, a gulch of standing water. This gulch runs to Waipio. I lived there one month. Thence along the gulch to Kaapeape a place where there used to be a settlement. I do not know that the boundary line is on Kawaihae 2nd, but I do know that the land comes to Kalualepo, which is the only *mauka* boundary of Kawaihae that I know of. This boundary given is the boundary of Puukapu.
>
> Volume B, Ouli an Ili aina of Waimea in the District of South Kohala, Island of Hawaii 3d. J.C. November 14, 1873.
> (Pupuka) …Thence up to Lua Meki Halukuwailani, a deep hole with some small ones near to it, thence to the gulch Keanui o manu where Ouli is cut off by the land of Puukapu. There is a deep water hole and ancient crossing at the corner of Momoualoa [Mamalahoa] and Ouli and the boundary of Puukapu, this point is marked X….

Volume A—1, No.2, Rex vs. George Davis, Boundary Dispute, Waikoloa nui Ili of Waimea—Hawaii. Testimony taken August 8th and 9th 1865 at Waimea—Hawaii.
(Ehu) I am *kamaaina* of Puukapu. I was born in Waimea. I know the boundary from my own and my father's knowledge…I knew Kahanapilo w. wife of George Davis—she was not *konohiki* of the *ilis* on Waikoloa—nor of Waimea—I was in Kona when she died…I am *kamaaina* of Puukapu only—Kainea was the *Konohiki* when I lived there. There was no *pili* grass on that land—my father was not a bird catcher, he used to *mahiai* [farm].

(Cross) "Kainea was *Konohiki* in the time of Kalaimoku—Kainea is dead. Waikoloa is an *ahupuaa* of Waimea, which is a *Kalana*, with eight divisions. I only know about Waikoloa. I have been to Pukalani—Nonoaina and Paulama—they join Waikoloa, but do not run far out. Pukalani joins Puukapu…Puukapu is a division of Waimea…Puukapu belonged to Kalaimoku (I do not know the present owners).

(Wahahee) I am *kamaaina* of the King's land Puukapu—I was born there. Puulepo is close to Pukalani, which land joins Puukapu. My parents showed me the boundary. My mother belonged at Puukapu…Pukalani belonged to Kamehameha fourth. Nohoaina and Paulama to the same; also Puukapu; and I suppose they descended to Kamehameha V.

(Mi 1st) I live on Waikoloa—I am *kamaaina* of the lands in dispute. The name of the large land is Waimea—I am a witness for George Davis and also for the Rex. Waimea is a *Kalana*—which is the same as an island divided into districts—there are eight *Okana* in Waimea. In those *Okana* are those lands said to extend out (*hele mawaho*). These lands came in to the possession of Kamehameha I who said to Kupapaulu, go and look out to of the large lands running to the sea, for John Young and Isaac Davis. Kupapaulu went to Keawekuloa, the *haku aina*, who said if we give Waikoloa to the foreigners they will get Kalahuipua [Kalahuipuaa] and Anaiomalu [Anaehoomalu] (two lands at the beach) then your master will have no fish. So they kept the sea lands and gave Waikoloa to Isaac Davis…They kept all the valuable part of the lands, and gave the poor land outside to Isaac Davis. They kept Puukapu, Pukalani, Nohoaina, Kukuiula (above the church), and Paulama; and gave Waikoloa to Isaac Davis. The other Waikoloa, this side of the stream dividing them, was the King's".

Volume A No.1 No.2, For the King
(Cross) …Puuhuluhulu is the land *makai* of Waikoloa; and also Kaleikumikiau; Puupili; Pahoa; Kekio; 2 Puuokaa; and Waikoloa are King's lands adjoining. I know about the wall; I could carry stones then; in the time of Kamehameha I. I know the boundary of Waimea. Commence at Puukapu, the head of the land.

The information from these nineteenth century land commission transactions show that the Hawaiians who lived on Pu'ukapu lands defined it as either an *okana*—district or subdistrict, usually comprising several *ahupua'a* (cf. Mi) or an *ili*—land section, usually subdivision of *ahupua'a* (cf. Kalua). Waimea is described as a *kalana* (cf. Cross; Mi). C.J. Lyons describes Pu`ukapu and Waikoloa as *'ili kūpono* of the *ahupua'a* of Waimea (Lyons 1875:119 in Kelly and Nakamura 1975:28). The *'ili kūpono* is a large body of land that is nearly independent from *'ili* overseen by *konohiki.* At the time of the *Māhele* in 1848, Pu'ukapu was Crown Land; it was later transferred to the State and the Department of Hawaiian Home Lands (Watson 1969: B-1, in Kelly and Nakamura 1975:29). The designation of Pu'ukapu as an *ahupua'a* comes primarily from twentieth century maps and reports (c.f. Bonk 1996). Several Land Commission *kuleana* have been awarded in Pu'ukapu. One of these, LCA # 2271B, was awarded to Moluhi (NT 146v4, in Haun et al. 2003:21). There is no other information (e.g., acreage, boundaries, royal patent, etc.) on this award. The fact that Pu'ukapu was Crown Land likely limited the number of land commission claims made for the area.

At least two the testimonies [above] describe the traditional use and the value of Pu'ukapu lands. According to Ehu, his father farmed (*mahi'ai*) the lands on which they lived. Testimony by Mi indicates the value of Pu'ukapu lands, "They [overseers for Kamehameha I] kept all the valuable part of the lands, and gave the poor land outside to Isaac Davis. They kept Pu'ukapu . . . " After his victory on Hawai'i, Kamehameha is said to have given Waimea to his warrior brother Kalaimamahū, whose son Kahalai'a then inherited it (Anon. 1893 in Barrère 1983:28).

There are other historical accounts describing how farm produce from Waimea replenished foreign ships coming into Kawaihae Harbor. Taro is one of the foods that the Waimea lands were known for. According to Handy and Handy (1972), dry taro was planted along the lower slopes of the Kohala Mountains on the Waimea side, and on the plains south and west of Kamuela (Handy and Handy 1972:532). On his second visit to Waimea town and Puʻukapu (the last village) William Ellis made the following observation:

> to Waikoloa, Waikala, Pukalani and to Puukapu, 16 or 18 miles from the sea-shore, and the last village in the district of Waimea…the soil over which he [Mr. Thurston] had passed, was fertile, well watered, and capable of sustaining many thousand inhabitants. He had numbered 220 houses, and the present population is probably between eleven and twelve hundred. (Ellis 1825:217, in Handy and Handy 1972:532)

Thirty-two years [1793] earlier, Archibald Menzies made the following observation:

> A little higher up…than I had time to penetrate, I saw in the verge of the woods several fine plantations, and my guides took great pains to inform me that the inland country was very fertile and numerously inhabited. Indeed, I could readily believe the truth of these assertions, from the number of people I met loaded with the produce of their plantations and bringing it down to the water side to market, for the consumption was now great, not only by the ship, but by the concourse of people which curiosity had brought in to the vicinity of the bay (Menzies 1920:56 in Handy and Handy 1972).

Land Transactions Documented for the Project Area

In addition to the Land and Boundary Commission records, there are several categories of written documentation, which provide information about land use and land transactions in the late 1800s to early 1900s. These include:

> Leases and Financial Records of the Crown Lands Commission
> Government Land Applications
> Land Grant Records
> Public Works Records

As the project area is former Crown Lands, any land transactions involving these lands would be shown on lease and financial records. A review was made of all lease and financial documents for the island of Hawaiʻi (*Vol. 10, Leases and Financial Records, Hawaii Island*). There were no transactions recorded for Waimea. There were three Government Land Applications dating between the late 1800s and early 1900s that show requests for use of lands within Puʻukapu Ahupuaʻa. The applicants were Theo Davis (Application #911), Dr. Wight (Application #666), and Holmes (Application #693). The application by Holmes includes "a native", whose name is not provided. There were a total of seventy-six leases given by the Crown on the Island of Hawaiʻi. Only one of these, Crown Lease #6, was in Puʻukapu. The lease was given to R. C. Janion (sp.), James Lowsada and Frank Spencer. The application of this lease was made on September 1, 1857, and reads as follows:

> …tract of land known as the "Ahupuaa of Puukapu" situate in Waimea, Island of Hawaii. Excepting only from this lease, three certain lots of land, sold by his Majesty to Kahakauwila, P. Ryan and E. Adams, near the lot formerly belonged to George Risely and containing altogether about 19 acres more or less, and also all "Kuleanas" awarded by the Land Commissioner on the said ahupuaa.

An initial search on the Waihona ʻĀina Corp. database showed that a total of sixty-five land grant awards were made in Puʻukapu Ahupuaʻa between the years 1902 and 1930. None of these included portions of the current study area. A 1928 Hawaii Territory Survey map (Figure 12) indicates that the current study area was a pasture lease, which Bergin (2006) indicates belonged to Parker Ranch as prized grazing lands. This pasture lease reverted back to the Hawaiian Home Commission in 1950, and was divided into fifty-two ranch lots of 300 acres each. Parker Ranch helped Hawaiian Homes and the lot awardees with fencing and water services free of charge beginning in 1952 (Bergin 2006:68). It was not until 1964 that the County Water Supply put in its own system, and the DHHL further divided the pasture lots into smaller 10, 40 and 100 acre parcels.

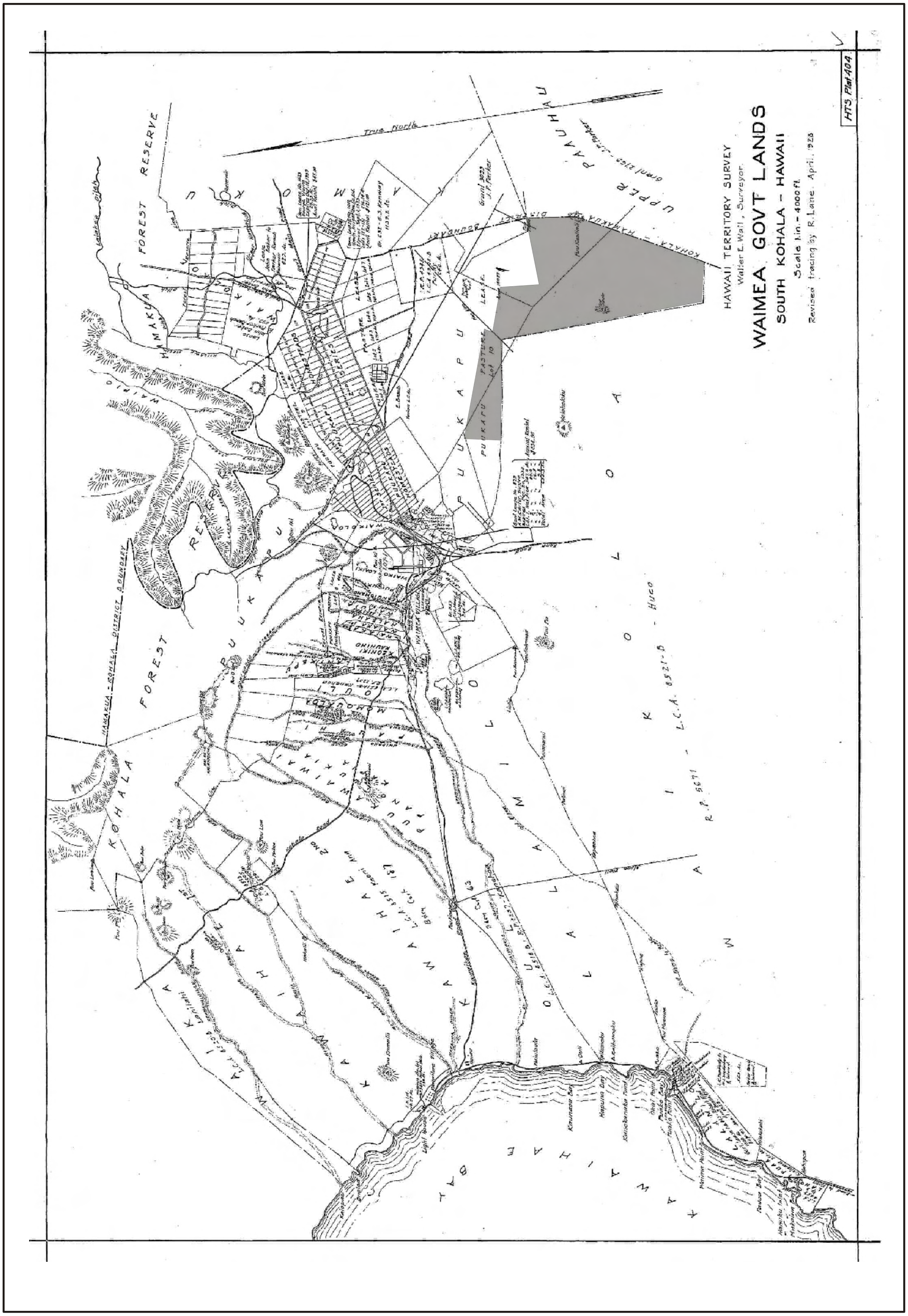


Figure 12. Hawaii Territory Survey Map of Waimea Govt Lands, April 1928 (current project area shaded).

Prior Archaeological Studies

Several archaeological studies have been conducted in the vicinity of the current project area within Pu‘ukapu and neighboring Waikoloa Ahupua‘a (Bonk 1985, 1996; Carson 2006; Clark 1987; Clark and Kirch 1983; Clark et al. 1990; Erkelens 1998; McEldowney 1991; Neller and Beggerly 1980; Rechtman 2000; Rechtman and Prasad 2006; Thompson and Rosendahl 1991, 1992). These are comprehensively summarized in Carson (2006) and Erkelens (1998). Collectively, these studies have documented Precontact settlement and agricultural use of the area beginning in the thirteenth century. By the 1600s this use intensified and continued to intensify into the late 1700s. Following European contact, the Waimea area became a center of population that was primarily focused on cattle ranching; as a result, the traditional residential and agricultural areas were abandoned. Of these studies, the most proximate to the current project area was a field inspection conducted by SHPD on TMK: 3-6-4-04:047. In her written report to Ross Cordy, Holly McEldowney (1991) describes two relatively large connected enclosures built on steeply sloping uneven terrain with core-filled stacked stone walls. Unsure of the function of this site, McEldowney concluded:

> In terms of significance, the enclosures are significant for their information content and should probably be documented in more detail if they are going to be destroyed. It would be good to document wall construction in more detail because some segments are well made. If the area is to be bulldozed, monitoring might catch evidence of their function. They could be a good example of a site type if we ever determine what that type is and **they are certainly the only example of anything for miles**. With so much uncertainty, it would be good to preserve it if possible. (McEldowney 1991:3, **emphasis mine**)

With respect to the Precontact use of the general project area, Clark (1987) offered a regional settlement pattern model that includes four elevationally delimited environmental zones: Coastal Zone, Intermediate Zone, Kula Zone, and Wilderness Zone. The Coastal Zone extends up to about 150 feet elevation, and was used for permanent and temporary habitation, coastal resource exploitation, and limited agriculture. The Intermediate Zone extends from the Coastal Zone to about 1,900 feet elevation. This zone was used primarily for seasonal agriculture with associated short-term occupation, typically situated near intermittent drainages. The Kula Zone extends from the Intermediate Zone to about 2,700 feet elevation (and to 3,200 feet in certain areas). This was the primary agricultural and residential area, with extensive formal fields and clustered residential complexes. The Wilderness Zone extends above the Kula Zone to the mountaintops, and was a locus for the collection of wild floral and faunal resources. The current project area, situated at elevations ranging from 2,735 feet to 3,680 feet, is perhaps at the interface of Clark’s (1987) Kula and Wilderness Zones, but clearly extends into the Wilderness Zone.

CURRENT SURVEY EXPECTATIONS

Based on the location and the specific history of the project area land use, the results of the background research, and a review of archaeological work previously conducted in the general vicinity, the archaeological expectations for the current study are limited. It is remotely possible that Precontact sites, including trails, temporary habitations, and resource procurement sites may have been present within the current project area. However, the extensive land use throughout the late nineteenth and twentieth centuries has significantly altered the landscape. Ranching related features in the project area may include boundary markers, walls, and enclosures; while some of these features may date from the 1920s and 1930s, other may date from the 1950s or 1960s.

ARCHAEOLOGICAL FIELDWORK

On March 26 and April 3, 2009, Matthew R. Clark, B.A., Ashton K. Dircks, B.A, and Robert B. Rechtman, Ph.D. carried out the archaeological fieldwork for the current project. The proposed infrastructure corridors were surveyed in their entirety employing a combination of pedestrian transecting and visual inspection from slow moving vehicle. The survey boundaries were clearly identifiable following already developed roads, existing buried utility corridors, and pasture areas. No historic properties were identified as a result of the fieldwork.

CONCLUSION AND RECOMMENDATIONS

Given the negative findings of the current study, it is concluded that development of the proposed DHHL Pu‘ukapu Hybrid Water System will not significantly impact any known historic properties. It is recommended that no further historic preservation work is needed.

REFERENCES CITED

Bergin, B.

2004 *Loyal to the Land: The Legendary Parker Ranch, 750-1950*. University of Hawai‘i Press: Honolulu.

2006 *Loyal to the Land: The Legendary Parker Ranch, 1950-1970*. University of Hawai‘i Press: Honolulu.

Barrère, D.

1983 Notes on the Lands of Waimea and Kawaihae. Report 2, in Jeffrey T. Clark and Patrick V. Kirch (eds.), *Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai‘i*, pp. 25-38. Department Report 83-1. Dept. of Anthropology, Bernice P. Bishop Museum, Honolulu.

Bonk, W.

1985 An Archaeological Survey in the Waimea-Paauilo Watershed Area of Portions of the Districts of South Kohala and Hamakua, County of Hawaii, Hawaii. Manuscript on file, USDA Soil Conservation Service.

1996 An Archaeological Survey of a Small Portion of Land in Pu‘ukapu, South Kohala, County of Hawaii, Hawaii. *Papers in Ethnic and Cultural Studies 96*-1, U.S. Dept. of Agriculture.

Burtchard, G. and M. Tomonari-Tuggle

2002 The Waimea Agricultural System Reconsidered: Implications of the Waimea Town Center Project. Paper presented at the Society for Hawaiian Archaeology, Kaua‘i, October 11-13, 2002.

2003 Seeking Waimea’s Past: Archaeological Data Recovery at Waimea Town Center, Kamuela-Waimea, South Kohala, Hawaii Island. Report prepared by International Archaeological Research Institute, Inc., for the Parker Ranch Foundation Trust, Kamuela, Hawai‘i.

Carson, M.

2006 Archaeological Assessment for the Proposed Hawai‘i Belt Road, Mud Land to the Kamuela Race Track, Hawai‘i Island (Portions of Hawai‘i Island Tax Map Key 6-4-02, 6-4-03, 6-4-04, 6-7-01, and 6-7-02). International Archaeological Research Institute, Inc., Honolulu, Hawai‘i. Prepared for Akinaka and Associates, Ltd., Honolulu, Hawai‘i.

Clark, J.

1987 Waimea-Kawaihae, A Leeward Hawaii Settlement Pattern. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois at Urbana-Champaign.

Clark, J., and P. Kirch (editors)
1983 Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai‘i. An Interdisciplinary Study of an Environmental Transect. *Departmental Report Series* 83-1. Department of Anthropology, B.P. Bishop Museum, Honolulu. Prepared for Department of Transportation, State of Hawaii.

Clark, S., E. Davidson, and P. Cleghorn
1990 Archaeological Testing and Data Recovery for the Waimea School Improvements Lot A (TMK: 6-7-2:por.17), Waikoloa, South Kohala, Hawai‘i Island. Applied Research Group. Prepared for Awa and Associates, Honolulu.

Coulter, J.
1931 Population and Utilization of Land and Sea in Hawaii, 1853. *Bishop Museum Bulletin No. 88*. B.P. Bishop Museum, Honolulu, Hawaii.

Erkelens, C.
1998 The Kuleana Lots at Pukalani Waimea Town Center Project Area, Waimea, Hawaii Island. International Archaeological Research Institute, Inc., Honolulu. Prepared for Parker Ranch.

Fornander, A.
1959 *Selections from Fornander’s Hawaiian Antiquities and Folk-Lore*. S. Elbert, editor. The University Press of Hawaii.

Handy, E.S.C. and E.G. Handy
1972 Native Planters in Old Hawaii: Their Life, Lore, and Environment. *Bernice P. Bishop Museum Bulletin, No. 233*. Bishop Museum Press, Honolulu, Hawaii.

Haun, A., D. Henry and K. McGuire
2003 Archaeological Inventory Survey, DHHL Residential Development at Lālāmilo, South Kohala District, Island of Hawai‘i. Haun & Associates Report 166-071203. Report prepared for PBR Hawaii, Hilo, Hawai‘i.

Juvik, S., and J. Juvik (editors)
1998 *Atlas of Hawaii*. Third Edition. University of Hawaii Press. Honolulu.

Kamakau, S.
1961 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu.

Kelly, M. and B. Nakamura
1975 Progress Report on Background History of the Mudlane-Waimea-Kawaihae Road Corridor. Unpublished manuscript, State Historic Preservation Office, Kapolei.

Lyons, C.
1875 Land Matters in Hawaii. *Islander*, Honolulu.

Maly, K.
1999 *Na Ala Hele Ma Kai O Kohala Hema* (The Coastal Trails of South Kohala): Archival-Historical Documentary Research, Oral History—Consultation Study and Limited Site Preservation Plan Kawaihae-‘Anaeho‘omalu Trail Section. Report prepared for *Na Ala Hele*, Hilo, Hawaii. Report prepared by Kumu Pono Associates, Hilo, Hawai‘i.

McEldowney, H.
1983 A Description of Major Vegetation Patterns in the Waimea-Kawaihae Region During the Early Historic Period. Report 16, in Jeffrey T. Clark and Patrick V. Kirch (eds.), Archaeological Investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawai‘i, pp.407-445. Department Report 83-1. Dept. of Anthropology, Bernice P. Bishop Museum, Honolulu.

McEldowney, H.
1991 Field Check of Pastoral Lot #100 Awarded to Mr. James Akiona, Hawaiian Home Lands, Puukapu, south Kohala, Hawai‘i. SHPD internal memorandum.

Menzies, A.
1920 *Hawaii Nei, 128 Years Ago.* Edited by William F. Wilson. Honolulu: The New Freedom Press.

Neller, E., and P. Beggerly
1980 An Archaeological Reconnaissance of the Route of Proposed Improvements to the Lalamilo-Puukapu Irrigation System, Waimea, Hawaii. State Historic Preservation Office, Honolulu.

Prasad, U.
2003 Phase I Cultural Impact Assessment Study for the Waimea-Kawaihae Road Corridor, Island of Hawai‘i. International Archaeological Research Institute, Inc., Honolulu.

Pukui, M., S. Elbert, and E. Mookini
1974 *Place Names of Hawaii*. University of Hawaii Press, Honolulu.

Pukui, M., and S. Elbert
1986 *Hawaiian Dictionary*. Revised and enlarged edition. University Press of Hawaii, Honolulu.

Rechtman, R.
2000 Archaeological Survey of U.S. Cellular Tower Site in Pu‘ukapu Ahupua‘a, South Kohala District, Island of Hawai‘i (TMK: 3-6-4-01:02). Rechtman Consulting Report RC-0002 (Waimea). Prepared for Roy A. Vitousek III, Cades, Schutte, Fleming, and Wright, Kailua-Kona, Hawai‘i.

Rechtman, R., and U. Prasad
2006 An Archaeological and Cultural Assessment Survey of Pu‘u Ne‘ene‘e Ranch Pu‘ukapu Ahupua‘a, South Kohala District, Island of Hawai‘i (TMKs: 3-6-4-01:051, 053, 156, 157, 158, 159). Rechtman Consulting Report RC-0399. Prepared for Mr. Ken Russell, Kukulu Pono Construction, Kamuela, Hawai‘i.

Thompson, L., and P. Rosendahl
1991 Archaeological Inventory Survey, Potential Sites for North Hawaii Community Hospital, Lands of Waikoloa, Puukapu, and Lalamilo, South Kohala District, Island of Hawaii (TMK:6-7-02:13,17;6-7-03:11;6-8-01:1,2). PHRI Report 905-092391. Final report prepared for Wilson, Okamoto & Associates, Honolulu.

1992 Archaeological Inventory Survey, Waimea Elderly Housing Project, Land of Puukapu, South Kohala District, Island of Hawaii (TMK: 6-7-02: Por. 17). PHRI Report 1248-060192. Final report prepared for William L. Moore Planning, Hilo.

Wolfe, E., and J. Morris
1996 Geologic Map of the Island of Hawai‘i. Geologic Investigations Series Map 1-2524-A. U.S. Department of the Interior, U.S. Geological Survey.

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September 1, 2009

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

LOG NO: 2009.3260
DOC NO: 0909MD01
Archaeology

Dear Dr. Rechtman:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Archaeological Assessment of 80 acres with No New Sites
Pu'ukapu Ahupua'a, South Kohala District, Island of Hawai'i
TMK: (3) 6-4-004:009, 010, 032-051, 053 & 054 (all, por.)

Thank you for resubmitting the above referenced report (*Rechtman 2009; An Archaeological Assessment Survey for the DHHL Pu'ukapu Hybrid Water System [TMKs: 3-6-4-04: 009, 010, 032-051, 053, 054] Pu'ukapu Ahupua'a, South Kohala District, Island of Hawai'i; RC-0404*), which we received on August 14, 2009. The report presents the results of an archaeological survey for a water line in South Kohala; no new sites were found. We had previously requested minor revisions to an earlier draft of this report (Doc No. 0907MD25) and all changes have been made.

The report is generally of good quality and meets the requirements of HAR 13§13-276, thus fulfilling the historic preservation review requirements for this project. Upon receipt of this letter please submit one paper copy of your report marked "Final" to our Kapolei office along with a CD containing a searchable pdf version of the final report and a copy of this approval letter, marked to the attention of the "**Kapolei Library**." If you have questions about this letter please contact Morgan Davis at (808) 933-7650.

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist and Historic Preservation Manager
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