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KAHIKINUI KOA FOREST PROTECTION  
AND RESTORATION**

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DEC 23 2004

**KAHIKINUI KOA FOREST  
PROTECTION AND RESTORATION  
KAHIKINUI, ISLAND OF MAUI  
STATE OF HAWAII**

**FINAL ENVIRONMENTAL ASSESSMENT**

Submitted Pursuant to Chapter 343, Hawai'i Revised Statutes (HRS)

State of Hawai'i  
Department of Land and Natural Resources  
Division of Forestry and Wildlife

December 2004

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Tax Map Key Number: (2<sup>nd</sup> 1-8:001:005, 006, 007, 009, 011 [pors.])

**PROPOSING  
AGENCY:**

State of Hawai'i  
Department of Land and Natural Resources  
Division of Forestry and Wildlife

**CONSULTANT:**

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**CLASS OF ACTION:**

Use of State Lands and Funds, Use of Conservation District

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

## SUMMARY

The Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), is proposing to build a pig- and deer-proof fence to enclose approximately 1,500 acres of native remnant *koa* (*Acacia koa*) forest on portions of five properties owned by DOFAW, the State of Hawai'i and the Department of Hawaiian Home Lands. A Memorandum of Agreement (MOA) is currently being developed among the landowners of these properties, each of which supports the action. The overall aim of this project is to initiate an effective management scheme within the remnant native upland forest of southern Haleakalā. The project can demonstrate that a reasonable effort involving active management and feral ungulate control can restore and protect the unique forest resources. It is hoped that the project will serve as a showcase for responsible and economical stewardship on State land, thus providing an example for stewardship on private land and an incentive for future public investment and policy development. Although full forest recovery is expected to take decades, this project will initiate the process needed for long-term recovery, and is expected to provide more than 1,500 acres of *koa* forest habitat for dozens of native and endangered plant and animal species within the next five to ten years.

The budget for the project is currently set at \$500,000, funded by the State of Hawai'i and through grants from the U.S. Fish and Wildlife Service and the U.S. Forest Service. The project will begin as soon as approvals are obtained. Additional funds are pending for future fiscal years, and significant in-kind services will be contributed by agency collaborators.

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**LIST OF ABBREVIATIONS**

ALISH	Agricultural Lands of Importance to the State of Hawaii
BMP	Best Management Practice
DLNR	Hawai'i State Department of Land and Natural Resources
DOFAW	Hawai'i State Division of Forestry and Wildlife
EA	Environmental Assessment
EIS	Environmental Impact Statement
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HDOH	Hawai'i State Department of Health
HAR	Hawai'i Administrative Rules
HEPA	Hawai'i Environmental Policy Act
HRS	Hawai'i Revised Statutes
OEQC	Hawai'i State Office of Environmental Quality Control
SFHA	Special Flood Hazard Area
SHPD/O	State Historic Preservation Division/Officer
SMA	Special Management Area
UH	University of Hawai'i
USF&WS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USNRCS	U.S. Natural Resources Conservation Service

## 1 PROJECT BACKGROUND, LOCATION AND DESCRIPTION

### 1.1 Project Background

Native dry and mesic forests of the Hawaiian Islands are among the most diverse ecosystems in the State. Forest ecosystems once formed a contiguous belt around Haleakalā, Maui, providing habitat for countless endemic species. These forests are now experiencing extreme degradation from grazing and trampling feral ungulates (e.g., pigs and goats), invasion by alien plant species, and habitat fragmentation. More recently, the region is threatened by an expanding population of axis deer. In old growth forests, feral ungulates destroy native understory species, leading to species loss and facilitating invasion by noxious weeds. While large canopy tree species often persist for some time despite this disturbance, forest integrity decreases dramatically. More importantly, this disturbance suppresses the natural regeneration of canopy species, unfavorably skewing the age class distribution within the stands, threatening the persistence of the forest and leading eventually to total forest destruction.

Not only native plants but also the native insects and birds that depend upon them are affected. During the last 200 years, habitat degradation along with introduced bird diseases at low elevations have caused severe declines in nearly every native bird species. Presently, all endangered bird species remaining on Maui are restricted to the upper elevation forests of east Maui, leaving them vulnerable to extinction.

Efforts are currently underway to identify the habitat needs of these bird species, to develop captive breeding and reintroduction programs, and to restore remnant forest habitat statewide in order to reestablish and recover populations of native forest birds. Restoration of dry and mesic upland forests of southeastern Maui is an integral strategy for the recovery of Maui's endangered forest birds. A number of agencies, organizations and individuals are acting individually and/or through partnerships to take systematic actions to restore the native ecosystems. Most notable are the following:

**Leeward Haleakalā Watershed Restoration Partnership (LHWRP).** This group of ten landowners - the James Campbell Estate, Haleakalā National Park, Haleakalā Ranch, Kaonoulu Ranch, Living Indigenous Forest Ecosystems (LIFE), Nu'u Mauka Ranch, State of Hawai'i Department of Hawaiian Homelands, State of Hawai'i Division of Forestry and Wildlife, 'Ulupalakua Ranch, U.S. Geological Survey, and John Zwaanstra - possesses over 43,000 acres of land. On June 2, 2003, representatives signed a "Memorandum of Understanding," agreeing to unite to work towards restoration of native ecosystems on Maui, from Ulupalakua to Kaupo, in the areas above 3,500 feet in elevation. One of the projects is expected to provide a fenced area to the east that will connect to the subject area, resulting in a larger contiguous area of forest undergoing restoration.

**Living Indigenous Forest Ecosystems (LIFE).** LIFE is a community-based forest restoration group that currently holds a long-term lease on adjacent Hawaiian Homelands parcels. The management and restoration of these lands is guided by the 1995 Kahikinui Forest Reserve Community Management Conceptual Plan. Their efforts are assisted by the Kahikinui Game and Land Management `Ohana (KGLMO), a hunting group whose purpose is to assist in eliminating feral ungulates on important forest reserve areas. DOFAW and the U.S. Fish and Wildlife Service have jointly awarded LIFE with a \$330,000 grant to broaden the reforestation efforts onto lands to the west of the subject area, in order to broaden the scope and effectiveness of the proposed work.

**Ka `Ohana O Kahikinui.** The community association for the Kahikinui homesteaders, which is mainly concerned with settling Hawaiians on the land, establishing a community, and pursuing community-based economic development, is also engaging in reforestation efforts.

## 1.2 Project Location and Description

The Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), is proposing to build a pig- and deer-proof fence to enclose approximately 1,500 acres of native remnant *koa* (*Acacia koa*) forest on portions of properties shown in Figure 1 and Table 1. The properties are owned by the State of Hawai'i, by DOFAW, and by the Department of Hawaiian Home Lands (DHHL). A Memorandum of Agreement (MOA) is currently being developed among the landowners and lessees of these properties, each of which supports the action.

**Table 1-1  
Fencing on Subject Properties**

Fence Segment (see Fig. 1-1)	TMKs (1-8:001)	Length of Fence (approx)
A	006	2,750m
B	005, 009	3,880m
C	007, 011	3,270m

The fence will begin and terminate at two different locations on the southern boundary fence of Haleakalā National Park (Fig. 1). The western alignment descends from 9,200 to 6,300 feet above sea level, forming a gentle arc to the west until it encounters an existing fence line, which continues makai along the western edge of Wai'ōpae Gulch until the 3,600-foot elevation. The eastern alignment extends from 9,000 to 5,160 feet elevation. At 8,000 feet elevation, it passes just east of Pu'uali'i then runs downslope along a narrow ridgeline between upper Pāhihi Gulch and an unnamed gulch. At about 6,200 feet elevation, the eastern alignment crosses Pāhihi Gulch, then hugs its western bank until the existing Kahikinui Forest Reserve fence line is reached. From this point, an existing fence line, which will be improved, connects the two legs of proposed fencing.

The fence will be seven feet high, with four feet of woven hogwire secured by 10-foot T-posts, with single-strand wires extending three feet above the hogwire. DOFAW will inspect and maintain the fence as necessary. Gates will be placed at the mauka and makai ends of the property. In consultation with other groups, including Ka 'Ohana O Kahikinui, KGLMO, LHWRP, and LIFE, DOFAW may decide to place other gates that can be used, among other purposes, for cultural access.

While the study area is in the current administrative district of Hana, it straddles the *moku* (traditional districts) of Kahikinui and Kaupō, and the subject area is referred to as a portion of Kahikinui for the purposes of this project and environmental assessment. The first step in restoring the forest will primarily involve efforts to exclude feral ungulates. As illustrated in Figure 2 and documented in Fielding (2003:34), programs throughout the Hawaiian Islands, at Hawai'i Volcanoes National Park, Haleakalā, and Kahoolawe have illustrated that eradication or reduction may dramatically revive a degraded forest. Next, DOFAW will work to restore the native ecosystems in these areas, primarily through natural regeneration from the resident seedbank, wherever possible. Although the seedbank is expected to provide rapid regeneration in many areas, some more degraded areas will likely require active outplanting. In the long term, weed treatment, fire suppression techniques and outplanting of native species will be necessary to achieve optimal forest regeneration.

The overall aim of this project is to initiate an effective management scheme within the remnant native upland forest of southern Haleakalā. The project can demonstrate that a reasonable effort involving active management and feral ungulate control can restore and protect the unique forest resources. It is hoped that the project will serve as a showcase for responsible and economical stewardship on State land, thus providing an example for stewardship on private land and an incentive for future public investment and policy development. Although full forest recovery is expected to take decades, this project will initiate the process needed for long-term recovery, and is expected to provide more than 1,500 acres of *koa* forest habitat for dozens of native and endangered plant and animal species within the next five to ten years.

This work is part of DOFAW's overall strategy to integrate habitat protection and restoration with species research, management, and reintroduction programs. In connection with DOFAW's ongoing, statewide captive propagation and reintroduction program, efforts are currently underway to develop a similar program for the critically endangered Maui Parrotbill (*Pseudonestor xanthrophys*). The present project is expected to provide reintroduction sites for this and many other endangered bird and plant species.

The budget for the project is currently set at \$500,000, funded by the State of Hawai'i and through grants from the U.S. Fish and Wildlife Service and the U.S. Forest Service. The project will begin as soon as approvals are obtained. Additional funds are pending for

future fiscal years, and significant in-kind services will be contributed by agency collaborators.

### **1.3 Alternatives Considered**

#### **1.3.1 No Action**

If no action is taken to fence out feral ungulates from this area, continued forest degradation is expected, to the detriment of Hawai'i's rare ecosystems and threatened and endangered plant and animal species.

#### **1.3.2 Alternative Areas**

The proposed project was designed to use available funding in the most effective manner in the most suitable area for accomplishment of the project's objectives of native forest regeneration on the leeward slopes of Haleakalā. The particular area chosen, along with the area just to the west that will be managed by LIFE, represents the best remaining forest with the highest chance for effective restoration. All properties are under the control of State government agencies and are dedicated to uses compatible with forest regeneration. The efforts of the Leeward Haleakalā Watershed Restoration Partnership are expected to result in extensive regeneration efforts in many other parts of this forest belt of leeward Haleakalā. As such, the project proponents believe that this area is by far the most suitable area for the project and do not envision any alternative areas at this time.

## 2 ENVIRONMENTAL ASSESSMENT PROCESS

The project involves the use of State of Hawai'i lands and funds, and therefore requires compliance with Chapter 343, Hawai'i Revised Statutes (HRS), the Hawai'i Environmental Policy Act (HEPA). The State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), is the proposing agency for this Environmental Assessment (EA).

HEPA was enacted by the Hawai'i State Legislature to require State and County agencies to consider the environmental impacts of various actions as part of the decision-making process. Agencies are required to conduct an investigation and evaluation of alternatives as part of the environmental impact analysis process, prior to making decisions that may impact the environment. The implementing regulations for HEPA are contained in Title 11, Chapter 200, Hawai'i Administrative Rules (HAR).

This Environmental Assessment (EA) process was conducted in accordance with HEPA. According to HEPA and its implementing regulations, a Draft EA is prepared to document environmental conditions and impacts, to develop mitigation measures that avoid, minimize or compensate for adverse environmental impacts, and determine whether or not an action has significant impacts upon the environment. Impacts are evaluated for significance according to thirteen specific criteria as presented in HAR 11-200-12. If no significant impacts are expected, then a Final EA with a Finding of No Significant Impact (FONSI) may be issued. When the Draft EA determines that significant impacts are present, then a Notice of Intent is prepared and the Final EA facilitates preparation of an Environmental Impact Statement (EIS).

### 3 ENVIRONMENTAL SETTING AND IMPACTS

This section describes the existing social, economic, cultural, and environmental conditions surrounding the proposed project along with the probable impacts of the proposed action and mitigation measures designed to reduce or eliminate adverse environmental impacts. For many categories, the No Action Alternative would result in no impacts. Therefore, unless explicitly mentioned, discussion of impacts and mitigation relates to the proposed action only.

#### 3.1 Physical Environment

##### 3.1.1 Geology, Hazards, and Soils

###### *Existing Environment*

The surface geology of the area proposed to be fenced consists of lava flows from Haleakalā Volcano, mostly Pleistocene in age (Kula Volcanic Series) with some Holocene (Hana Volcanic Series) in the southwest (MacDonald et al 1986:383). A few cinder cones, including Pu'u Ali'i, are also present. Lava tubes may be present in some areas.

Terrain and vegetation along the alignments varies with elevation such that three broad zones are distinguishable. The first and uppermost zone consists of a relatively smooth but very rocky slope with sparse vegetation. This zone extends from about 9,200 to 8,200 feet elevation. Below this, vegetation becomes increasingly dense, consisting of low shrubs, grasses, and herbs. A few 'ōhi'a (*Metrosideros polymorpha*) are present in the gulch bottoms. Terrain in this zone is dissected by numerous small drainages, some of which have developed into very deep river beds such as Wai'ōpae and Pāhihi Gulches. This middle zone extends from about 8,200 to 6,200 feet elevation on the eastern fence line. The third and lowest zone consists of eroded, grassy slopes with large areas of exposed volcanic soil. This area has been heavily impacted by feral goats and is in a state of accelerated erosion. Terrain is rolling and occasionally dissected with major gulches. The lower zone extends from 6,200 to 5,160 feet elevation along the eastern alignment, but begins somewhat higher on the western alignment.

The lower, existing fence line portion of the study area follows steep ridges to a point of coalescence. Bedrock is present at the surface through most of the survey area with soil development only in isolated areas between rocks. At lower elevations, lateritic soil of varying depth becomes common.

*Impacts and Mitigation Measures*

In general, geologic conditions impose no constraints on the project, and no mitigation measures are expected to be required. Special Contract Requirements that will be incorporated into the fence construction contract documents will stipulate that in case a previously undetected lava tube is breached during construction, DOFAW will notify the State Historic Preservation Division and cease work in the vicinity immediately to ensure that no historic or burial resources are adversely affected.

**3.1.2 Floodplains and Water Quality**

*Existing Environment*

The area proposed to be fenced is not mapped as a Special Flood Hazard area in a community flood insurance study. The substrate consists of lava flows and cinder and is well-drained.

*Impacts and Mitigation Measures*

The project will not add to the area of impermeable surface and will not adversely affect drainage.

**3.1.3 Climate and Air Quality**

*Existing Environment, Impacts and Mitigation Measures*

Average annual rainfall in the mid-elevation sections of leeward Haleakalā is 40-60 inches, with fog-drip also playing a role in soil moisture. Prevailing winds are from the northeast (UH-Manoa, Dept. of Geography 1998).

Air quality in the area is excellent and, human sources of air pollution in this sparsely populated area are minimal.

No adverse effects to climatic variables, including air quality, would occur as a result of fencing or forest recovery. Fencing activities are expected to produce minimal dust, and there are no sensitive areas nearby. Reforestation will reduce the tendency for wind erosion and consequent dust entrainment. Reforestation also contributes to accelerated fog drip, although the increase in evapotranspiration may consume most or all of this bonus. Some people argue that reforestation may increase local precipitation. Whatever the case, it is generally agreed that reforestation generally has positive effects on watersheds, by enhancing deep soil water transfer to upper soil horizons, thereby increasing soil moisture, slowing runoff, preventing erosion, and increasing infiltration.

At larger spatial scales, the restoration of the subject area is expected to provide aquifer recharge, enhancing stream flow and water quality, and decreasing sedimentation levels in the lands makai of the site and in the near-shore marine waters below the area.

### **3.1.4 Noise**

#### *Existing Environment, Impacts and Mitigation Measures*

Noise levels in the area are extremely low, and are mainly derived from wind, birds and mammals. Fence construction – particularly helicopter transport of personnel and materials – will elevate noise levels during short periods over the course of several months. Due to the lack of sensitive uses within several miles, it is not expected that the contractor will be required to obtain a permit per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. The Department of Health (DOH) is being consulted as part of this EA to confirm this. If necessary, DOH will review 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.

### **3.1.5 Scenic Value**

#### *Existing Conditions, Impacts and Mitigation Measures*

The landscape of leeward Haleakalā has scenic values that range from bare and rugged in the *'aina malo`o* of the lower elevations to forested and misty in the upper elevations. The retreat of the forest in this area, along with the spread of alien vegetation, has reduced scenic values in the area proposed to be fenced. Fencing itself, while detracting from scenery to some extent, will aid in reforestation and the restoration of the scenic character of the native Hawaiian forest.

### **3.1.6 Hazardous Substances**

#### *Existing Environment, Impacts and Mitigation Measures*

No known hazardous substances are present on the properties, which are vacant and do not appear to have undergone any active land use in modern times.

Construction with power equipment can expose areas to hazardous substances such as oil, solvents, and fuel. The fencing contractor will be required as a condition of the contract to develop and put into practice Best Management Practices that prevent the release of any hazardous substances, including oil, fuel and solvents.

## 3.2 Biological Environment

### *Existing Environment*

The area proposed to be fenced contains degraded mesic forest from approximately 3,200-6,500 feet in elevation, transitioning into subalpine native vegetation from 6,500-9,300 feet elevation. Grazing and browsing from introduced ungulates has significantly impacted the native vegetation throughout the proposed exclosure, leaving a mosaic of remnant vegetation with interspersed introduced grasses.

Currently, major native vegetation components in the mesic forest include an *'ohi'a/koa overstory* (*Metrosideros polymorpha*/*Acacia koa*); a middle canopy layer of trees and shrubs, including olapa (*Cheirodendron trigynum*), pilo (*Coprosma montana*), ohelo (*Vaccinium calycinum*), akala (*Rubus hawaiiensis*), pukiawe (*Styphelia tameiameia*), kawau (*Ilex anomala*), and kolea (*Myrsine lessertiana*), a *'ali'i* (*Dodonea viscosa*), and mamane (*Sophora chrysophylla*); and a lower canopy ground layer dominated by a rich diversity of ferns, including *Cibotium*, *Sadleria*, *Dryopteris*, and *Pteridium*. Native grasses such as *Deschampsia* and *Eragrostis* are present but not widespread in many areas. A few listed threatened or endangered understory species, such as *Clermontia lindseyana* and *Cyanea obtusa*, may also have managed to persist in the area.

Despite heavy disturbance, the area has been subjected to relatively few alien weed invasions. Alien species of consequence are mostly limited to grasses, including molasses grass (*Melinis minutiflora*), velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), and kikuyu grass (*Pennisetum clandestinum*).

Native birds in the area include *'Apapane* (*Himatione sanguinea*), *'Amakihi* (*Hemignathus virens*), *I'iwi* (*Vestiaria coccinea*), Pueo (*Asio flammeus*), Kolea (*Pluvialis fulva*), and Koa *'e kea* (*Phaethon lepturus dorotheae*). In addition, Maui *'Alauhio* (*Paroreomyza montana*), Maui Parrotbill (*Pseudonestor xanthophrys*), Po *'ouli* (*Melamprosops phaeosoma*), and *'Akohekohe* (*Palmeri dolei*) were likely once common but are now no longer present. Nene (*Branta sandwichensis*) is found just to the west and east and may frequent grasslands and alpine shrublands of the site on occasion, although it has not been observed to date. Introduced passerine birds include House Finch, Nutmeg Mannikin, Red-billed Leiothrix, Hwamei, Japanese White-eye, Northern Mockingbird, Eurasian Skylark, Common Myna, and Northern Cardinal.

The endangered Hawaiian Petrel (*'Ua'u*) (*Pterodroma sandwichensis*) is known from subalpine areas within the region where ungulate and predator control programs exist, but is probably absent or present in only very small numbers in the subject area. Although burrows may be present in the region, none were found within 100m of the proposed fenceline, nor have any burrows been located within the proposed exclosure.

*Manduca blackburni*, an endangered sphinx moth, is present on the south slope of Haleakalā and in fact has critical habitat nearby (although not within) the affected area. The moth's native food plant tree, *Nothocestrum latifolium* ('aiea), can occur up to 5,020' elevation but usually occurs lower than elevations proposed for fencing. A program of outplanting this easily propagated native tree could increase its abundance and help recover the endangered moth.

The corridor proposed for fencing was thoroughly surveyed by biologists from the Division of Forestry and Wildlife. During 2003-2004, ten trips were conducted by avian biologists and botanists in which all fence lines were repeatedly surveyed. Among other factors, the actual fence alignment was chosen to avoid disturbance to sensitive plant or animal species. No threatened or endangered plant or animal species as listed by the U.S. Fish and Wildlife Service or the State of Hawai'i were present on the alignment.

#### *Impacts and Mitigation Measures Concerning Sensitive Species*

Because fencing will only remove a small proportion of the individuals of any plant species, and no rare, threatened or endangered species are present in the fencing corridor, no adverse effects to plant species would occur.

The reforestation aspect of the project has the potential to provide new habitat for the introduction and perpetuation of native plant and animal species, including many that are threatened or endangered. Table 3-1, compiled by DOFAW for the area, shows species that are native to the area and could be introduced or augmented. Regeneration of the forest vegetation is expected to be rapid based on the results of other exclosures in the region (B. Hobdy, pers. comm. to S. Fretz). Outplanting of native elements in the more open areas, and for more rare species will ensure rapid regeneration of native diversity.

Positive long-term impacts to the fencing would include the regeneration of native mesic and even some dry forest species currently under threat by feral ungulates, fire and weeds. Native tree species such as 'iliahi (*Santalum ellipticum*, and *S. haleakalae*), kauila (*Alphitonia ponderosa*), and koa'ia (*Acacia koaia*), which were once more common on leeward Haleakalā, have been largely extirpated. Passive native plant regeneration of many species is expected from within the exclosure after ungulates are removed. Active outplanting of the rare or endangered species could also follow for such species as:

*Cenchrus agrimonioides* Trin. var. *agrimoinoides* - KAMANOMANO, KUMANOMANO  
*Bonamia menziesii* Gray  
*Acacia koaia* Hbd. - KOAI'E, KOAIA  
*Colubrina oppositifolia* - KAUILA  
*Clermontia lindseyana* - 'OHA  
*Cyanea obtusa* - HAHA

The endangered Hawaiian Petrel is known from subalpine areas within the region where ungulate and predator control programs exist. In the years following elimination of ungulates, petrels may begin to recolonize the exclosed area. Regeneration of native vegetation and elimination of ungulates that trample burrows would have a significant positive impact on the reproductive success of this species. In addition, DOFAW has indicated that a predator control program may be implemented if petrels are found to be nesting within the enclosure in future years. As a result of these measures, overall productivity and survival of petrels would be expected to increase within the enclosure, contributing significantly to the overall recovery of this listed species.

**Table 3-1**  
**Species Found in, or to Be Reintroduced to, Proposed Restoration Habitat**

Wildlife Species	Plant Species
<b>Endangered (Federal and State)</b>	<b>Endangered (Federal and State)</b>
Maui Parrotbill ( <i>Pseudonestor xanthophrys</i> )	<i>Clermontia lindseyana</i>
Nene ( <i>Branta sandvicensis</i> )	<i>Geranium multiflorum</i>
'Akohekohe ( <i>Palmeria Dolei</i> )	<i>Zanthoxylum hawaiiense</i>
Po'ouli ( <i>Melamprosops phaeosoma</i> )	<i>Neraudia sericea</i>
Hawaiian Hoary Bat ( <i>Lasiurus semotus cinereus</i> )	
Blackburn's Sphinx Moth ( <i>Manduca blackburni</i> )	<i>Diellia erecta</i>
	<i>Phlegmariurus mannii</i>
<b>Hawaiian Endemics</b>	<i>Phyllostegia mollis</i>
I'iwi ( <i>Vestiaria coccinea</i> )	<i>Diplazium molokaiense</i>
'Apapane ( <i>Himatione sanguinea</i> )	<i>Bidens micrantha</i>
'Amakihi ( <i>Hemignathus virens</i> )	<b>Candidate Endangered Species</b>
Maui 'Alauahio ( <i>Paroremyza montana</i> )	<i>Canavalia pubescens</i>
	<i>Cyrtandra oxybapha</i>
	<i>Ochrosia haliakalae</i>
	<b>Species of Concern (SOC)</b>
	<i>Stenogyne haliakalae</i>
	<i>Portulaca villosa</i>
	<i>Cyanea arborea</i>
	<i>Cyanea obtusa</i>
	<i>Ranunculus mauiensis</i>
	<i>Cyrtandra biserrata</i>
	<i>Schiedea diffusa</i>

Source: DOFAW unpubl. data

No critical habitat for the sphinx moth (*Manduca blackburni*) would be affected. As stated above, although its native food plant tree, *Nothocestrum latifolium*, usually occurs at a lower elevation than elevations of the site to be fenced, *N. longifolium* and other plant species important to *M. blackburni* could be outplanted at the site once the area is fenced, providing a benefit to the species.

Hawaiian Hoary Bat (*ope`ape`a*, *Lasiurus semotus cinereus*) would benefit from the future reforestation of the site. This endangered bat utilizes forested areas for feeding, roosting and breeding activities. The *ope`ape`a* is commonly observed in the high stature *koa* forests to the east in the Kipahulu valley. Increases in *koa* forest cover in Kahikinui will allow the bat to expand its current presence and aid in overall bat recovery.

No streams, lakes or wetlands are present or would be affected in any way by the project.

In summary, few adverse biological impacts are expected, and, on the whole, the project will significantly assist in the recovery of all types of native biota.

### 3.3 Socioeconomic and Cultural Environment

#### 3.3.1 Land Use, Social Factors and Recreation

##### *Existing Environment and Impacts*

The island of Maui had 128,094 residents according to the U.S. Census of Population conducted in 2000 (U.S. Census Bureau Web Page). Census Tract 303.01, which contains the project area along with most of the Ulupalakua-Kula area, had 6,659 residents. No census data are available for the Kahikinui area, which reportedly has less than 10 families in full-time residence. Maui County has an ethnically diverse population throughout many of its districts, but also contains pockets where certain ethnic groups are more concentrated. Native Hawaiians, who constitute 8.9 percent of the population on Maui, are proportionally more numerous in the area from Ulupalakua to Hana, which has been less affected by the visitor industry. Lifestyles and social systems in this area are more in keeping with traditional Hawaiian and "local" values.

Many areas on the slopes of Haleakalā are used for hunting, an activity that provides food, recreation, and social interaction for many residents. It is also important to point out that hunters and hunting groups not only support but often actively participate in fencing, ungulate control or eradication and reforestation activities in the Kahikinui area. Discussions with local hunters indicate that because of the difficulty of access, relatively little hunting occurs in the subject area itself, although areas directly adjacent (e.g., the LIFE-leased area of DHHL near the 7,000-foot elevation) are hunted regularly. The management and restoration of those lands are guided by the 1995 Kahikinui Forest Reserve Community Management Conceptual Plan that seeks to eliminate feral ungulates to enhance forest restoration. The plan is implemented in part by the Kahikinui Game and Land Management `Ohana (KGLMO) to assist in ungulate removal. Nevertheless, it appears that the project will not have a substantial adverse impact on hunting, though it may slightly reduce the amount of game in areas makai of the enclosure by restricting

movement of animals from upper elevations. Ultimately, the collective habitat restoration and feral ungulate management programs on the various properties at high elevations in leeward Haleakalā will cause a substantial reduction in game, but considerable hunting opportunities will continue to exist. The Draft EA has been distributed to Kahikinui Game and Land Management 'Ohana for their comments.

### 3.3.2 Access, Public Services, Facilities and Utilities

There is no road access to the subject area. A very rough, four-wheel drive ranch roads leads from Pi'ilani Highway (Highway 31) through Haleakalā Ranch to a point near, but not at, the makai boundary of the subject area. For this reason, transport of material and personnel is expected to occur primarily through helicopters. No effect on roads will occur.

No utilities or other public services are available at the site or will in any way be affected by the action.

### 3.3.3 Cultural and Historic Resources

#### 3.3.3.1 Cultural Setting

##### *Geographic Setting*

The project area is located between 3,600 and 9,200 feet in elevation, roughly between the Wai'ōpae and Pahihi Gulches, largely within the ahupua'a of Nakula. While the study area is in the current administrative district of Hana, it straddles the traditional districts of Kahikinui and Kaupō, and is now largely the concern of groups centered in Kahikinui. For this reason, the treatment of cultural resources will focus on Kahikinui.

##### *Methods*

In assessing the existing cultural resources of Kahikinui and the project's potential adverse and beneficial impacts upon them, the author consulted a number of sources. Several publications have examined the cultural resources of the area, including the *East Maui Resource Inventory* (USDOI-NPS 1998), as well as a planning practicum of the Department of Urban and Regional Planning at the University of Hawai'i at Manoa (UH-Manoa, DURP 2000) entitled *Ka 'Ohana O Kahikinui: Community Based Economic Development and Makai Management Plan, Moku of Kahikinui*. Other documentary sources included a compendium of archaeological studies entitled *Ke Mea Kahiko O Kahikinui* (Kirch 1997).

The most important and invaluable sources were Maui residents who were knowledgeable about the natural and cultural resources of the area. These included Lea and Nohea Kaiaokamalie, Donna Simpson, Leon K. Sterling, Walter Kanamu, Art Medeiros and Kawika Davidson.

#### *Existing Environment*

Much of what is known about the history of East Maui is derived from *oli*, or chants, which pass along legends, historical events and genealogies. Abraham Fornander, a 19<sup>th</sup> century Maui judge, and Samuel Kamakau, who, among other positions, was also a Maui judge, recorded a number of stories concerning the area. As summarized in the *East Maui Resource Inventory*, which consulted Fornander and Kamakau's work:

“...According to the *oli*, the Hawaiian people were created by the pairing of the divine Wakea and Papa, the sky-father and earth-mother. Their pairing created the two major Hawaiian genealogies – the Nana’ulu and ‘Ulu, the ruling class. The Nana’ulu line ruled O’ahu and Kaua’i, and the ‘Ulu governed the islands of Maui and Hawai’i” (USDOI-NPS 1998: 7).

The *East Maui Resource Inventory* goes on to explain that during the twelfth century, Maui became split into two warring kingdoms. Eventually, Pi’ilani, the king of West Maui, united all of Maui under one rule. An era of peace and monumental constructions (including the magnificent heiau of Pi’ilanihale in ‘Ula’ino) ensued. Many of the prominent *ali’i nui* of the post-contact era, including Kahekili of Maui, Boki of O’ahu, Queen Ka’ahumanu, King Kaumuali’i of Kauai, Princess Victoria Kāmamalu, Liholiho (Kamehameha II), Kūikeyouli (Kamehameha III), Queen Lili’uokalani, as well as many others, can be traced as descendants of Kekaulike of the Pi’ilani line, who died in 1736. Between 1786-1794, the Hawai’i chief Kamehameha used modern gunnery to fight the Maui chief Kahekili, who was legendary for both ferocity and political acumen, and who was thought by many to be the chief most likely to unite the Hawaiian islands. In a decisive 1794 battle, Kamehameha finally prevailed. During the 19<sup>th</sup> century, Maui, along with the other Hawaiian Islands, experienced debilitating diseases, increasing Western presence through whaling, sandalwood cutting, missionaries, and sugar planters, and the gradual displacement of native land tenure and political control.

Kahikinui is one of the traditional *moku*, or land divisions, of Maui. It is located on the southwest slope of Maui and sweeps from the dry, cliffed coastline through the better-watered uplands before terminating in the dry uplands on the southern rim of Haleakalā Crater. The origin of the name Kahikinui is not entirely certain, as it has been translated as “the great rising” Handy (1972), as well as the “Great Tahiti” (Pukui and Elbert 1974:6), perhaps because of the similarities in shape and appearance between the islands

of Tahiti and Maui. It may also refer to a navigational star (Pukui and Elbert 1986:112). Perhaps the name is meant to evoke a rich variety of meanings.

In an oral tradition for the area:

“Pele travels from the northwest corner of Ka Pae `Aina of Hawaii, residing and dwelling in different areas then proceeding to move down the island chain to her final resting spot at Haleama`uma`u on the island of Hawaii. One account speaks of Pele, upon her arrival at Kilauea, arriving from “Kahiki”, which often times is referenced as from her point of origin at Polapola (Borabora)” (UH-Manoa, DURP 2000: 19)

Kahikinui, along with Kaupō and other *moku* on the west and south of Haleakalā, was extensively developed for dryland farming of `uala (sweet potato) and taro. Water was a limiting factor and ingenious agricultural methods were devised to conserve soil moisture. `Uala was often grown in makali`i (Handy 1972:129), which were rocky areas specially prepared for planting. The arduous and risky nature of farming the `aina malo`o – or dry lands – may account for the numerous temples to Lono, the deity responsible for rainfall and thunder (Kirch 1997:2). Abundant natural resources were present, including a wide variety of dryland forest trees such as wiliwili (*Erythrina sandwichensis*) and many herbs, including `uhaloa (*Waltheria indica*). Perhaps even more important were marine resources such as fish, shellfish and crustaceans, and the fresh water springs that emerged near the coastline.

Kahikinui and Kaupō, although not untouched during the 19<sup>th</sup> century, did not experience the intense changes in land use and population that occurred in many locations in Hawai`i. One of the few visitors was the French explorer Jean-François de Galoup de la Pérouse, who reported only a few small villages along the coast. Archaeological work reported in Kirch (1997) indicates that a much larger population was still living mauka, around 1,000 feet in elevation, which were hidden by distance and topography from la Pérouse. Isolated and traditional Kahikinui proved a good place to shelter in many respects. Despite the dominance of the Congregationalist missionaries throughout the island, Catholicism spread rapidly on Maui. Though officially outlawed by the missionary-influenced government, it became particularly prevalent in Kahikinui, where a thatched church was established at the site of the present St. Ynez ruin in Nakaohu. A famous incident of civil disobedience occurred in Kahikinui in 1843, when police arrested worshipping Catholic Hawaiian women, then proceeded to bind and march them through Hana to Wailuku, a distance of 90 miles. As other Hawaiians saw the women’s plight, they joined them, eventually gathering a throng of about 1,000 people, which induced the police to dismiss the charges.

In the Mahele of 1848, which installed a Western system of land title that ultimately disenfranchised many commoners, Kahikinui wound up in the hands of the government and in the personal holdings of Princess Ruth Ke'elikolani. Very few kuleana were awarded in the Kahikinui area. Just as disease began to decimate the population and more and more rural Hawaiians were drawn to the attractions of the growing port cities, cattle ranching began to dominate Kahikinui, no doubt aided by the ability to secure title to land. By the 1880s, a Portuguese named M. Pico (also called "Paiko") was ranching Kahikinui, and much of Kaupō was also being ranched. The Hawaiian Homes Commission Act of 1920 established lands held in trust for the benefit of Native Hawaiians, and the government lands in Kahikinui were part of this trust. Lands above 4,000 feet in elevation were placed in the forest reserve of the territorial government, and lands below 4,000 feet were leased to cattle ranchers. Ulupalakua Ranch ended up leasing the lands of Kahikinui in the 20<sup>th</sup> century, and Haleakalā Ranch leased lands in Kaupō. The traces of a long Hawaiian occupation were gradually obscured but not erased by alien vegetation, cattle trampling and soil erosion. The forest resources that sustained the Hawaiian culture also gradually degraded, and as late as 1910 the forest was much denser (Rock 1913).

According to the planning practicum cited previously (UH-Manoa, DURP 2000), the preserved, hidden resources of Kahikinui (and, for that matter, parts of Kaupō) offer special, almost unique values for the perpetuation of Hawaiian culture:

"Aside from the abundance of natural resources, Kahikinui is endowed with a wealth of cultural assets, gifts left by the ancestors. Because Kahikinui has experienced relatively little physical impact from the post-contact period such as urban development and large-scale agricultural use, it contains an abundance of intact sites, which include villages, heiau, agricultural structures and shrines. Sites are scattered across the moku in relative abundance with particularly high concentrations along the coastline and in the upland areas. Kahikinui may well be the only area in the State where this kind of concentration and variety of sites exist and as such it is an excellent living laboratory to study past Hawaiian life and land usage" (UH-Manoa, DURP 2000: 20).

According to an ethnobotanical study of a site in leeward Haleakalā (Medeiros et al 1994), forest restoration is of cultural importance because many plants with traditional uses are rapidly disappearing from the area. One example is the famed mature *koa* trees of Haleakalā, which are prized for canoes (Fielding 2003) but are failing to be replenished.

Preserving and enhancing the cultural resources of Kahikinui, Kaupō, and other regions of leeward Haleakalā – which are increasingly seen as including biological resources - is the goal of a number of governmental and non-profit organizations. The Hawai'i State

Department of Hawaiian Home Lands, in response to request from beneficiaries, awarded a number of homesteads in Kahikinui. The Kahikinui homesteaders have a community organization, Ka 'Ohana O Kahikinui, and are active in programs that promote conservation and cultural preservation. Another organization centered in the Kahikinui area is LIFE, or Living Indigenous Forest Ecosystems. LIFE currently holds a long-term lease on Hawaiian Homelands property mauka of the homestead area and is currently involved in restoration efforts there. The Leeward Haleakalā Watershed Restoration Partnership, a group of ten government and private landowners, is working towards restoration of native ecosystems on Maui, from Ulupalakua to Kaupo, on 43,000 acres mauka of 3,500 feet in elevation. There is growing recognition that cultural perpetuation is inextricably tied to the preservation and restoration of the unique biological resources that Hawaiians utilized and husbanded for a wide variety of purposes over the course of centuries.

#### *Impacts and Mitigation Measures*

Informants were consulted for their opinions about the cultural impacts of implementing the proposed project. The site is very difficult to access for the general public, including Native Hawaiian gatherers, because it is rough country surrounded by miles of ranch land, DHHL land, and Haleakala National Park land. There is virtually no access for the general public across these properties to reach the subject lands. For this reason, along with the degraded vegetation of the area, most of the knowledgeable informants interviewed had never actually visited the site, nor did they have knowledge of any practices on the site. The only exceptions were hunters associated with the Kahikinui Game and Land Management 'Ohana (KGLMO), a hunting group whose purpose is to assist in eliminating feral ungulates on important forest reserve areas, as discussed in Section 3.3.1. This group, which is strongly associated with Native Hawaiian interests, fully supports the project and others like it. The result of the proposed project will be a significant enhancement of the native vegetation and wildlife in the area, which will dramatically increase its cultural value as well. All informants agreed that restoration of the native forest provided a cultural benefit. Several who are *kama'aina* to these lands, spoke of the project being in the Wao Akua, the abode of the gods. They believe that forest restoration in this area is not only acceptable but is in keeping with the active wishes of the ancestors. Informants also noted that the proposed project is consistent with and supportive of similar projects in various states of planning by LIFE and the Leeward Haleakalā Watershed Restoration Partnership, which involve a number of local residents. The Draft EA was distributed to a number of community and cultural groups in order to ensure that any cultural impacts that were not recognized during consultation are disclosed, and as appropriate, mitigated for. No additional information was received from comment letters.

### 3.3.3.2 Archaeological Resources

An archaeological study of the properties was conducted by Rechtman Consulting, Inc. It is attached as Appendix 3 and summarized in this and the next section. The purpose of the study was to document the presence of any historic properties or traditional cultural properties that might exist within the project area, to assess the significance of any such resources, and to provide a statement of impact to any such resources as a result of the proposed fence construction. The study was based on fieldwork and consultation of archaeological and historical reports.

#### *Previous Archaeology*

Although a number of archaeological investigations have been conducted in the general region over the years, very few have extended to the elevation of Kahikinui Forest Reserve, and there are very few studies that are especially relevant to the present project area. The most important of the higher elevation leeward studies are Soehren's survey for the National Park Service (Soehren 1963) and an inventory survey (Dixon et al 2000) of DHHL's 2,000-acre "Kuleana Homestead", an outgrowth of a multi-institutional archaeological study conducted throughout the traditional *moku* of Kahikinui (Kirch 1997).

Soehren's survey is particularly pertinent since it recorded a number of site types above 6,000 feet elevation. These included burials, cairns, adze quarries, rock shelters, trails, petroglyphs, and temporary campsites. For obvious environmental reasons, no primary habitation or agricultural features were found on these sub-alpine slopes. Use of the upland region was apparently restricted to resource procurement and interment.

Working at a lower elevation (1,600 and 4,000 feet), Dixon et al later recorded 319 sites during their 1995-1997 field surveys. Almost all of these sites were located below 3,000 feet in elevation and include primary habitations, temporary habitations, agricultural features, ranch infrastructure, *heiau*, *hōlua* slides, boundary markers, shelters, surface midden, lithic workshops, and possible burials. Primary dwellings were clustered between 1,600 and 2,600 feet elevation, as were sites with possible ritual functions. Site density drops off precipitously above 2,800 feet. The almost total absence of sites in the upper portion of Kahikinui Mauka contrasts somewhat with Soehren's earlier findings (likely a reflection of differences in terrain, as Kahikinui is very steep while Soehren's study area was more gentle). In both cases, however, site types in the upper elevations are exclusively temporary in nature with no permanent dwellings or associated agricultural development.

Given the results of previous archaeological investigations, particularly in *mauka* portions of Kahikinui, it was expected that the narrow survey corridor of the present study will

produce very few sites. The uppermost elevations (9,200-8,200 feet) are unlikely to have archaeological remains, although there is the possibility of cairns or trails. The middle and lower elevations (8,200-5,160 feet) were likewise expected to contain few sites, especially given the very rugged topography of this area. If present, sites would include rock shelters, cairns, quarry sites, petroglyphs, ridge trails, or other temporary-use sites.

#### *Fieldwork*

Fieldwork for this project was conducted on May 5, 2004 by a team of four archaeologists. The eastern and western alignment centerlines were clearly marked with blue flagging tape. Each alignment was surveyed by two archaeologists and a natural resources biologist spaced 10 meters apart along and on either side of the centerline. This method allowed for intensive visual coverage of an approximately 20 meter wide corridor surrounding the centerline and existing lower fence line.

#### *Findings*

No traditional Hawaiian or historic archaeological resources were observed within the project area. The only evidence that portions of the project area had been accessed is in the form of bullet casings and a hunting blind. Bullet casings were observed at the intermediate and lower elevations on both alignments. The hunting blind, found on the western alignment at approximately 6,400 feet in elevation, appears to have been constructed sometime in the last year. The blind and the bullet casings indicate that this area is currently utilized for hunting.

#### *Impacts and Mitigation Measures*

Systematic, intensive archaeological survey of two fence line corridors and an existing fence line in Kahikinui Forest Reserve found no historic properties. It is therefore concluded that installation of the proposed fence lines and the proposed improvements to the existing fence line will have no adverse effect on any known archaeological resources. The State Historic Preservation Division (SHPD) has received a copy of the inventory survey and has concurred in a letter of September 21, 2004, concerning the adequacy of the survey and the validity of the determination that there will be no adverse effect (See Appendix 2).

As a precaution, construction documents shall include instructions that cultural remains are inadvertently discovered during installation of the fence, all work in the immediate area of the discovery will halt and SHPD will be notified immediately.

### 3.3.4 Agricultural Land

#### *Existing Farming Operations and Value of Agricultural Land*

Consultation of maps of important farmland from the U.S. Natural Resources Conservation Service (USNRCS) (as displayed in the Hawai'i State Geographic Information System) determined that the properties are not classified as important agricultural lands in *Agricultural Lands of Importance to the State of Hawai'i* (ALISH) map series. No farming is occurring in the fenceline areas, which do not have road access or any improvements that would make it feasible to farm.

#### *Impacts and Mitigation Measures*

No adverse impacts to farmland or farming would occur.

### 3.4 Growth-Inducing, Cumulative and Secondary Impacts

#### *Growth-Inducing Impacts*

Analysis of growth-inducing impacts examines the potential for a project to induce unplanned development, substantially accelerate planned development, encourage shifts in growth from other areas in the region, or intensify growth beyond the levels anticipated and planned for without the project. No aspect of the project has the potential to encourage growth.

#### *Cumulative Impacts*

Cumulative impacts result when implementation of several projects that individually have minor impacts combine to produce more severe impacts or conflicts among mitigation measures.

All potential adverse impacts of the current project related to most categories of effect, including erosion, water quality, air quality, noise, scenic values, historic sites, and most other areas of concern, are either non-existent or extremely restricted in geographic scale, negligible, and capable of mitigation through proper enforcement of permit conditions. There are thus few, if any, appreciable adverse impacts that might accumulate with those of other past, present and future actions to produce more severe impacts. In the context of the large extent of existing forest of similar type in the area, the small area lost to fencing does not represent a substantial loss, particularly when given the significant benefit in terms of environmental restoration.

Beneficial cumulative impacts to biological resources, which are substantial, are discussed in Section 3.2.

#### *Secondary Impacts*

Construction projects sometimes have the potential to induce secondary physical and social impacts that are only indirectly related to the project. For example, construction of a new recreation facility can lead to changes in traffic patterns that produce impacts to noise and air quality for a previously unimpacted neighborhood. In this case, the proposed project's impacts are mostly limited to direct impacts at the site itself.

Secondary impacts to biological resources are discussed in Section 3.2.

### **3.5 Required Permits and Approvals**

No One permits would be required to implement this project.

~~Hawai'i State Department of Land and Natural Resources  
1. Conservation District Use Permit~~

### **3.6 Consistency with Government Plans and Policies**

The project is highly consistent with all government plans and policies, especially those aspects that call for conservation of natural resources.

#### **3.6.1 Hawai'i State Plan**

The Hawai'i State Plan was adopted in 1978. It was revised in 1986 and again in 1991 (Hawai'i Revised Statutes, Chapter 226, as amended). The Plan establishes a set of goals, objectives and policies that are meant to guide the State's long-run growth and development activities. The proposed project is consistent with State goals and objectives that call for increases in employment, income and job choices, and a growing, diversified economic base extending to the neighbor islands.

Chapter 226-4 sets forth goals associated with the *Hawai'i State Plan*:

- (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations.
- (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

The aspects of the plan most pertinent to the proposed classification are the following:

- Chapter 226-11 *Objectives and policies for the physical environment--land-based, shoreline, and marine resources*. Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of prudent use of Hawai'i's land-based, shoreline, and marine resources and effective protection of Hawai'i's unique and fragile environmental resources. To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of the State to:

- (1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.
- (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
- (3) Take into account the physical attributes of areas when planning and designing activities and facilities.
- (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
- (5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.
- (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
- (8) Pursue compatible relationships among activities, facilities, and natural resources.
- (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion. The proposed action is consistent with the goals, objectives and policies of the *Hawai'i State Plan*. Specifically, it is an appropriate use of an isolated land area that will encourage the protection of rare or endangered plant and animal species and habitats.

### 3.6.2 Conservation District

The property is in the State Land Use Conservation District, Resource subzone. Any proposed use in such areas must undergo an examination for its consistency with the goals and rules of this district and subzone. Discussion with DLNR'S Office of Conservation and Coastal Lands indicates that because the project is inside a Forest Reserve, DOFAW will not be required to obtain a Conservation District Use Permit (CDUP) for the project. Actions to affirmatively manage the forest reserve are viewed as operation and maintenance of an existing use and thus exempt from any requirement for a

~~CDUP. Nevertheless, it should be noted that the project is entirely consistent with the criteria of the Conservation District, as listed in Chapter 13-5, Hawai'i Administrative Rules (HAR). DOFAW will prepare a Conservation District Use Application (CDUA) for the project. The CDUA will include a detailed evaluation of the consistency of the project with the criteria of the Conservation District permit process as contained in Chapter 13-5, Hawai'i Administrative Rules (HAR). Briefly, the following individual consistency criteria should be noted:~~

- ~~• The proposed action may be defined as an area of land that has been set aside to preserve, protect, conserve and manage particular plant species, and is thus a "Plant Sanctuary Use" as defined in Chapter 13-5-2, HAR. This is an identified land use within the Resource subzone per Chapter 13-5-22 (P-7, D-1), and is consistent with the purpose of the district and the subzone as defined in Chapter 13-5-1 and 13-5-13, HAR, respectively.~~
- The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawai'i Revised Statutes (HRS), entitled *Coastal Zone Management*.
- The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region, and in fact will result in substantial environmental benefit.
- The proposed land use, including fences, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.
- The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved and improved upon by allowing forest regeneration. Open space will be preserved.
- Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District. The proposed action will not subdivide the property and will not lead to any increase in intensity of use.

**4 COMMENTS AND COORDINATION**

**4.1 Agencies and Organizations Contacted**

The following agencies received a letter inviting their participation in the preparation of the Environmental Assessment.

*County of Maui*

- Mayor's Office
- Planning Department
- Fire Department
- Department of Public Works and Environmental Management
- County Council

*State of Hawai'i*

- Department of Land and Natural Resources, State Historic Preservation Division
- Department of Health
- Department of Hawaiian Home Lands
- Office of Hawaiian Affairs

*U.S. Government*

- Pacific Islands Ecoregion, U.S. Fish and Wildlife Service
- U.S. Natural Resources Conservation Service

The following organizations/individuals received a letter and/or personal invitation soliciting their participation in the preparation of the Environmental Assessment:

- Leeward Haleakalā Watershed Restoration Partnership
- Friends of Haleakalā National Park
- Ka 'Ohana O Kahikinui
- Sierra Club
- Kahea
- Emily Fielding
- Art Medeiros
- Donna Simpson
- Nohea and Lea Kaiaokamalie

Copies of correspondence from agencies and organizations with substantive comments during the preparation of the EA are included in Appendix 2A and are cited in appropriate sections of the text of this EA.

The EA has been distributed to those among the agencies and organizations listed above that requested it, as well as the following: LIFE and KGLMO (Kahikinui Game and Land Management `Ohana).

Two comment letters were received from the Office of Environmental Quality Control (OEQC) and the Office of Hawaiian Affairs (OHA) during the 30-day comment period that followed publication of the EA in the *Environmental Notice* on October 23, 2004. Copies of the letters and response to them are provided in Appendix 2b. Certain portions of the text of the EA have been revised in response to these letters (and other input received during the comment period); these sections are denoted by dotted underlines, as in this paragraph.

**5 LIST OF DOCUMENT PREPARERS**

This Environmental Assessment was prepared for the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife. Agencies, firms and individuals involved included the following:

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**6 STATE OF HAWAII ENVIRONMENTAL ASSESSMENT FINDINGS**

Section 11-200-12 of the State Administrative Rules sets forth the criteria by which the significance of environmental impacts shall be evaluated. The following discussion paraphrases these criteria individually and evaluates the project's relation to each.

1. *The project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* In the context of the large extent of existing forest of similar type in the area, the small area lost to fencing does not represent a substantial loss, particularly when given the significant benefit in terms of environmental restoration. No significant natural resources will be irrevocably committed or lost. The State Historic Preservation Division is expected to concur with the determination that no effect to historic properties will occur.

2. *The project will not curtail the range of beneficial uses of the environment.* No future beneficial use of the environment will be affected in any way by the proposed project. The land in the immediately surrounding area, which is zoned for conservation, will not be adversely affected.

3. *The 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. A number of specific guidelines support these goals. No aspect of the proposed project conflicts with these guidelines. The project's goals of environmental restoration are a direct fulfillment of policies that call for conserving natural resources.

4. *The project will not substantially affect the economic or social welfare of the community or State.* The improvements will benefit the social and economic welfare of Hawai'i by improving the natural environment.

5. *The project does not substantially affect public health in any detrimental way.* No adverse effects to public health are anticipated.

6. *The project will not involve substantial secondary impacts, such as population changes or effects on public facilities.* No adverse secondary effects are expected. The project will not enable or encourage development.

7. *The project will not involve a substantial degradation of environmental quality.* The project will not degrade environmental quality in any substantial way, and will substantially improve the natural environment.

8. *The project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* No endangered species of flora or fauna would be adversely affected in any way by the project, and many such species would significantly benefit from the action.

9. *The project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* For most categories of impact, all adverse impacts will either not occur or are extremely minor and will therefore not tend to accumulate in relation to this or other projects. Substantial beneficial cumulative impacts are expected for biological resources.

10. *The project will not detrimentally affect air or water quality or ambient noise levels.* The project will have largely beneficial effects to water quality, and will have negligible adverse effects in terms of air quality and noise.

11. *The project will not affect or will likely be damaged as a result of being located within an environmentally sensitive area such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.* No hazardous areas or potential to increase hazard to humans or environmentally sensitive areas are involved.

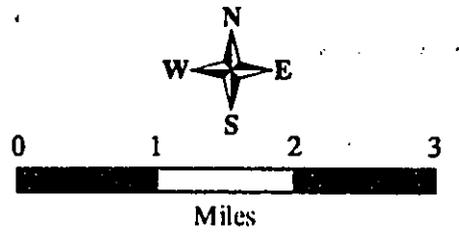
12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* No protected viewplanes will be impacted by the project, which will have no adverse scenic effects.

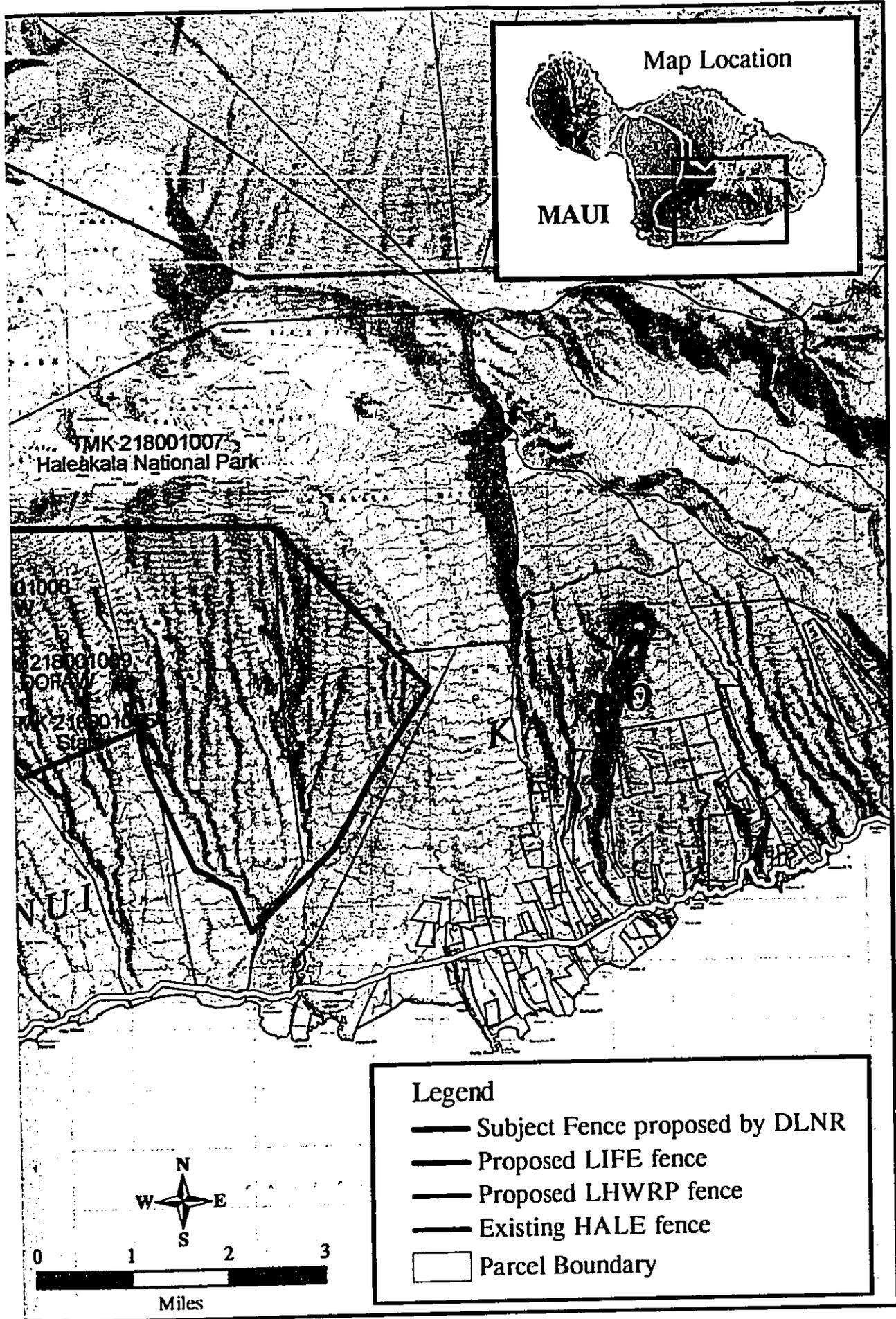
13. *The project will not require substantial energy consumption.* A small amount of energy will be required for the fence line construction.

For the reasons above, and in consideration of comments received on the Draft EA, the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife, has determined that the proposed project will not have any significant effect in the context of Chapter 343, Hawai'i Revised Statutes and section 11-200-12 of the State Administrative Rules, and has issued issue a Finding of No Significant Impact (FONSI).



State of Hawaii  
Department of Land and Natural Resources  
Division of Forestry and Wildlife  
Map No. FW - 0596 (09/2004)





**RECEIVED AS FOLLOWS**

**Figure 2**  
**Haleakalā National Park Fenceline at Kaupō Gap**



“Haleakalā National Park fenceline at Kaupō Gap” (completed in 1986), showing vegetation recovery obtained by excluding ungulates, in contrast to the adjacent region on the left side of the photo.” Photo by M. Spaulding 2002. Caption text and photo from Fielding 2003, p. 17.

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**KAHIKINUI KOA FOREST  
PROTECTION AND RESTORATION  
ENVIRONMENTAL ASSESSMENT**

**APPENDIX 1**

**FIGURES**

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**KAHIKINUI KOA FOREST  
PROTECTION AND RESTORATION  
ENVIRONMENTAL ASSESSMENT**

**APPENDIX 2  
AGENCY COORDINATION LETTERS  
AND PUBLIC INVOLVEMENT  
PART A: RESPONSES TO PRECONSULTATION**

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# geometrician

ASSOCIATES, LLC

integrating geographic science and planning

September 3, 2003

TO INTERESTED AGENCIES AND ORGANIZATIONS

**Subject: Pre-Consultation on Environmental Assessment for Fencing and Habitat Restoration, Island of Maui**

I have been contracted by the Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), to prepare an Environmental Assessment (EA) in compliance with Chapter 343, HRS. This letter is to share information about the project and request your input on site conditions, issues that you wish to be addressed in the EA, and any other concerns you may have.

The project involves construction of a pig-proof fence to enclose approximately 650 acres of native remnant koa forest on a portion of TMK 2-1-8-001:009 (see attached map). The project also includes building an approximately 1.5-mile long fence extending from the northwest boundary of the enclosure to the Haleakala National Park boundary fence to the north. The first step in restoring the forest will primarily involve efforts to exclude feral ungulates. Next, DOFAW will work to restore the native ecosystems in these areas.

The overall aim of this project is to initiate an effective management scheme within the remnant native upland forest of southern Haleakala. The project can demonstrate that a reasonable effort involving active management and feral ungulate control can restore and protect the unique forest resources. It is hoped that the project will serve as a showcase for responsible and economical stewardship on State land, thus providing an example for stewardship on private land and an incentive for future public investment and policy development. Although full forest recovery is expected to take decades, this project will initiate the process needed for long-term recovery.

The areas of investigation in the Environmental Assessment will include but not be limited to the following: flora, fauna, and ecosystems; noise and air quality; water quality assurance; geology, soils, and hazards; flooding and drainage impacts; socioeconomic impacts; historic sites; and cultural impacts. Again, I would appreciate your comments on any special environmental conditions or impacts related to the development. Please contact me at 808-982-5831 (on the Big Island) if you have any questions or require clarification. Kindly indicate whether you wish to receive a copy of the EA when completed.

Sincerely,

Ron Terry

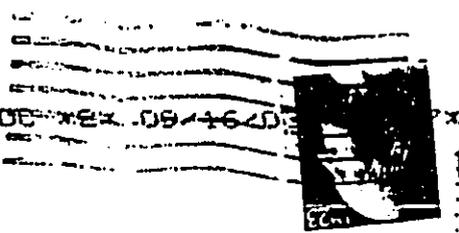
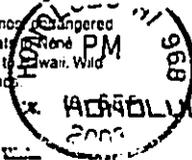


phone: (808) 982-5831 · fax: (808) 966-7593 · HC 2 Box 9575 Kea'au Hawai'i 96749 ·

rterry@interpac.net

---

Nene (pronounced, nay-nay), are said to be the world's most endangered goose. There are only about 1000 Nene in the wild. Threats to Nene include habitat loss and predation by animals introduced to Hawaii. Wild populations are found on only three of the Hawaiian Islands.



Please send a copy  
of EA for Fencing &  
Habitat Restoration  
Island of Maui  
to

Geometrician  
HC 2 Box 9575  
Keaauhi  
96749

Friends of Haleakala National Park  
P.O. Box 322  
Makawao, Maui, HI 96768

Thanks

To Adopt A Nene, write  
Friends of Haleakala National Park, Inc.  
P.O. Box 322, Makawao, HI 96768



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ALAN M. ARAKAWA  
MAYOR



200 South High Street  
Wailuku, Maui, Hawaii USA  
96793-2155  
Telephone (808) 270-7855  
Fax (808) 270-7870  
e-mail: mayors.office@co.maui.hi.us

**OFFICE OF THE MAYOR**

Ke'ena O Ka Meia

COUNTY OF MAUI  
Kalana O Maui

September 15, 2003

Mr. Ron Terry  
Geometrician Associates  
HC 2, Box 9575  
Kea'au, HI 96749

Dear Mr. Terry

RE: Your notice of September 3, 2003 concerning environmental assessment of  
fencing and habitat restoration for Maui.

Thank you very much for your informative letter regarding the fencing and habitat restoration for  
the Island of Maui. Your notice has been forwarded to Mr. Rob Parsons, Environmental  
Coordinator for the County of Maui for his action.

I am certain that he will be most interested in this study and prove to be a valuable resource in  
aiding in this effort. He may be reached at (808) 270-7960.

We would appreciate a copy of your environmental assessment when completed.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan M. Arakawa", is written over a horizontal line.

Alan M. Arakawa  
Mayor

aa:kt/cs

cc: Rob Parsons, Environmental Coordinator

S:\ALL\Terry - Parsons.wpd

PHONE (808) 594-1888

FAX (808) 594-1865



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

HRD03/1118

September 17, 2003

Rod Terry  
Geometrician Associates, LLC  
HC2 Box 9575  
Kea'au HI 96749

Re: Pre-Consultation on Environmental Assessment for Fencing and Habitat Restoration, Island of Maui.

Dear Mr. Terry,

OHA is in receipt of your September 3, 2003 request for comments on the above referenced project. OHA has no comments on the project. However, we suggest that you contact the following people:

Thelma Shimaoka  
OHA CRC  
140 Hoohana St.  
Kahului, HI 96732

PH 243-5219

Charlie Maxwell  
PH: 572-8038

You should also consult with members of the Royal Orders and Hawaiian civic clubs in the area.

We look forward to receiving the draft EA. If you have further questions, please contact Pua Aiu at 594-1931 or e-mail her at [paiu@oha.org](mailto:paiu@oha.org).

Sincerely,

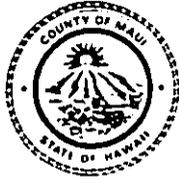
A handwritten signature in black ink, appearing to read "Peter L. Yee".

Peter L. Yee  
Director  
Nationhood and Native Rights

ALAN M. ARAKAWA  
Mayor

MICHAEL W. FOLEY  
Director

WAYNE A. BOTEILHO  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING**

September 24, 2003

Mr. Ron Terry  
Geometrician Associates, LLC  
HC 2 Box 9575  
Kea'au, Hawaii 96749

Dear Mr. Terry:

RE: Pre-Consultation Comments on the Environmental Assessment for the Fencing and Habitat Restoration Project on State Land located at TMK: (2) 1-8-001: 009, Island of Maui (LTR 2003/3582)

The Maui County Planning Department (Department) is in receipt of your letter and has the following comments:

- State Land Use and Hana Community Plan Designations are Agriculture and Conservation.
- Include a discussion of the restoration management plan.
- Provide a site plan showing the location of the proposed fence and provide a description of the fence materials. In addition, discuss the long term efforts in maintaining the fence.

Thank you for the opportunity to comment. If additional clarification is required, please contact Ms. Kivette A. Caigoy, Staff Planner, of this office at 270-7735.

Sincerely,

A handwritten signature in black ink, appearing to read "M. W. Foley", is written over a horizontal line.

MICHAEL W. FOLEY  
Planning Director

MWF:KAC:sp

c: Kivette A. Caigoy, Staff Planner

General File

(K:\WP\_DOCS\PLANNING\LETTERS\tr2003\3582\_FenceHabitatRestorEAPrecon.wpd)

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

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

DAN DAVIDSON  
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU  
DEPUTY DIRECTOR - WATER

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

November 4, 2003

Mr. Ron Terry  
Geometric Associates, LLC  
HC 2 Box 9575  
Kea'au, Hawaii 96749

LOG NO: 2003.2168  
DOC NO: 0310CD75

Dear Mr. Terry

**SUBJECT: Chapter 6E-8 Historic Preservation Review – Pre-Consultation on Environmental Assessment for Fencing and Habitat Restoration Kaupo Ahupua`a, Hana District, Island of Maui TMK: (2) 1-8-001:009**

Thank you for the opportunity to review and comment on the Pre-Consultation on Environmental Assessment for Fencing and Habitat Restoration which was received by our staff September 10, 2003. Our review is based on reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was conducted of the subject property.

Based on the submitted document, we understand the construction of a pig-proof fence to enclose approximately 650 acres of native remnant koa forest. The proposed undertaking includes building a 1.5 mile long fence which will extend from the northwest boundary of the enclosure to the Haleakata Park boundary fence to the north.

A search of our records indicates an archaeological inventory survey has not been conducted of the subject property. The proposed project areas are located within high elevation forest and pre-Contact use of the area would have consisted of forest resource exploitation. Based on a search of our records, sites in this area would include temporary habitation, trails, and possibly burials, heiau, and shrines. Thusly, we believe it is likely that historic sites may be present within the proposed project area.

However, the submitted document does not indicate what type(s) of ground altering activities will be conducted during the fence line installation. Thusly, we are unable to provide comments at this time. Please provide us with additional information describing in detail what the fence line installation involves and whether bulldozing and/or other land alterations will occur. Once we have this information we will be better able to complete our review.

If you have any questions, please call Cathleen A. Dagher at 692-8023.

Aloha,

*P. Holly McEldowney*

P. Holly McEldowney, Acting Administrator  
State Historic Preservation Division

CD:jen

c: Michael Foley, Director, Dept of Planning, County of Maui, 250 South High Street, Wailuku, HI 96793  
Cultural Resources Commission, Planning Dept, County of Maui, 250 S. High Street, Wailuku, HI 96793

LINDA LINGLE  
GOVERNOR OF HAWAII



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

DAN DAVIDSON  
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU  
DEPUTY DIRECTOR - WATER



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**

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

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

September 21, 2004

Robert Rechtman, Ph.D.  
Rechtman Consulting, LLC  
HC1 Box 4149  
Kea'au, Hawaii 96749

Log No: 2004.2822  
Doc No: 0409MK10

Dear Dr. Rechtman:

**SUBJECT: Chapter 6E-42 Historic Preservation Review - Archaeological Assessment  
For the Proposed Kahikinui Forest Reserve Fence Alignment, Prepared for  
Ron Terry, Ph.D., Geometrician  
Manawainui and Nakula Ahupua'a, Hana District, Maui  
TMK (2) 1-8-001:009**

Thank you for the opportunity to review this report which our staff received on July 30 2004 (Desilets and Rechtman 2004, *Archaeological Assessment Survey of a Proposed Kahikinui Forest Reserve Fence Alignment [TMK 2-1-8-001:009 Por.]*, Manawainui and Nakula Ahupua'a, Hana District, Island of Maui. Rechtman Consulting, LLC, ms.). The assessment has been conducted as part of the preparation of an Environmental Assessment, for a proposed project for fence line installation. The proposed fence line will connect to an existing fence, originally constructed to control ungulates within an area of the Kahikinui forest reserve. The existing fence is established at the 3600 feet elevation, and extends to approximately 6400 feet in elevation on the west side and 5000 feet on the east. The proposed continuation of the fence line will extend the fence to the border of the of Haleakala National Park boundary.

According to the subject report, the project area is about 27.18 acres in size, with two corridors, each 20 meters wide and about 2.75 kilometers in length, comprising the Area of Potential of Effect (APE). The assessment survey has adequately covered the project area documenting no historic properties in the project area. The two corridors were examined along the proposed alignments. The area in question is perpendicular to the slope, roughly north-south. Based on the limited previous work in adjacent comparable areas, it was not expected that any permanent sites and/or agricultural sites would be identified. One recently constructed hunting blind and shell casings were identified, but no evidence of historic use. The fence will be installed via helicopter drop, and no heavy equipment will be utilized in the clearing and placement procedures for the fence.

Robert Rechtman, Ph.D.  
Page 2

We concur that no further work is necessary as part of this project. We understand that a cultural impact assessment has been prepared.

We find this report to be adequate and can accept it as final. As always, if you disagree with our comments or have questions, please contact Dr. Melissa Kirkendall (Maui/Lana'i SHPD 243-5169) as soon as possible to resolve these concerns.

Aloha,

  
P. HOLLY MCELLOWNEY, Administrator  
State Historic Preservation Division

MK:jen

- c: Michael Foley, Director, Department of Planning, County of Maui, FAX 270-7634
- Bert Ratte, County of Maui, Land Use and Codes, FAX 270-7972
- Glen Ueno, County of Maui, Land Use and Codes, FAX 270-7972
- Ron Terry, Ph.D., HCR 2 Box 9575, Kea'au, HI 96749
- Maui Cultural Resources Commission, Dept of Ping, 250 S. High St, Wailuku, HI 96793

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**KAHIKINUI KOA FOREST  
PROTECTION AND RESTORATION  
ENVIRONMENTAL ASSESSMENT**

**APPENDIX 2  
AGENCY COORDINATION LETTERS  
AND PUBLIC INVOLVEMENT  
PART B: COMMENT LETTERS ON  
DRAFT EA AND RESPONSES**

---

PHONE (808) 594-1888

FAX (808) 594-1865



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

HRD04/1118 B

November 18, 2004

Ron Terry  
Geometrician Associates  
HC 2 Box 9575  
Keaau, HI 96749

**RE: Request for review and comment on the Draft Environmental Assessment of Kahikinui Koa Forest Protection and Restoration, Hana, Maui, TMKs: 1-8-001:005, 006, 007, 009, 011 (pors.)**

Dear Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of your request for review and comment on the above-described project, which would include a cooperative effort in building a pig- and deer-proof fence around approximately 1,500 acres of native, remnant koa forest in the upland forest of southern Haleakalā. OHA offers the following comments.

We support the concept of fencing to protect native, rare and endangered plants – further protecting native birds that depend on those plants – from ungulates. We also support weed control efforts and removal of existing, damaging ungulates from the areas to be enclosed, although we suggest that Native Hawaiian hunters be allowed, should they be interested, in removing any such ungulates for subsistence use.

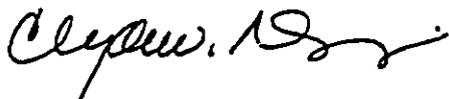
We further request the applicant's assurances that the project will continue to afford Native Hawaiian gathering and cultural access rights to the area – perhaps through pass-through gates created for such access. This consideration for applicable cultural gathering and access rights must be given both during and after construction activities, except as necessary to ensure safety. If such safety-related restrictions are put in place, alternate public access routes must be provided.

Ron Terry  
November 18, 2004  
Page 2

OHA will further rely on assurances from the applicant that should this project go forward, and should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance or excavation during fence installation, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions, please contact Heidi Guth by phone at 594-1962 or e-mail her at [heidig@oha.org](mailto:heidig@oha.org).

Sincerely,



Clyde W. Nāmu'o  
Administrator

CC: Director  
Office of Environmental Quality Control  
235 South Beretania Street  
Suite 702  
Honolulu, HI 96813

Scott Fretz  
Hawaii State Division of Forestry and Wildlife  
1151 Punchbowl Street, Room 325  
Honolulu, HI 96813

Thelma Shimaoka  
Community Resource Coordinator  
OHA – Maui Office  
140 Hoohana St., Suite 206  
Kahului, HI 96732

# geometrician

ASSOCIATES, LLC

integrating geographic science and planning

December 3, 2004

Clyde W. Namu'o, Administrator  
Office of Hawaiian Affairs  
711 Kapiolani Blvd., Suite 1250  
Honolulu HI 96813

Dear Mr. Namu'o:

**Subject: Draft Environmental Assessment for Kahikinui Koa Forest Protection and Restoration, TMK, 1-8:001:005, 006, 007, 009, 011 [pors.], Island of Maui**

Thank you for your comment letter dated November 18, 2004, concerning the Draft EA for the project. Our answer to your specific comments are provided below.

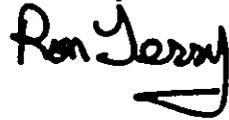
- *Support for project, including elements involving removal of alien ungulates by Native Hawaiian hunters.* Kahikinui Game and Land Management 'Ohana (KGLMO), a hunting group whose purpose is to assist in eliminating feral ungulates on important forest reserve areas, is strongly associated with Native Hawaiian interests and fully supports the project and others like it. DOFAW expects to utilize this valuable partner in its conservation efforts.
- *Continuation of Native Hawaiian gathering and cultural access rights through the area.* The site is very difficult to access for the general public, including Native Hawaiian gatherers, because it is rough country surrounded by miles of ranch land, DHHL land, and Haleakala National Park land. There is virtually no access for the general public across these properties to reach the subject lands. For this reason, along with the degraded vegetation of the area, most of the knowledgeable informants interviewed as part of the extensive cultural consultation process documented in Section 3.3.3 of the EA had never actually visited the site, nor did they have knowledge of any practices on the site. Nevertheless, DOFAW would be pleased to help promote conditions on the site that would eventually allow it to be used for gathering and cultural access purposes. Gates will be placed at the mauka and makai ends of the property. In consultation with other groups, including Ka 'Ohana O Kahikinui, Kahikinui Game and Land Management 'Ohana (KGLMO), the Leeward Haleakalā Watershed Restoration Partnership (LHWRP), and Living Indigenous Forest Ecosystems (LIFE), DOFAW may decide to place other gates that can be used, among other purposes, for cultural access. This information has been added to Section 1.2 of the Final EA.

phone: (808) 982-5831 fax: (808) 966-7593 HC 2 Box 9575 Kea'au Hawai'i 96749  
ronterry@verizon.net

---

Once again, we appreciate your review of the document and your support of the project.

Sincerely,

A handwritten signature in black ink that reads "Ron Terry". The signature is written in a cursive style with a large, sweeping flourish at the end.

Ron Terry, Ph.D., Project Consultant  
Geometrician Associates

phone: (808) 982-5831 fax: (808) 966-7593 HC 2 Box 9575 Kea'au Hawai'i 96749  
ronterry@verizon.net

---

LINDA LINGLE  
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4185  
FACSIMILE (808) 586-4186  
E-mail: [oeqc@health.state.hi.us](mailto:oeqc@health.state.hi.us)

November 22, 2004

Mr. Scott Fretz  
State of Hawai'i Department of Land and Natural Resource  
1151 Punchbowl Street, Room 325  
Honolulu, Hawai'i 96813

Dr. Ron Terry  
Ron Terry Ph.D.  
HC 2 Box 9575  
Keaau, Hawai'i 96749

Dear Messrs. Fretz and Terry:

The Office of Environmental Quality Control has reviewed your draft environmental impact statement for the Kahikinui Koa Forest Protection and Restoration, Tax Map Key 1-8, parcels 5, 6, 7, 9 and 11 in the judicial district of Hana and offers the following comments for your consideration and response.

1. **Cultural Impacts:** Please discuss contemporary cultural resources and practices, including hunting. Please refer to the guidance for cultural impact assessment found on our Internet site at <http://www.state.hi.us/health/oeqc/index.html>.

Thank you for the opportunity to comment. If there are any questions, please call Mr. Leslie Segundo, Environmental Health Specialist, at (808) 586-4185.

Sincerely,

  
GENEVIEVE SALMONSON  
Director

# geometrician

ASSOCIATES, LLC

integrating geographic science and planning

December 3, 2004

Genevieve Salmonson, Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu HI 96813

**Subject: Draft Environmental Assessment for Kahikinui Koa Forest Protection and Restoration, TMK, 1-8:001:005, 006, 007, 009, 011 [pors.], Island of Maui**

Thank you for your comment letter dated November 22, 2004, concerning the Draft EA for the project. Concerning your comment on cultural impacts, we would like to point out that the site is very difficult to access for the general public, including Native Hawaiian gatherers, because it is rough country surrounded by miles of ranch land, DHHL land, and Haleakala National Park land. There is virtually no access for the general public across these properties to reach the subject lands. For this reason, along with the degraded vegetation of the area, most of the knowledgeable informants interviewed as part of the extensive cultural consultation process documented in Section 3.3.3 of the EA had never actually visited the site, nor did they have knowledge of any practices on the site. The only exceptions were hunters associated with the Kahikinui Game and Land Management 'Ohana (KGLMO), a hunting group whose purpose is to assist in eliminating feral ungulates on important forest reserve areas. This group, which is strongly associated with Native Hawaiian interests, fully supports the project and others like it. The result of the proposed project will be a significant enhancement of the native vegetation and wildlife in the area, which will dramatically increase its cultural value as well. Although much of this information was already contained in Section 3.3.1, it has been added to Section 3.3.3.1 as well. We hope this response satisfies your concerns with the cultural impacts section of the document.

Once again, we appreciate your review of the document.

Sincerely,



Ron Terry, Ph.D., Project Consultant  
Geometrician Associates

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ronterry@verizon.net

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**KAHIKINUI KOA FOREST  
PROTECTION AND RESTORATION  
ENVIRONMENTAL ASSESSMENT**

**APPENDIX 3  
ARCHAEOLOGICAL REPORT**

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Archaeological Assessment Survey of a  
Proposed Kahikinui Forest Reserve Fence  
Alignment  
(TMK 2-1-8-001:009 por.)

Nakula Ahupua'a  
Hana District  
Island of Maui

PREPARED BY:

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

PREPARED FOR:

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Kea'au, Hawai'i 96749

July 2004

**RECHTMAN CONSULTING, LLC**

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phone: (808) 966-7036 toll-free fax: (800)406-2665  
e-mail: bob@rechtmanconsulting.com  
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

Archaeological Assessment Survey of a  
Proposed Kahikinui Forest Reserve Fence  
Alignment  
(TMK 2-1-8-001:009 por.)

Nakula Ahupua'a  
Hana District  
Island of Maui

**RECHTMAN CONSULTING**

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## INTRODUCTION

At the request of Ron Terry, Ph.D., Rechtman Consulting, LLC performed an archaeological assessment survey of a proposed fence line corridor in the Kahikinui Forest Reserve, Manawainui Ahupua'a and Nakula Ahupua'a, Hana District (TMK 2-1-8-001:009) (Figure 1). While the study area is in the current administrative district of Hana, it straddles the traditional districts of Kahikinui and Kaupō. The purpose of this survey was to document the presence of any historic properties (including traditional cultural properties) that might exist within the project area, assess the significance of any such resources, and provide a statement of impact to any such resources as a result of fence line construction.

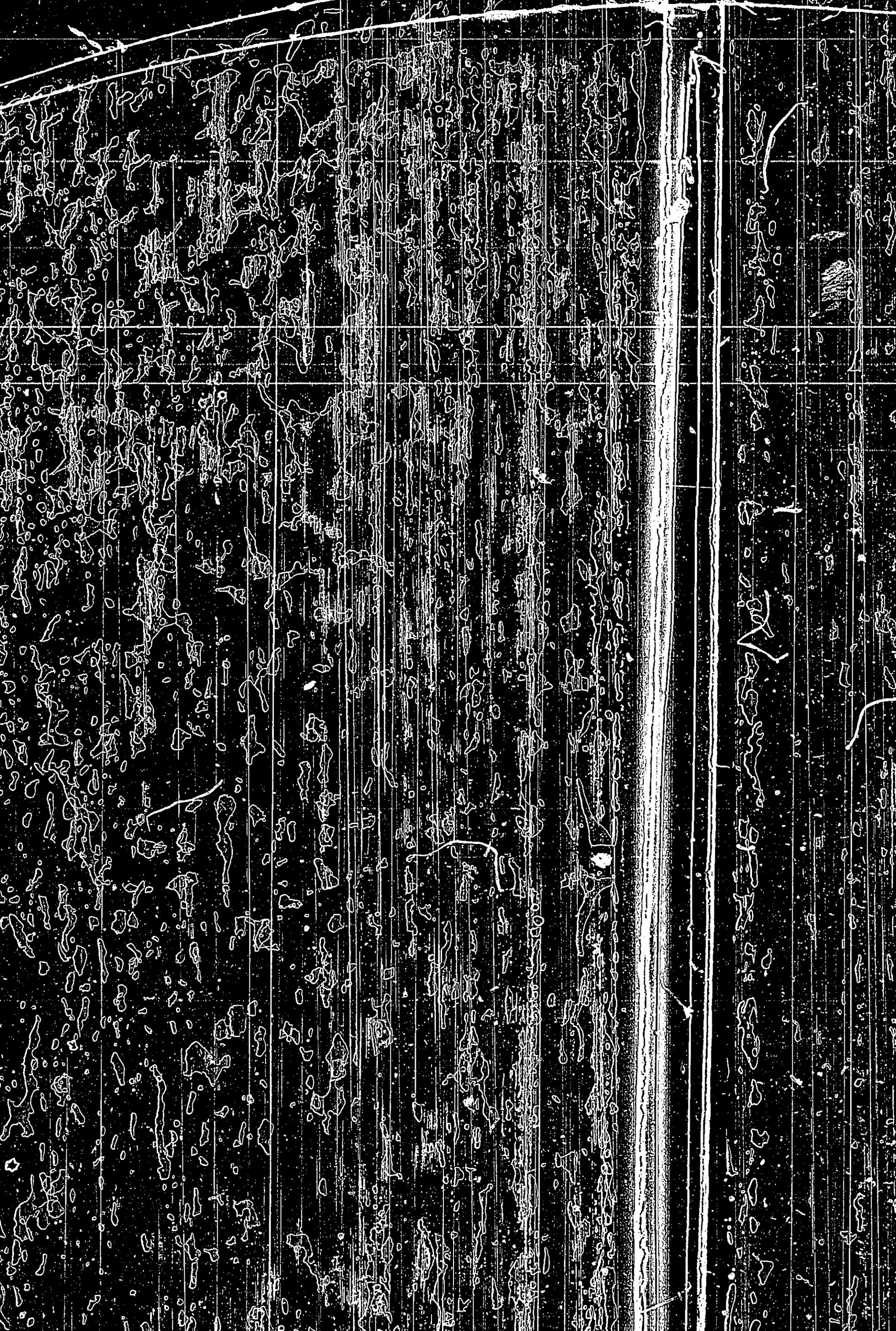
This report is intended to accompany an Environmental Assessment (EA) being prepared in compliance with Chapter 343 Hawai'i Revised Statutes, as well as fulfilling the requirements of the County of Maui Planning Department and the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) with respect to permit approvals for land-altering and development activities.

## PROJECT AREA DESCRIPTION

The project area consists of two 20 meter wide fence alignment corridors and an existing fence line running from the border of Haleakala National Park to the southern boundary of Kahikinui Forest Reserve (Figure 1). Both eastern and western alignments consist of approximately 2.75 kilometers of undeveloped land until an existing fence is present. This upper portion of the study area runs perpendicular to the slope along a roughly north-south orientation. Local geology consists of alkalic and tholeiitic basalts in the 46 to 54 percent silica range (Luedke and Smith 1988). The lower, existing fence line portion of the study area follows steep ridges to a point of coalescence. Bedrock is present at the surface through most of the survey area with soil development only in isolated areas between rocks. At lower elevations, lateritic soil of varying depth becomes common.

The western alignment descends from 9,200 to 6,300 feet above sea level, forming a gentle arc to the west until it encounters an existing fence line, which continues makai along the western edge of Wai'ōpae Gulch until the 3,600 foot elevation. The eastern alignment extends from 9,000 to 5,160 feet elevation. At 8,000 feet elevation, it passes just east of Pu'u'ali'i then runs downslope along a narrow ridgeline between upper Pāhihi Gulch and an unnamed gulch. At about 6,200 feet elevation, the eastern alignment crosses Pāhihi Gulch, then hugs its western bank until the existing Kahikinui Forest Reserve fence line is reached. From this point the survey area followed the fence line to the 3,600 foot elevation.

Terrain and vegetation along the alignments varies with elevation such that three broad zones are distinguishable. The first and uppermost zone consists of a relatively smooth but very rocky slope with sparse vegetation (Figure 2). This zone extends from about 9,200 to 8,200 feet elevation. Below this, vegetation becomes increasingly dense, consisting of low shrubs, grasses, and wildflowers (Figure 3). A few 'ōhi'a (*Metrosideros polymorpha*) are present in the gulch bottoms. Terrain in this zone is dissected by numerous small drainages, some of which developed into very deep river beds such as Wai'ōpae and Pāhihi Gulches (Figure 4). This middle zone extends from about 8,200 to 6,200 feet elevation on the eastern fence line. On the western alignment, the middle zone was encountered at a somewhat higher elevation. The third and lowest zone consisted of eroded, grassy slopes with large areas of exposed volcanic soil (Figure 5). This area has been heavily impacted by feral goats and is in a state of accelerated erosion. Terrain is rolling and occasionally dissected with major gulches. The lower zone extends from 6,200 to 5,160 feet elevation along the eastern alignment, but begins somewhat higher on the western alignment.



# CORRECTION

THE PRECEDING DOCUMENT(S) HAS  
BEEN REPHOTOGRAPHED TO ASSURE  
LEGIBILITY  
SEE FRAME(S)  
IMMEDIATELY FOLLOWING

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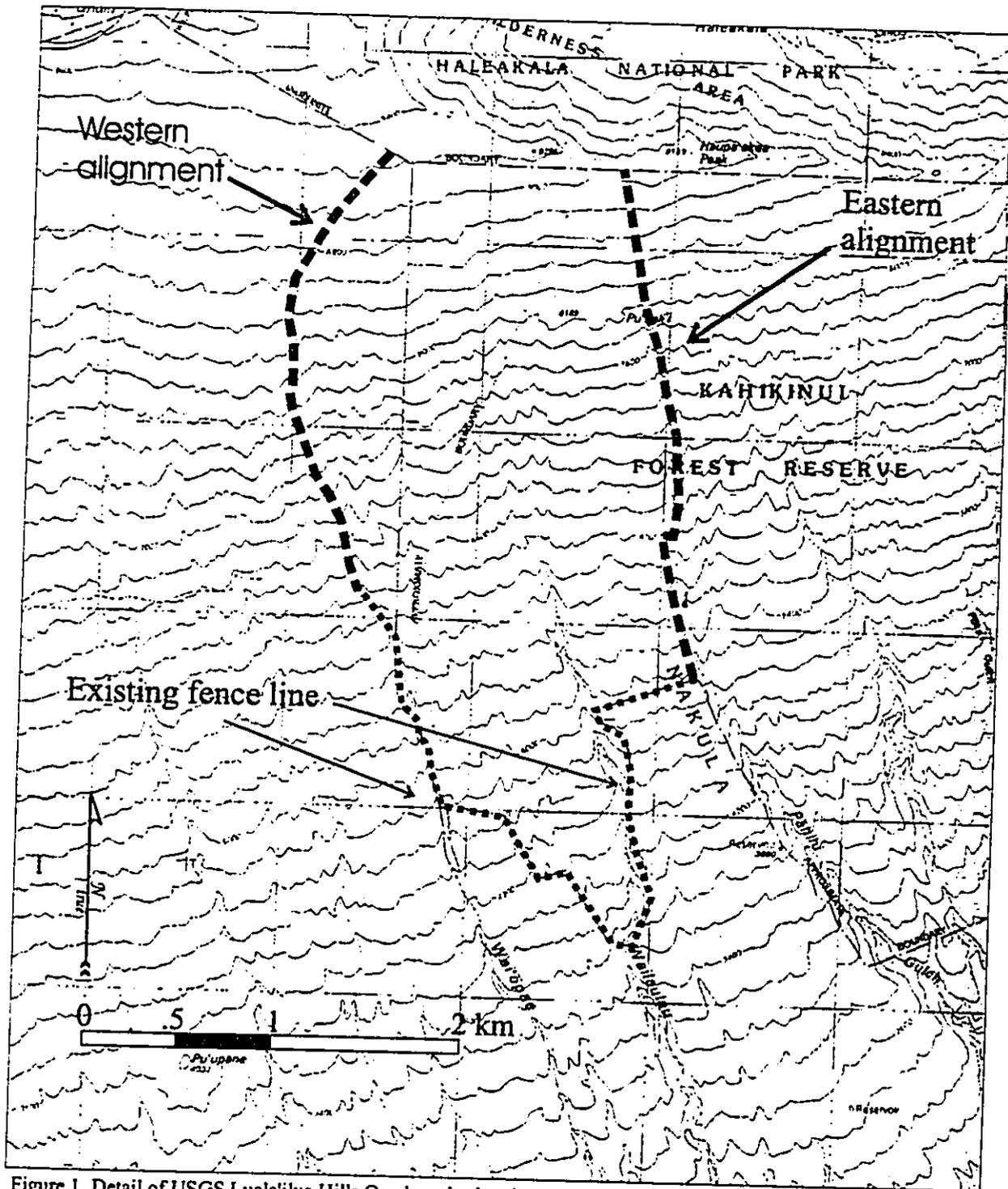


Figure 1. Detail of USGS Luialua Hills Quadrangle showing eastern and western fence alignments.

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Figure 2. Upper elevation. Rocky terrain and sparse vegetation, view to north.



Figure 3. Middle elevation zone. Rocky, rolling dissected terrain, view to north.

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Figure 4. Middle elevation zone. Rocky, deeply dissected terrain, view to south.



Figure 5. Lower elevation zone. Grassy, highly eroded and rolling terrain, view to southwest.

## PREVIOUS ARCHAEOLOGY

Although a number of archaeological investigations have been conducted in the general region over the years (see Dixon et al. 2000:Table 1.1), very few have extended to the elevation of Kahikinui Forest Reserve. Consequently, there are very few studies that are relevant to the present project area. The most important of the higher elevation leeward studies are Soehren's survey for the National Park Service (Soehren 1963) and Dixon et al.'s inventory survey of the Department of Hawaiian Homelands' 2000 acre "Kuleana Homestead" (Dixon et al. 2000). The Dixon et al. (2000) study was an outgrowth of a multi-institutional archaeological study conducted throughout the traditional *moko* of Kahikinui (Kirch 1997).

Soehren's survey is particularly pertinent since it recorded a number of site types above 6,000 feet elevation. These included burials, cairns, adze quarries, rock shelters, trails, petroglyphs, and temporary campsites. For obvious environmental reasons (see Project Area Description), no primary habitation or agricultural features were found on these sub-alpine slopes. Use of the upland region was apparently restricted to resource procurement and interment.

Working at a lower elevation (1,600 and 4,000 feet), Dixon et al. later recorded 319 sites during their 1995-1997 field surveys (Dixon et al. 2000). Almost all of these sites were located below 3,000 feet elevation and include primary habitations, temporary habitations, agricultural features, ranch infrastructure, *heiau*, *hōlua* slides, boundary markers, shelters, surface midden, lithic workshops, and possible burials. Primary dwellings were clustered between 1,600 and 2,600 feet elevation, as were sites with possible ritual functions. Site density drops off precipitously above 2,800 feet. The almost total absence of sites in the upper portion of Kahikinui Mauka contrasts somewhat with Soehren's earlier findings (likely a reflection of differences in terrain, Kahikinui is very steep while Soehren's study area was more gentle. In both cases, however, site types in the upper elevations are exclusively temporary in nature with no permanent dwellings or associated agricultural development.

## PROJECT EXPECTATIONS

Given the results of previous archaeological investigations, particularly in *mauka* portions of Kahikinui, it is expected that the narrow survey corridor of the present study will produce very few sites. The uppermost elevations (9,200-8,200 feet) will likely produce no archaeological remains, although there is the possibility of cairns or trails. The middle and lower elevations (8,200-5,160 feet) are likewise expected to contain few sites, especially given the very rugged topography of this area. If present, sites may include rock shelters, cairns, quarry sites, petroglyphs, ridge trails, or other temporary-use sites.

## FIELDWORK RESULTS

Fieldwork for this project was conducted on May 5, 2004 by Mark Winburn, B.A., Christopher Hand, B.A., Matthew Clark, B.A., and Michael Desilets, M.A. under the direction of Robert Rechtman, Ph.D.. The eastern and western alignment centerlines were clearly marked with blue flagging tape. Each alignment was surveyed by two archaeologists and a natural resources biologist spaced 10 meters apart along and on either side of the centerline. This method allowed for intensive visual coverage of an approximately 20 meter wide corridor surrounding the centerline and existing lower fence line.

No traditional Hawaiian or historic archaeological resources were observed within the project area. The only evidence that portions of the project area had been accessed is in the form of bullet casings and a hunting blind. Bullet casings were observed at the intermediate and lower elevations on both alignments. The hunting blind was noted on the western alignment at approximately 6,400 feet elevation (2289223 N, 0787334E Universal Transverse Mercator WGS 84) (Figure 6). Natural Area Reserve Specialist Bryon Stevens, who had flagged the centerline, is almost certain that the hunting blind was not present when the alignment was flagged. It is also clear that many of its constituent cobbles were only recently unearthed. It therefore appears that this feature was constructed sometime in the last year. The blind and the bullet casings indicate that this area is currently utilized for hunting.

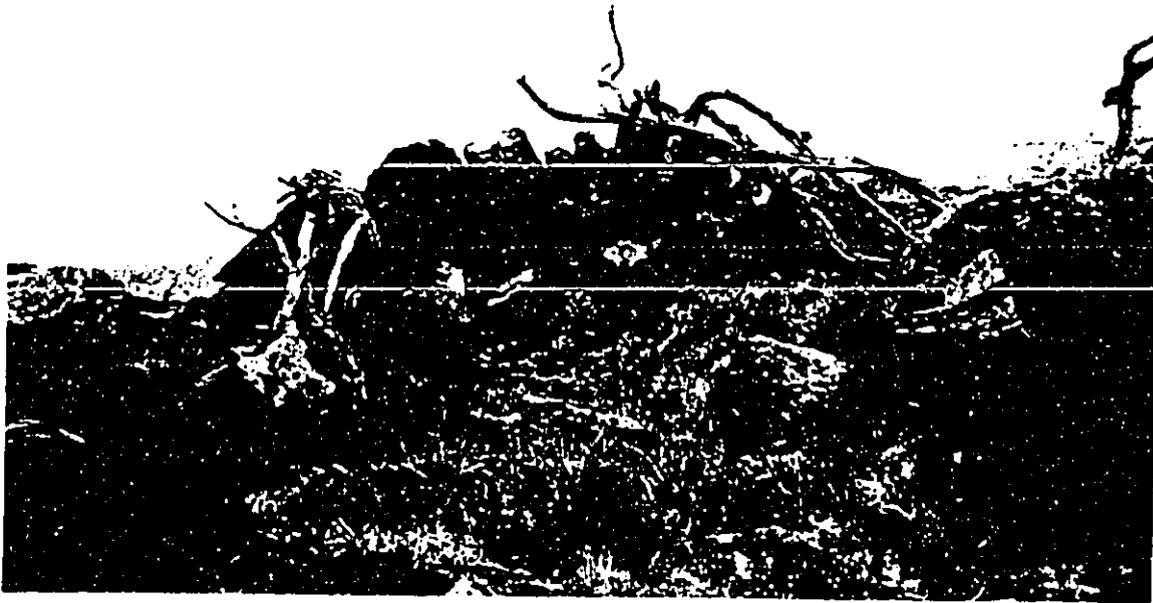


Figure 6. Modern hunting blind recorded near western alignment, view to southwest.

## CONCLUSION

Systematic, intensive archaeological survey of two fence line corridors and an existing fence line in Kahikinui Forest Reserve produced negative results with respect to the discovery of historic properties. It is therefore concluded that installation of the proposed fence lines and the proposed improvements to the existing fence line will have no adverse effect on any known archaeological resources. However unlikely, if cultural remains are inadvertently discovered during installation of the fence, all work in the immediate area of the discovery will halt and SHPD-DLNR notified immediately.

## REFERENCES CITED

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