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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
KAWAIAHAO PLAZA, SUITE 132
567 SOUTH KING STREET
HONOLULU, HAWAII 96813

May 10, 1995

Mr. Gary Gill, Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, HI 96813

Dear Mr. Gill,

Subject: Negative Declaration for Kapunakea Preserve Natural Area Partnership, District of Lahaina, County of Maui, Hawaii; TMK: 4-4-07-01, 4-4-07-03, 4-4-07-07, 4-4-07-08.

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed and responded to the comments received during the 30-day public comment period which began on February 23, 1995. The agency has determined that this project will not have significant environmental effect and has issued a negative declaration. Please publish this notice in the May 23, 1995 OEQC Bulletin.

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

Please contact Betsy Gagné at 587-0063 if you have any questions.

Sincerely,

Michael G. Buck, Administrator
Division of Forestry and Wildlife

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FINAL ENVIRONMENTAL ASSESSMENT FOR KAPUNAKEA PRESERVE NATURAL AREA PARTNERSHIP

This document prepared pursuant to Chapter 343, HRS

May 1995

Prepared by
The Nature Conservancy of Hawaii
Maui Project Office
P.O. Box 1716
Makawao, Hawaii 96768

CONTENTS

Figures

I. SUMMARY

CHAPTER 343, HAWAII REVISED STATUTES (HRS)
ENVIRONMENTAL ASSESSMENT

Project Name: Kapunakea Preserve Natural Area Partnership

Proposing Agency / Applicant:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

The Nature Conservancy of Hawaii
1116 Smith Street, Suite 201
Honolulu, Hawaii 96817

Approving Agency:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife

Project Location:

Kapunakea Preserve, 1,264 acres in the District of Lahaina, County of Maui, State of Hawaii

Tax Map Key	Acreage
4-4-07-01	1,014.6
4-4-07-03	74.0
4-4-07-07	175.0
4-4-07-08	0.21

Agencies Consulted During EA Preparation:

Federal:

US Department of Interior/ Haleakala National Park
US Department of Agriculture/ Soil Conservation Service–Maui District
US Fish & Wildlife Service
US Department of Agriculture/ Animal Damage Control

State:

Aquatic and Wildlife Advisory Committee–Maui
Department of Health–Maui
DLNR/ Aquatic Resources Division–Maui District
DLNR/ Division of Forestry & Wildlife–Maui District
DLNR/ Division of Land Management–Maui District
DLNR/ Office of Conservation and Environmental Affairs
DLNR/ State Historic Preservation Division
Hawaii Department of Agriculture–Pesticide Branch
University of Hawaii Cooperative Extension Service

County:

Department of Water Supply
Planning Department–Maui County
Maui County Council

Private:

Amfac/JMB Hawaii Inc.
Conservation Council for Hawaii
East Maui Irrigation Co.
Haleakala Ranch Company
Hawaii Audubon Society
Kamehameha Schools/Bishop Estate
Keola Hana Maui, Inc.
Maui Humane Society
Maui Land and Pineapple Co.
Native Hawaiian Advisory Council
Native Hawaiian Legal Corporation
Native Hawaiian Plant Society
Natural Resources Defense Council
Pioneer Mill Company, Ltd.
Sierra Club Legal Defense Fund
Sierra Club/ Maui Group

II. Project Description

Kapunakea Preserve was established in 1992 when Pioneer Mill Company, Ltd., a subsidiary of AMFAC/JMB Hawaii Inc., granted The Nature Conservancy a perpetual conservation easement over 1,264 acres on West Maui. The primary goal of this project is to maintain the preserve's native ecosystems and protect the area's rare plants and animals.

Management in the preserve to date (primarily pig and weed control and monitoring) has been conducted under an Emergency Authorization granted by the State Department of Land and Natural Resources in March 1992. One of the conditions of the Emergency Authorization was to comply with existing Natural Area Partnership Program (NAPP) procedures, including submitting a Conservation District Use Application for the use of Conservation District Land. This application is no longer a requirement for NAPP-funded preserves. Current program requirements do, however, include compliance with the environmental review process under chapter 343, Hawaii Revised Statutes.

Summary Description of the Affected Environment

Location

Kapunakea Preserve is on the leeward side of the West Maui Mountains and ranges in elevation from approximately 1,000 feet to 5,400 feet near the Puu Kukui summit. The area is adjacent to two natural areas that are also managed to protect natural resources: Puu Kukui (privately owned) and the Honokowai section of the state West Maui Natural Area Reserve (Figure 1).

Native Natural Communities

Ten vegetated native natural communities are represented in Kapunakea Preserve. These communities vary from lowland shrublands to montane bogs. One of the communities is considered rare, the 'Ohi'a Mixed Montane Bog (Figure 2; also see Appendix 1)[1].

Kapunakea Preserve also contains the upper reaches of one large stream (Honokowai Stream, which is diverted for agricultural uses) and several smaller streams. Honokowai and the other streams are discontinuous and do not contain the suite of native diadromous animals (those requiring both freshwater and marine habitats to complete their life cycle) characteristic of the upper reaches of perennial streams in Hawaii. *Atyoida bisulcata* ('opae kala'ole) occur in small numbers in Honokowai Stream above

[1]The U.S. Fish and Wildlife Service's National Wetland Inventory maps indicate that a wetland body is located within Kapunakea Preserve. The Service defines wetlands as "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water."

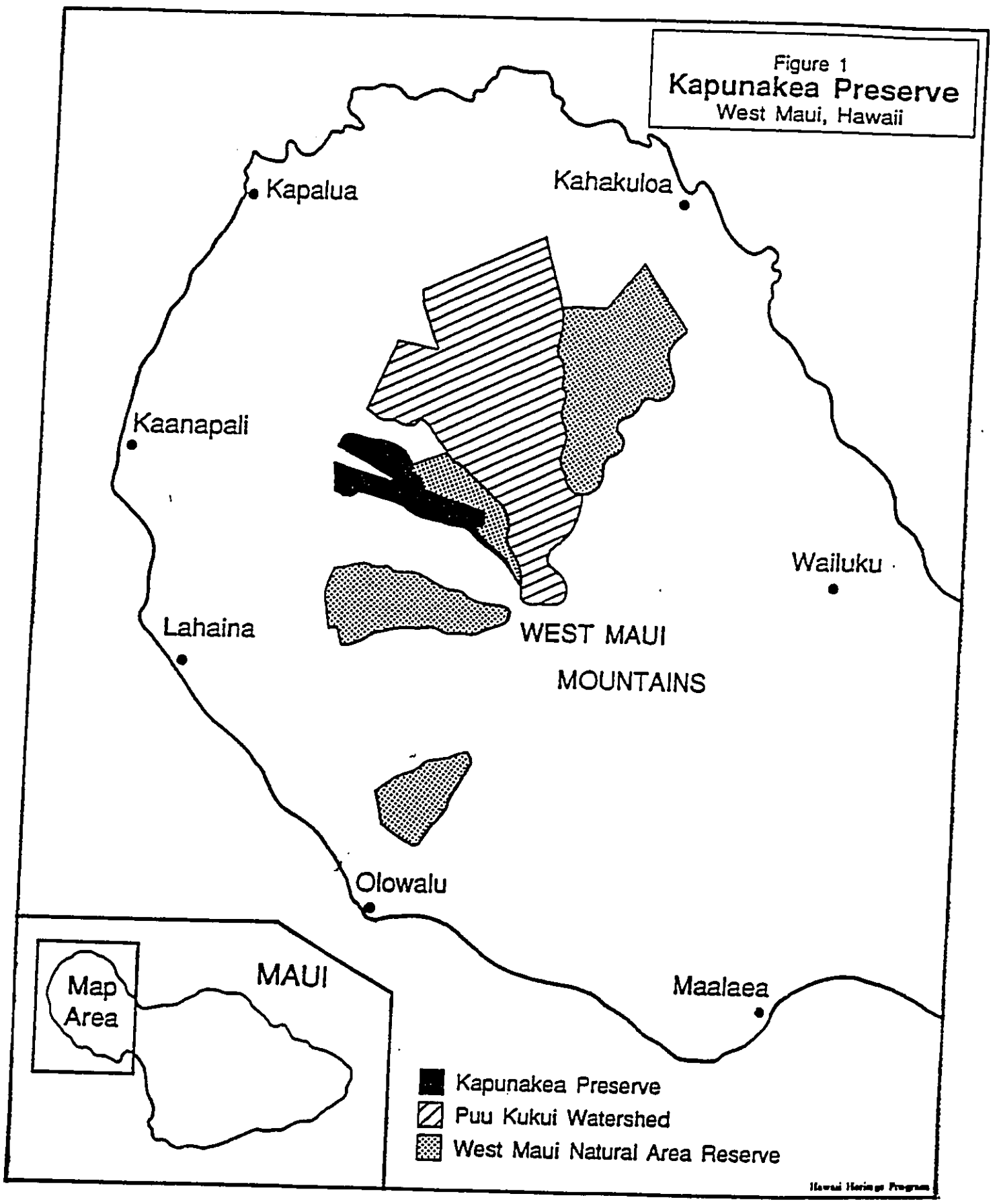


Figure 1
Kapunakea Preserve
West Maui, Hawaii
Kapalua
Kahakuloa
Kaanapali
Wailuku
Lahaina
WEST MAUI
MOUNTAINS
Olowalu
Maalaea
MAUI
Map
Area
Kapunakea Preserve
Puu Kukui Watershed
West Maui Natural Area Reserve

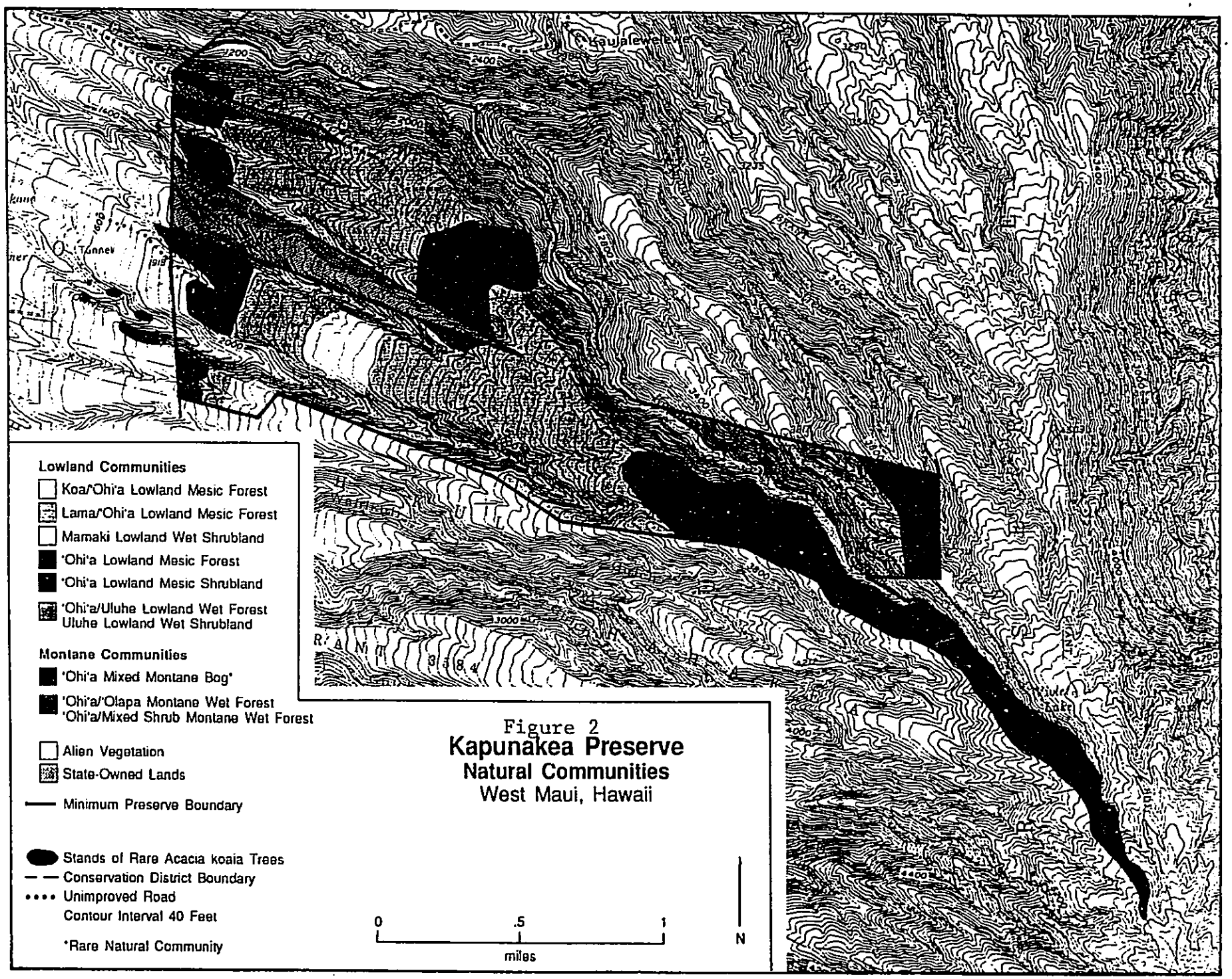


Figure 2
Kapunakea Preserve
Natural Communities
West Maui, Hawaii

the diversion (which is inside the preserve). However, native gobioid fishes (o'opu) are unable to migrate through the combined barriers of extreme channelization and nearly total diversion of the water flow above the channelized area (S. Hau, pers. comm. 1994). Because the predatory native fishes cannot access the stream above the diversion, the native aquatic insect fauna is among the most dense and diverse observed in Hawaii (D. Polhemus, pers. comm. 1994). The preserve's other streams are naturally dry most of the year.

Native Flora

To date, 24 rare plants have been reported in Kapunakea Preserve (Appendix 2). The rare plants include the federally listed endangered *Alectryon macrococcus* var. *macrococcus* ('ala'alahua), *Bidens micrantha* ssp. *kalealaha*, *Bonamia menziesii*, *Colubrina oppositifolia* (kauila), *Ctenitis squamigera* (pauoa), and *Santalum freycinetianum* var. *lanaiense* ('iliahi or sandalwood).

Native Fauna

Vertebrates

Four native birds are found in Kapunakea Preserve: 'apapane, 'i'iwi, 'amakihi, and pueo. No native diadromous fishes are known from Kapunakea (stream diversion makes this unlikely).

Invertebrates

Terrestrial arthropods include some of the most diverse taxonomic groups at Kapunakea, and are known to perform important ecosystem functions. These functions include pollinating native plants and serving as a food resource for insect-eating forest birds. However, most of Kapunakea's terrestrial invertebrate species have not been studied and are not well documented.

Kapunakea's aquatic invertebrates are also poorly understood. The preserve contains *Atyoida bisulcata*, and several Hawaiian damselfly taxa (*Megalagrion hawaiiense*, *M. calliphya*, *M. blackburnii*, and *M. nigrohamatum* subsp. *hamatum*) are known from areas near the preserve, as is the native dragonfly *Anax strenuus*. These insects may also occur within Kapunakea (D. Polhemus, pers. comm. 1994). We plan to improve both monitoring and research for the preserve's invertebrates in the coming years.

Populations of four species of rare Hawaiian tree snails have recently been documented at Kapunakea: *Partulina perdix*, *Partulina tappaniana*, *Partulina crocea*, and *Perdicella kuhnsi*. These snails were once widespread and abundant on Maui, but in many areas their numbers have declined precipitously in this century due to habitat destruction, collection, and the depredations of introduced animals. A number of other snails also occur at Kapunakea, including tornatellinines and species of *Auriculella*, *Succinea*, and *Philonesia*.

Historical/Archaeological and Cultural Sites

The preserve encompasses portions of three traditional Hawaiian ahupua'a (land divisions): Honokowai, Hanakaoo, and Kapunakea. The northern half of the preserve, including Honokowai Valley, and Kapaloa Valley are in Honokowai. The southern ridge area is within Hanakaoo, and a small portion at the southwestern edge of the preserve is with Kapunakea (see Appendix 4 for more information about ahupua'a and Land Commission Awards in the area that is now Kapunakea Preserve).

Evidence of precontact and early historic period taro lo'i (irrigated terraces) have been documented for the Honokowai Valley, between 800 and 1,000 feet in elevation (below the preserve boundary). Four complexes, consisting of numerous adjoining agricultural terraces, water channels, diversion dams, and habitation features were recorded as part of an inventory survey for a waterline project (*Archaeological Surface Survey, Honokowai Gulch, Ka'anapali, Maui*, B.D. Davis, 1977). Agricultural features were found on both sides of the stream, and continued upstream beyond the limits of the area that was examined during Davis' survey. Additional remnants of an irrigated lo'i system have been identified further downstream in Honokowai Valley. No surveys have been conducted to date upstream from Davis' 1977 survey area.

The historic trail that follows along the south side of Honokowai Gulch within the Kapunakea Preserve was constructed by Pioneer Mill in order to access the water resources of Honokowai Stream. This trail, which dates to the early twentieth century, is an excellent example of a non-vehicular industrial transportation route. It presently does not contain any modern construction materials.

The Honokowai Tunnel, constructed by Pioneer Mill, extended across portions of Kapunakea Preserve, between the Honokowai Stream intake and the Horner Reservoir.

The tax map of the Kapunakea Preserve area (4-4-07) shows an historic trail extending down the slopes of Puu Kukui and into Hanakaoo. The trail splits near the Hanakaoo/Honokowai boundary and takes two routes toward the ocean. The origin and purpose of this trail are presently unknown.

If future uses of the preserve require alteration or improvement of the Honokowai Trail, Puu Kukui Trail, or areas in the Honokowai Stream bottom suspected to contain taro lo'i, the State Historic Preservation Division (SHP) recommends that background research and a field survey be completed for these areas. SHP will also be asked to review any trail improvement/alteration plans before they are implemented.

Adjacent Natural Resources

Kapunakea Preserve is adjacent to two other natural areas that are actively managed: Puu Kukui (which is privately owned and part of the Natural Area Partnership Program) and the Honokowai section of the state West Maui Natural Area Reserve

(NAR). These managed areas comprise more than 13,000 acres of contiguous, managed watershed.

Six of the 10 vegetated native natural communities found in Kapunakea Preserve, including the rare 'Ohi'a Mixed Montane Bog, are also found in West Maui NAR. The Puu Kukui Watershed Management Area and Kapunakea Preserve share eight native natural communities (Appendix 1). Of the 24 rare plants reported from Kapunakea, 16 are known from the West Maui NAR and 11 have been reported from Puu Kukui (Appendix 2).

Sensitive Habitats

The habitats and resources listed above and in the appendices are regarded as sensitive and are found both within and adjacent to Kapunakea Preserve. The intent of all proposed management activities is to provide long-term protection to these habitats and resources. Potential negative effects of management activities such as introduction of new weeds along newly constructed fences, trails, or monitoring transects are recognized, and special precautions will be taken to minimize the risks. Management activities that affect adjacent sensitive habitats in the West Maui NAR or in the privately owned Puu Kukui watershed management area will be coordinated with appropriate staff from these organizations to avoid potential negative impacts.

General Description of the Action's Technical, Socio-Economic and Environmental Characteristics

Technical

Management Considerations

This project is long term, consisting of several different phases. The primary goal is to maintain native ecosystems and protect the habitat of rare plants and animals in the designated area.

This section describes specific management strategies that will be undertaken to maintain and enhance the native ecosystems and species of Kapunakea Preserve. To facilitate management, five management units have been defined (see discussion on page 10). Management goals for 5 fiscal years are discussed. TNC has adopted a July 1-June 30 fiscal year. (As of this writing, FY95 [Year 1 in this assessment] is almost over.) The Nature Conservancy of Hawaii will be responsible for the completion of the management work. Our management strategies are shaped by the following considerations.

1. Kapunakea Preserve is adjacent to two natural areas that are also managed to protect natural resources: Puu Kukui (privately owned) and the Honokowai

section of the state West Maui Natural Area Reserve (Figure 1). The Conservancy currently holds a perpetual conservation easement over approximately 8,600 acres at the Puu Kukui Watershed. The Conservancy acts as preserve advisor and consultant to Maui Land and Pineapple Co., the primary managers of Puu Kukui Watershed, and has a Master Cooperative Agreement with the state Division of Forestry and Wildlife to undertake cooperative management projects. These agreements will be used to coordinate management and sharing of staff, equipment, and expertise to maximize management efficiency.

In 1992 Pioneer Mill Company, Ltd. (Amfac/JMB) granted The Nature Conservancy of Hawaii a perpetual conservation easement for the area that is now known as Kapunakea Preserve. The easement preserves and protects in perpetuity the natural, ecological, and wildlife features and values of Kapunakea Preserve. The landowner reserved the rights to maintain and expand the existing water system, develop telecommunication facilities within strict limitations to protect the preserve, and to construct a limited number of dwelling units immediately outside (makaí of) the preserve.

An agreement with the state Department of Land and Natural Resources supports wildfire suppression. The Conservancy also holds within the conservation easement a separate right-of-entry and release of liability agreement with Pioneer Mill Co., Ltd., which ensures perpetual access and addresses mutual liability issues.

2. The primary strategy for protection of Kapunakea is to *prevent* the further introduction or spread of destructive alien species. Special care must be taken to avoid negative side-effects of management activities. For example, trails developed to support management activities are designed, and procedures established for staff, to prevent weed and ungulate invasion. This strategy requires helicopter access to most parts of the preserve.

3. The preserve is bounded on the west (lowland) side by private agricultural lands, and activities related to harvesting sugar cane (large, heavily-loaded trucks, agricultural burning, etc.) pose a risk to potential preserve users. For these reasons, public access to Kapunakea is limited. Interpretive and recreational uses are confined to selected sites, and guidelines to minimize impacts such as trampling and weed dispersal have been developed for these areas. Preserve management activities are routinely coordinated with the work underway in adjacent agricultural areas.

4. Like many Hawaiian natural areas, Kapunakea is remote and rugged. Given limited resources, the entire area cannot be managed equally. Management within the preserve is concentrated in areas where curtailing the most urgent threats protects other areas of the preserve (e.g., halting pig ingress along the northwest boundary), and in areas that contain special plants, animals, and native

natural communities (e.g., the rare montane bog community in the preserve's upper elevations).

5. Contrary to survey results prior to preserve establishment, feral pigs were found to be widespread in Kapunakea by early 1992, posing the largest threat to the preserve's native ecosystems and species. Pig rooting and wallowing destroy native plants and disturb ground cover on the forest floor, creating conditions favorable for soil erosion and the establishment of weeds. However, significant progress has been made reducing pig activity during the first 3 years of management. Removal of feral pigs will continue to be the priority management activity for the next year, and we expect that reducing pig disturbance will reduce weed establishment.

6. Strawberry guava (*Psidium cattleianum*) is widely established in the lower half of the preserve. Pigs and birds appear to be the primary vectors spreading this habitat-modifying weed. Weed control efforts will focus on strawberry guava control for the next several years to prevent further competition with native plant species.

Management Units

Kapunakea is managed as five units (Figure 3) defined by topographic boundaries, similarity of natural community types, and threats.

Unit 1

Unit 1 consists of the lowland (up to 3,000 feet elevation) portion of the preserve that is closest to Honokowai Stream. This unit is primarily comprised of 'ohi'a (*Metrosideros*)/uluhe (*Dicranopteris*) lowland shrubland, and forest. Prior to our management efforts, this unit showed high levels of pig activity. Activity has been significantly reduced by control measures that must be maintained to keep activity low.

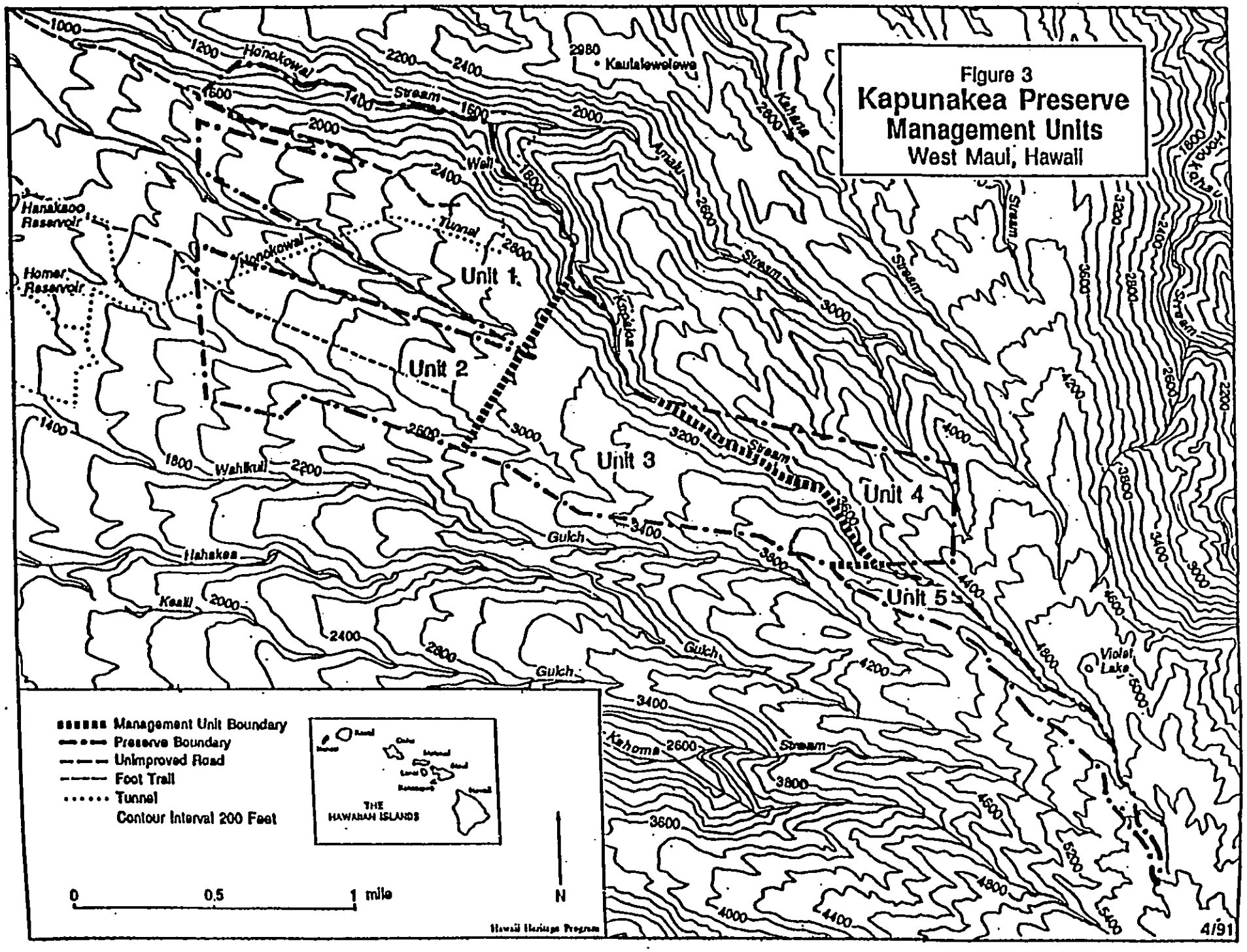
Unit 2

Unit 2 encompasses the remainder of the preserve's lowland elevations. It contains five native natural communities, although non-native vegetation prevails in the gulch bottoms. Strawberry guava is prevalent throughout the unit, and we will continue to control this threatening weed. Pig activity was high throughout this unit during the initial phases of ungulate control but has been reduced substantially.

Unit 3

Unit 3 comprises the majority of the preserve's mid-elevations (3,000 to 4,000 feet), and follows Kapaloa Stream along its northeast boundary. The four montane communities in Unit 3 are dominated by uluhe or 'ohi'a; Mamaki (*Pipturus albidus*) Lowland Wet Shrubland occurs along the stream bed. The uluhe and 'ohi'a-dominated communities

Figure 3
Kapunakea Preserve Management Units
West Maul, Hawaii



are intact, with minimal weed problems. Our management focus in this unit is to eliminate ungulates and control weed invasions.

Unit 4

Unit 4 begins on the east side of Kapaloa Stream, and continues to the eastern preserve boundary. This unit is adjacent to the Honokowai NAR and is topographically isolated from the rest of the preserve. The upper elevations in this unit must be accessed by helicopter, due to the steep gulch walls. To date, there has been no evidence of pig sign here, and the unit has very few weeds. Management focuses on preventing new invasions.

Unit 5

Unit 5 encompasses the highest elevations of the preserve and contains the rare 'Ohi'a Mixed Montane Bog community. Like Unit 4, access to this unit is by helicopter or from adjacent areas. Travel through this unit is conducted from the upper elevations down, to avoid transporting weeds from lower elevations. This unit also has very few weeds; our management priority is to remove any threats before they damage the rare 'ohi'a bogs. Water drainage channels dug by Pioneer Mill Co. in the early 1900s are evident throughout the bog region of the unit. The channels are completely over-grown with native bog vegetation.

Management Goals

The management programs that follow are listed in order of priority for the next 5 years of work. Each program goal is followed by a brief description of program strategies, and how we foresee these strategies changing over the next 5 years. A timetable is provided for each program.

Though each program is described separately, together they form an integrated management approach. Management priorities are focused on removing ungulates and habitat-modifying weeds. In addition, we have established a comprehensive network of management trails and monitoring stations throughout the preserve. This system will continue to be maintained and expanded where needed to support management activities.

Because no rare aquatic natural communities, plants, or animals are known from Kapunakea, the Conservancy does not currently monitor or directly manage aquatic communities or taxa. However, management targeted at the preserve's rare terrestrial resources will indirectly benefit aquatic resources. For example, successful ungulate and weed control programs will decrease erosion and its subsequent siltation of streams. Controlling ungulates is also expected to improve water quality by lowering the potential for bacterial coliform and leptospirosis in the water. Finally, management that improves the health of native terrestrial communities will also promote a more stable water regime by reducing the potential for rapid runoff.

Ungulate Control

Program Goal: To remove all ungulates from Kapunakea, and prevent future invasion.

The Kapunakea ungulate control program focuses on feral pig control because 1) the impacts of pigs can be severe and long-lasting (e.g., extinction of plant or invertebrate populations, loss of soil via erosion, and dispersal of habitat-modifying weeds), and 2) pigs, until recently, occupied most of the preserve and, at the outset of our program, were severely impacting large areas of high-quality native habitat. Pig control should also help reduce the number of mosquito breeding sites (mosquitoes are vectors of avian pox and malaria). The ungulate control program utilizes a combination of fencing, hunting, and snaring to bring pig populations down as rapidly as possible and prevent them from re-establishing. The lower boundary of the preserve has been fenced (Figure 4). Also, a strategic fence at 4,000 feet prevents pigs from moving into the bog areas. In accessible areas, hunting by trained staff and volunteers is the preferred method of animal removal. The Kapunakea area is on private land that has never been open to public hunting.

Snares are utilized only in areas that cannot be accessed readily enough and thoroughly enough to effectively control feral animals by hunting. The use of snares in remote areas also reduces damage to fragile understory vegetation by field staff and hunters by minimizing their presence, and reduces exposure to injury in this extremely rugged, wet terrain. Our objective is to utilize snaring only where no other method is available to safely and effectively protect the forest. Meanwhile, the Conservancy is working to reduce the need for snares by investing in additional fencing, improving the capability of our hunting program, and working with other colleagues to accelerate the research and development of additional control methods that can protect the forest as effectively and humanely as possible. Kapunakea staff will participate in this research effort.

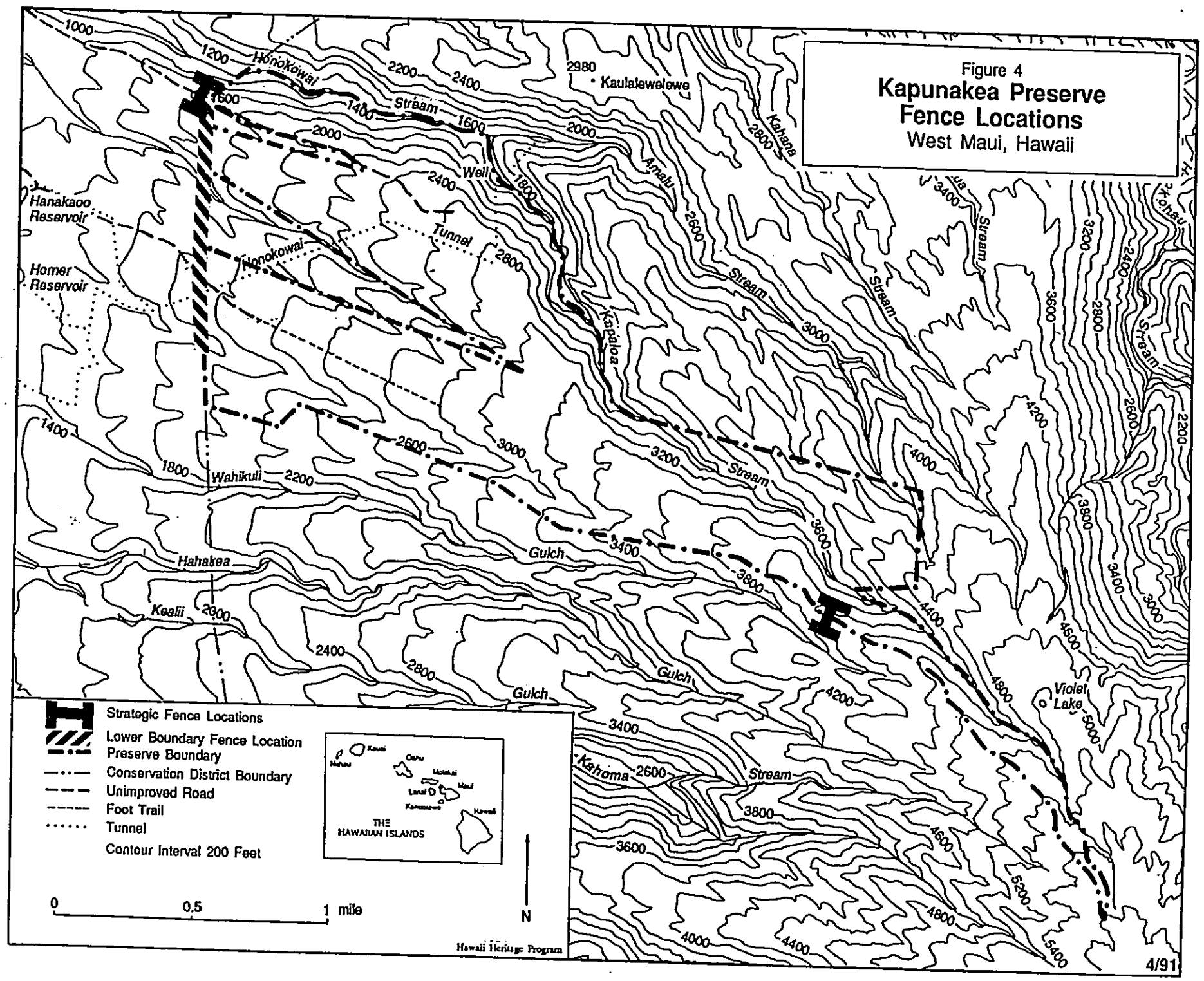
The effectiveness of pig control efforts is gauged by monitoring a preserve-wide network of seven 500-meter monitoring transects and by contracting a helicopter equipped with a Forward Looking Infra-red (FLIR) camera to locate ungulates in open areas of the preserve. We will continue to gather data on ungulate activity and the presence of weeds along monitoring transects every 4 to 6 months, utilizing standard monitoring methodology. At the outset of monitoring in 1992, 34 percent of 350 stations on these transects showed some indication of pig activity. Transects in the lower elevations of the preserve showed activity levels as high as 100 percent. Pig control will be maintained throughout the preserve as warranted by pig damage data.

In the past few years, axis deer and goats have greatly expanded their range on Maui to include areas near Ukumehame Gulch on West Maui. Control efforts for axis deer and goats are needed to protect West Maui's natural areas. Meanwhile, we will continue to monitor for their presence within and adjacent to the preserve. Cooperative interagency

Figure 4

Kapunakea Preserve Fence Locations

West Maui, Hawaii



and private efforts are needed for successful long-term control of axis deer and goats on Maui.

Ungulate Control Timeline

Year 1 (Fiscal Year 1995)
* Maintain existing fences, and add additional strategic fence if needed.
* Continue ungulate control (snaring and hunting) throughout preserve and at other strategic locations adjacent to the upper elevation portions of the preserve.
* Maintain ungulate monitoring system (seven 500-meter transects), and re-monitor every 4 to 6 months.
* Complete one FLIR ungulate census overflight.
* Continue volunteer and contract hunting program.

Years 2 & 3
* Maintain existing fences, and add additional strategic fence if needed.
* Continue ungulate control throughout preserve and at other strategic locations.
* Maintain ungulate monitoring system (seven 500-meter transects), and re-monitor every 4 to 6 months.
* Complete one FLIR ungulate census overflight.
* Continue volunteer and contract hunting program.

Years 4 & 5
* Maintain existing fences, and add additional strategic fence if needed.
* Continue ungulate control throughout preserve and at other strategic locations.
* Maintain ungulate monitoring system (seven 500-meter transects), and re-monitor every 4 to 6 months.
* Complete one FLIR ungulate census overflight.
* Continue volunteer and contract hunting program.

Weed Control

Program Goal: To remove habitat-modifying weeds from high-quality native habitats and prevent the introduction or spread of problem weeds to areas where they are not currently established.

One of the most important aspects of our weed control program will be to reduce current disturbances to intact vegetation, and prevent the introduction of additional alien plants. (Elimination of ungulates may be the most effective means of controlling the introduction and spread of habitat-modifying weeds in the preserve.) Strict procedures such as removing weed seeds from equipment and clothing before entering the preserve will be enforced. Helicopter flights to the preserve will originate from concrete pads or pavement if possible, and all materials will be inspected and cleaned.

Of the weeds already established in the preserve, many are shade intolerant and pose no major problem if the native forest canopy and ground cover remain intact. There are other alien plants, however, that can displace native vegetation over large areas; these habitat-modifying weeds are considered "priority weeds" for management (see Appendix 5).

Our weed control goal in high-quality native habitats with little weed invasion (such as the preserve's upper management units) is to reduce existing populations and prevent the spread of all habitat-modifying weeds. In other areas of the preserve, we will control incipient and new infestations of habitat-modifying weeds to prevent their spread.

Weeds are controlled manually (by pulling or cutting), chemically (using herbicide), or with a combination of manual and chemical control methods. Herbicide use is strictly limited, and in full compliance with the state Department of Agriculture's pesticide branch. (Weed control staff are also licensed by the state Department of Agriculture's pesticide branch.) When herbicides are needed, staff use Garlon 3A and Roundup, usually at a concentration of 2 percent or less, and always in strict compliance with the label. Very small quantities are used. Occasionally, staff may employ additional chemicals as appropriate, under the direction of the state Department of Agriculture's pesticide branch.

During our first years of management, we discovered several marijuana patches and reported them to state enforcement officials. Historical marijuana growing is evident throughout the preserve. Staff frequently run across old grow bags, water containers, fertilizer, and recently planted marijuana. Staff will continue to report all marijuana activity to the state and exercise caution when working in the preserve.

Weed Control Timetable

Year 1
* Complete range maps for two additional priority weeds.
* Maintain treatment schedule for priority weeds.

Years 2 & 3
* Complete range maps and update control strategies for all priority weeds.
* Maintain existing control programs and implement control of additional priority weeds as defined in updated strategy.

Years 4 & 5
* Continue weed control as defined in updated strategy.

Invertebrate and Small Mammal Control

Program Goal: To refine and expand programs to address known threats posed by non-native invertebrates and small mammals.

Even though threats posed to native species by non-native insects, mollusks, and small mammals (rats, mongooses, feral cats, etc.) are currently poorly understood, non-native invertebrates and small mammals are potential major threats to rare native species and ecosystem stability. Rats and mongooses are predators of certain bird species and snails. Efforts will be made to increase our understanding of these threats and reduce their negative impact where possible.

Procedures to prevent introducing new non-native invertebrates will continue to be implemented in FY95. Incidental observations of small mammal sign will be noted along existing ungulate/weed transects. Field staff are already trapping rats at all campsites and will continue to do so. As we begin to understand these threats better (see Rare Species Protection section), the Conservancy will refine and expand its control programs.

Invertebrate and Small Mammal Control Timeline

Year 1
* Update and continue to follow strict procedures for preventing the introduction of new non-native invertebrates and small mammals.
* Utilize existing ungulate/weed transects to collect data on the presence or absence of small mammals, including mongoose.
* Carry out rat trapping at all campsites.

Years 2 & 3
* Update and continue to follow strict procedures for preventing the introduction of new non-native invertebrates and small mammals.
* Utilize existing ungulate/weed transects to collect data on the presence or absence of small mammals, including mongoose.
* Carry out rat trapping at all campsites.

Years 4 & 5
* Update and continue to follow strict procedures for preventing the introduction of new non-native invertebrates and small mammals.
* Utilize existing ungulate/weed transects to collect data on the presence or absence of small mammals, including mongoose.
* Carry out rat trapping at all campsites.

Monitoring and Research

Program Goal: To track biological and physical resources of the preserve and evaluate changes in these resources over time; to identify new threats to the preserve before they become established pests; and to promote research to guide management programs.

Resource monitoring documents and quantifies natural resources (vegetation, birds, and invertebrates) and tracks them over time, identifying trends. Resources will eventually be mapped and tracked with help from the Hawaii Natural Heritage Program (HINHP)

and its Geographic Information System (GIS). Maps and data from the monitoring program will be used to update the research needs lists, refine long-term management plans, write research proposals and grants, and refine future budget proposals.

Monitoring yields better management of the preserve. Accurately quantifying changes in natural resources provides land managers with the information needed to determine the efficacy of past management programs, and to plan future research and management in Kapunakea. We will use a comprehensive network of quantitative monitoring plots and supplemental vegetation plots in different management units to better quantify and understand Kapunakea's vegetation. The data collected will help managers prioritize management efforts by defining unique qualities and threats that exist in each management unit.

All monitoring is consistent with the methods compiled by the Conservancy's Stewardship Ecologist through a series of statewide workshops with experienced land managers and researchers. This methodology is described in *NARS Statewide Monitoring Guidelines*, completed in 1992 for the state, and the *Kapunakea Long-Term Monitoring Plan*. We will continue to seek ways to refine our techniques and integrate this program with other management activities.

Monitoring and Research Timetable

Year 1
* Update research needs list and provide logistical support to researchers.
* Complete baseline monitoring report.
* Continue monitoring for specific management programs.

Years 2 & 3
* Update research needs list and provide logistical support to researchers.
* Implement invertebrate baseline monitoring.
* Complete second round of vegetation monitoring.
* Conduct follow-up assessment of baseline monitoring.
* Continue monitoring for specific management programs.

Years 4 & 5
* Update research needs list and provide logistical support to researchers.
* Continue baseline monitoring (according to schedule).
* Continue monitoring for specific management programs.

Rare Species Protection

Program Goal: To prevent extinction of rare species in the preserve.

Kapunakea preserve contains 24 reported rare plant taxa and at least 4 species of rare land snails (see Appendices 2 and 3). The Conservancy uses data compiled by the Hawaii Natural Heritage Program to identify rare species, and uses the Heritage

Program's definition of rare--species that exist in fewer than 20 populations worldwide. Additional rare species reported from adjacent lands and similar habitats are likely to be found in Kapunakea with future surveys.

Protecting habitat essential to the majority of the preserve's native plants and animals (controlling pig damage and weeds) is our primary management strategy. Threats to the rarest species will continue to be assessed and management to stem the most immediate threats will be implemented. Additional rare species and their locations will be identified during the course of other management activities. To prevent the extinction of rare species in the preserve, we will promote research on factors that may be limiting populations of the preserve's rare plants and animals.

Rare Species Protection Timetable

Year 1
* Continue to map rare plant populations and reduce threats as needed.
* Continue to support malacologist to assess protection needs of rare snails, and to locate other populations of rare snails in Kapunakea.
* Develop rare species monitoring strategy.

Years 2 & 3
* Implement rare species monitoring strategy.

Years 4 & 5
* Continue to implement rare species monitoring strategy and initiate protection where needed.

Public Outreach Programs

Program Goal: To build public understanding and support for the preservation of natural areas, and enlist volunteer assistance for preserve management.

Conservancy staff routinely give presentations to community and school groups on the importance of protecting natural areas in Hawaii. We also provide hiking opportunities on our other accessible Maui preserve, Waikamoi. Limited hikes along existing trails will be led by preserve staff at Kapunakea. People are also encouraged to join volunteer work parties, so that they can contribute to the protection of Kapunakea while learning about the preserve. In Years 1 and 2 existing trails will be improved, and additional trails designed, to promote natural area education.

As part of our public outreach efforts, we have established an internship program for two interns per year. We will continue to hire two interns per year to expose high school and college students to careers in conservation.

We have also established a very successful volunteer docent program on Maui. Currently, the docents lead regular hikes at Waikamoi. In FY95 these docents will help staff lead hikes at Kapunakea.

Public Outreach Program Timetable

Year 1
* Begin monthly interpretive hikes.
* Continue quarterly volunteer work parties.

Years 2 & 3
* Determine long-range public use goals via visitor use plan.
* Develop interpretive trail system per updated plan.
* Continue volunteer program.

Years 4 & 5
* Continue public use program per updated visitor use plan.
* Continue volunteer program.

Personnel, Equipment, and Facilities

The Conservancy currently has seven full-time stewardship staff on Maui: a project director, assistant preserve's manager, administrative coordinator, field biologist, weed control specialist, field naturalist, and field technician. Staff split their time between Waikamoi and Kapunakea Preserves with about 2.5 FTE's (full-time equivalents) dedicated to Kapunakea Preserve. The cost of vehicles, office and baseyard rent, and other preserve equipment is also split, with approximately 35 percent charged to Kapunakea.

In addition to routine field duties, Maui staff must also be prepared to fight fires. The Conservancy will work cooperatively with DOFAW to prevent and suppress any fires in and around the preserve. Several field staff will continue to upgrade their fire training and readiness as opportunities arise.

Socio-economic

Three general types of socio-economic benefits will result from the proposed project: 1) watershed protection, 2) maintenance of biodiversity, and 3) public education. This project will also create conservation jobs on Maui.

The forests of West Maui serve as a stable water source for Maui's residents and industries. Native vegetation is an essential component of this watershed system. Forest cover protects fragile mountain soils from erosion, and acts like an immense sponge that absorbs heavy rains. Water is gradually released into streams and groundwater aquifers, rather than running off the surface in torrents to the sea. Management activities will promote a more stable water regime both within and below the project area by

reducing the potential for rapid runoff from disturbed or degraded areas within the West Maui watershed area.

Preservation of biodiversity has been recognized as a legitimate and necessary goal for society. This project provides multiple opportunities to protect and preserve rare natural ecosystems and endemic species.

Kapunakea Preserve staff routinely give presentations to community and school groups on the importance of protecting natural areas in Hawaii, and Kapunakea's important biota. *Conservancy staff will also provide some hiking opportunities to the general* public. In addition, volunteers are routinely used in many management projects. Community volunteers have gained hands-on conservation experience while learning about Hawaii's unique plants and animals.

Environmental

This project has benefitted, and will continue to benefit the environment, by maintaining and enhancing native ecosystems, preserving biological diversity, and promoting improved water quality.

At least 24 rare plants, 4 rare snails, and 1 rare natural community reported from Kapunakea Preserve are better protected as a result of this project. By reducing the potential for rapid runoff from ungulate-damaged areas, a stable water regime will be promoted. In addition, the maintenance of a natural "viewshed" enhances the aesthetics of the area. Occasionally there will be an increase in noise levels when helicopters are used to transport staff and supplies to remote areas.

III. Summary of Major Impacts

Major Impacts -- Positive

- Reduction of ungulate activity to a level that will promote and sustain measurable recovery of native vegetation in all management units. (The long-term goal is to eliminate ungulates from Kapunakea.)
- Reduction of the range of habitat-modifying weeds and prevention of introduction of new problem weeds.
- Tracking of biological and physical resources in the preserve and evaluation of changes in these resources over time to identify new threats.

- Logistical and financial support to approved research projects will improve management understanding and protection of the preserve's resources as well as other natural areas in the state.

- Prevention of the extinction of rare species in the preserve.

- Promotion of a more stable water regime both in and below the project area by reducing the potential for rapid runoff from disturbed or degraded areas within Kapunakea through removal of feral animals and habitat-modifying weeds.

- Improved water quality (within and below the preserve) due to:
  1) decreased erosion and its subsequent siltation of streams and nearshore waters, and
  2) ungulate control, which lowers the potential for bacterial coliform and leptospirosis in the water.

MAJOR IMPACTS – NEGATIVE

One potential impact is the accidental introduction or spread of new weed species by managers or visitors on equipment, supplies, or transport vehicles. Also, because herbicides are sometimes used to control habitat-modifying weeds in the preserve, there is a remote possibility of localized soil contamination. Occasionally there will be an increase in noise levels when helicopters are used to access remote areas. The "prop wash" of low-flying helicopters also might disturb animals such as tree snails and birds. However, with care, no major negative impacts are expected to result from the proposed activities.

IV. ALTERNATIVES CONSIDERED

Although we (the Conservancy) considered a variety of alternatives involving lower levels of management, we decided that the actions outlined in this assessment are all necessary to assure the continued protection of rare species and valuable habitat. Slowing the pace of management could jeopardize progress made in controlling feral pigs, weeds, and other serious threats. Similarly, a no-action alternative would promote the loss of rare Hawaiian ecosystems, plants, and animals. Furthermore, erosion of fragile forest top soils would continue at an accelerated rate, degrading one of the largest watershed areas in the state and nearshore reefs and fisheries.

V. Proposed Mitigation Measures

To prevent the accidental introduction or spread of weed species, anyone entering the watershed area will be required to clean their clothing, boots, equipment, and camping gear of soil and plant material. Wherever possible, helicopter flights into the preserve will originate from weed-free areas such as wooden platforms or pavement, and all materials hauled in will be inspected and cleaned to remove soil, plant material, and insects. Helicopter landing sites and areas frequented by staff will be inspected for weeds each trip.

To prevent contamination of soil with herbicides, all field staff have been trained in the safe application of approved herbicides. Weed control staff are licensed by the state Department of Agriculture's pesticide branch. Herbicides are used according to label instructions, and all chemical use is in compliance with the state Department of Agriculture's pesticide branch.

Helicopter use is limited to essential conservation-related projects, and landings are restricted to very limited designated landing zones. To reduce noise and prop wash, we ask helicopter pilots to fly more than 1,000 feet above the forest canopy when travelling over the preserve.

VI. Determination

No significant negative impacts to the environment are expected to result from the implementation of the proposed activities.

VII. Findings, and Reasons Supporting Determination

The proposed activities are expected to benefit rare species, native natural communities, and important watershed, both in the project area and on adjacent lands. For example, ungulate control will protect rare plants and rare natural communities from browsing and other types of ungulate damage (including the spread of certain weeds). Active weed control in the project area will also help protect rare plants and natural communities, and will indirectly help rare and other native animals. Active management of Kapunakea Preserve will also promote a more stable water regime both in and below the project area by reducing the potential for rapid runoff from disturbed or degraded areas.

The risk of significant negative impact is low. Through a rigorous cleaning and monitoring program, the introduction or spread of new weed species by humans is expected to be minimal. Management-related impacts on historical resources in the area are expected to be negligible. Furthermore, the risk of herbicidal contamination is low because 1) only small volumes of approved herbicides are used, 2) staff are well-trained

in herbicidal application, and 3) all chemical use is in compliance with the state Department of Agriculture's pesticide branch.

VIII. List of Preparers

Mark White, Preserves Manager
Maui Project Office
P.O. Box 1716
81 Makawao Avenue, Suite 203A
Makawao, Hawaii 96768
(808) 572-7849

1. As this project is a joint state-private partnership agreement, the environmental assessment was prepared in consultation with Peter Schuyler and Betsy Gagné, staff members in the Department of Land and Natural Resources/Division of Forestry and Wildlife/Natural Area Reserves System program. Theresa Donham with the Department of Land and Natural Resources/State Historic Preservation Division helped prepare the Historical/Archaeological and Cultural Sites section. In addition, this environmental assessment incorporates many sections and figures from the Kapunakea Preserve Long Range Management Plan (e.g., all maps, descriptions of resources, and proposed activities). Please refer to the management plan for details pertaining to the project budget.

IX. APPENDICES

APPENDIX 1
NATIVE NATURAL COMMUNITIES OF KAPUNAKEA PRESERVE

NATURAL COMMUNITY	HERITAGE RANK(a)
Lowland	
Koa/'Ohi'a (*Acacia/Metrosideros*) Lowland Mesic Forest^†	G3
Lama/'Ohi'a (*Diospyros/Metrosideros*) Lowland Mesic Forest^	G3
Mamaki (*Pipturus*) Lowland Wet Shrubland	G3
'Ohi'a (*Metrosideros*) Lowland Mesic Forest^†	G3
'Ohi'a (*Metrosideros*) Lowland Mesic Shrubland	G3
'Ohi'a/Uluhe (*Metrosideros/Dicranopteris*) Lowland Wet Forest^	G3
Uluhe (*Dicranopteris*) Lowland Wet Shrubland	G4
Montane	
'Ohi'a (*Metrosideros*) Mixed Montane Bog	G2
'Ohi'a (*Metrosideros*)/Mixed Shrub Montane Wet Forest	G3
'Ohi'a/'Olapa (*Metrosideros/Cheirodendron*) Montane Wet Forest	G3
Aquatic Communities	
Hawaiian Intermittent Stream	G4

(a) Heritage Rank:
- G2 = Imperilled globally (typically 6 to 20 current viable occurrences).
- G3 = Very rare and local (typically 21 to 100 current viable occurrences).
- G4 = Apparently secure globally (>100 occurrences).
- ^ = Not known from West Maui NAR.
- † = Not known from Puu Kukui Watershed Management Area.

APPENDIX 2
RARE NATIVE PLANTS OF KAPUNAKEA PRESERVE

SCIENTIFIC NAME	COMMON NAME	HERITAGE RANK (a)	FEDERAL STATUS (b)
Acacia koaia†	koai'a, koai'e, koa'oha	G2Q	C2
Alectryon macrococcus var. *macrococcus*^	'ala'alahua, mahoe	G2T2	LE
Bidens micrantha ssp. *kalealaha*†		G3T1	LE
Bobea sandwicensis^†	'ahakea	G2	-
Bonamia menziesii^†	-	G2	LE
Calamagrostis expansa	-	G2	C2
Colubrina oppositifolia^†	kauila	G1	LE
Ctenitis squamigera	pauoa	G1	LE
Eurya sandwicensis	anini, wanini	G2	C2
Exocarpos gaudichaudii†	heau	G1	C2
Geranium humile	nohoanu, hinahina	G1	C2
Hedyotis formosa^	-	G1	C2
Hibiscus kokio ssp. *kokio*†	koki'o 'ula'ula	G2T2	C2
Lagenifera maviensis	howai-a-ulu	G2	-
Melicope orbicularis	alani	G1	3C
Myrsine vaccinioides	kolea	G1	C2
Neraudia melastomifolia^†	ma'aloa, ma'oloa, 'oloa	G2	3C
*Nothocestrum latifolium**^†	'aiea	G1	3C
*Phyllostegia bracteata**	-	G1	C2
*Phyllostegia stachyoides**†	-	G1	-
Platanthera holochila	-	G1	C1
Ranunculus mauiensis^†	makou	G2	C2
Santalum freycinetianum var. *lanaiense*†	'iliahi, sandalwood	G3T2	LE
Sicyos cucumerinus†	'anunu, kupala	G1	C2

Number of rare plants in Kapunakea 24
^ = Not known from West Maui NAR 8
† = Not known from Puu Kukui Watershed Management Area 13
* = Known from preserve historically (pre-1975) 3

(a) Heritage Rank:
- G1 = Species critically imperilled globally (typically 1 - 5 current viable occurrences).
- G2 = Species imperilled globally (typically 6 - 20 current viable occurrences).
- G3 = Species has restricted range (typically 21 - 100 current viable occurences).

GH – Species possibly extinct.
Q – Questionable taxonomic assignment.
T1 – Subspecies or variety critically imperilled globally.
T2 – Subspecies or variety imperilled globally.
TH – Subspecies or variety possibly extinct.

(b) Federal Status:
LE – Taxa formally listed as endangered.
C1 – Taxa for which the USFWS has on file enough substantial information on biological vulnerability and threats to support proposals to list them as endangered or threatened species.
C2 – Taxa for which information now in the possession of the USFWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which sufficient data on biological vulnerability and threats are not currently available to support proposed rules.
3A – Taxa for which the USFWS has persuasive evidence of extinction.
3C – Taxa that are no longer being considered for listing as endangered or threatened.
- – No federal status

NOTE: Several taxa, including *Cyanea lobata* and *Diellia erecta*, were recently removed from the Kapunakea rare plant list. These plants have been recorded from the region that encompasses Kapunakea Preserve; however, available information does not indicate that they were seen within the boundaries of the present-day preserve.

APPENDIX 3
RARE NATIVE LAND SNAILS OF KAPUNAKEA PRESERVE

SCIENTIFIC NAME	HERITAGE RANK (a)	FEDERAL STATUS (b)
Partulina croceat	G?	-
Partulina perdix	G1	-
Partulina tappaniana	G1	-
Perdicella kuhnsi	-	C2

† = Not known from Puu Kukui Watershed Management Area.

(a) Heritage Rank:
- G1 = Species critically imperilled globally (typically 1 to 5 current viable occurrences).
- G? = Insufficient data available to assign definite rank.
- - = HINHP does not yet rank this taxon.

(b) Federal Status:
- C2 = Taxa for which information now in the possession of the USFWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which sufficient data on biological vulnerability and threats are not currently available to support proposed rules.
- - = No federal status.

APPENDIX 4

CULTURAL RESOURCES BACKGROUND, KAPUNAKEA PRESERVE (PREPARED BY THERESA DONHAM, STAFF ARCHAEOLOGIST, STATE HISTORIC PRESERVATION DIVISION)

CULTURAL RESOURCES BACKGROUND - KAPUNAKEA PRESERVE

The Kapunakea Preserve encompasses portions of three traditional Hawaiian *ahupua'a* - Honokawai, Hanakao'o, and Kapunakea. The northern half of the preserve, including Honokawai Valley, and Kapaloa Valley are in Honokawai. The southern ridge area is within Hanakao'o, and a small portion at the southwestern edge of the preserve is within Kapunakea.

Honokawai and Hanakao'o are large *ahupua'a* which extend from Pu'u Kukui to the shoreline. At the coast, Hanakao'o includes the land from Keka'a Point (Black Rock) to Hanakao'o Beach Park, near the present site of the Lahaina Civic Center. Honokawai extends north from Keka'a Point to the northern edge of Honokawai Beach Park. Kapunakea is a *lele*, or disconinuous land division, which delineates a small drainage system between c. 1200 and 2200 feet elevation, and a coastal area immediately inland of Hala Landing.

The *ahupua'a* boundary between Honokawai and Hanakao'o follows the boundary between the traditional districts of Ka'anapali and Lahaina. The District of Ka'anapali, which is now encompassed by the Lahaina District, included all of northern West Maui from Honokawai to Honokohau. Within the Ka'anapali District are the five Hono (bays) o Piilani - Honokawai, Honokeana, Honokahua, Honolua, and Honokohau. The valleys associated with these streams were all intensively used for irrigated taro farming, and the District supported a relatively large population.

Evidence of precontact and early historic period taro *lo'i* have been documented for the Honokawai Valley, between 800 and 1000 ft elevation. Four complexes, consisting of numerous adjoining agricultural terraces, water channels, diversion dams, and habitation features were recorded as part of an inventory survey for a water line project (*Archaeological Surface Survey, Honokawai Gulch, Ka'anapali, Maui*, B.D. Davis, 1977). Agricultural features were found to occur on both sides of the stream, and continued upstream beyond the limits of the area that was examined during Davis' survey. Additional remnants of an irrigated *lo'i* system have been identified further downstream in Honokawai Valley. No surveys have been conducted to date upstream from Davis' 1977 survey area.

Traditional land use patterns are often reflected in the early to middle nineteenth century Land Commission Award documents. The location of many *kuleana* claims followed pre-established patterns of land cultivation, and were often concentrated along the arable sections of the perennial stream bottoms. For Honokawai Valley, there is a continuous pattern of relatively small Land Commission Awards (L.C.A.) along the stream, from the Ocean to the boundary of the West Maui Forest Reserve.

Within the Forest Reserve (and within the Kapunakea Preserve), there are a few small L.C.A. along Honokawai Stream, and some larger awards which encompass ridgelines. The larger awards were portions of *ali'i* lands.

The following L.C.A. occur within or adjacent to the area of the Kapunakea Preserve:

L.C.A. 11216: 28 to M. Kekau'onohi; included all of Mo'omuku Ahupua'a, excluding smaller L.C.A.; north side of Honokawai Stream, adjacent to the preserve

CORRECTION

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

CULTURAL RESOURCES BACKGROUND - KAPUNAKEA PRESERVE

The Kapunakea Preserve encompasses portions of three traditional Hawaiian *ahupua'a* - Honokawai, Hanakao'o, and Kapunakea. The northern half of the preserve, including Honokawai Valley, and Kapaloa Valley are in Honokawai. The southern ridge area is within Hanakao'o, and a small portion at the southwestern edge of the preserve is within Kapunakea.

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Evidence of precontact and early historic period taro *lo'i* have been documented for the Honokawai Valley, between 800 and 1000 ft elevation. Four complexes, consisting of numerous adjoining agricultural terraces, water channels, diversion dams, and habitation features were recorded as part of an inventory survey for a water line project (*Archaeological Surface Survey, Honokawai Gulch, Ka'anapali, Maui*, B.D. Davis, 1977). Agricultural features were found to occur on both sides of the stream, and continued upstream beyond the limits of the area that was examined during Davis' survey. Additional remnants of an irrigated *lo'i* system have been identified further downstream in Honokawai Valley. No surveys have been conducted to date upstream from Davis' 1977 survey area.

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Within the Forest Reserve (and within the Kapunakea Preserve), there are a few small L.C.A. along Honokawai Stream, and some larger awards which encompass ridgelines. The larger awards were portions of *ali'i* lands.

The following L.C.A. occur within or adjacent to the area of the Kapunakea Preserve:

L.C.A. 11216: 28 to M. Kekau'onohi; included all of Mo'omuku Ahupua'a, excluding smaller L.C.A.; north side of Honokawai Stream, adjacent to the preserve

L.C.A. 76: 1, 5 to Wm. Shaw; L.C.A. 76 included ten parcels for a total of 689 acres. The two *'apana* within the Preserve are at Haenanui, the minor gulch system south of Honokawai Stream (76:1); and along the south slope of Honokawai Valley.

L.C.A. 7715: 3 to Lot Kamehameha; this is one *'apana* of the Hanakao'o *ahupua'a* award, which consisted of 3853 acres.

L.C.A. 11216 to M. Kekau'onohi; included most of Kapunakea, comprising 35 acres; approximately half of this award is within the preserve

L.C.A. 3765: 2 to Aio; one of three *'apana*, less than one acre, located along south side of Honokawai Stream, in the valley bottom

L.C.A. 3925-E to Kaneali'i; one of four *'apana*, less than one acre, located along the south side of Honokawai Stream, in the valley bottom, adjacent to L.C.A. 3765: 2.

Among the six L.C.A. parcels that are within the Kapunakea Preserve, four are portions of large land awards to *ali'i* and a prominent *haole*, that were completed as part of the *Mahele*, or division of lands between the King (Kamehameha), the chiefs, and the government.

In addition to other *ahupua'a* in Lahaina, M. Kekau'onohi received most of the two small land divisions - Mo'omuku and Kapunakea - that occur to the north and south of Honokawai. Kekau'onohi, a *kapu ali'i*, was the daughter of Kaho'anoku Kina'u, a son of Kamehameha I and Peleuli. Kekau'onohi became the wife of Liholiho, and was appointed Governor of Kauai. She was originally selected by vote to be Governor of Maui, but her appointment was challenged by William Richards, who convinced the chiefs that John Young should be governor of Maui instead (Kamakau 1992).

Lot (Kapuaiwa) Kamehameha (V), who received the *ahupua'a* of Hanakao'o, was the son of Kamehameha I and Kaheiheimaile Hoapili, a very high ranking *ali'i*.

William Shaw was a *haole* from Dublin, Ireland, who arrived in Lahaina circa 1807. Shaw's daughters inherited *ali'i* rank from their mother, and became *hanai* daughters to Kauaiwa Kamehameha, who gave them lands in Lahaina. Shaw was given lands in Honokawai (at Haenanui and Loi'inui) and Waikapu by Kamehameha I. Both William Shaw and his son Patrick served as governor of Moloka'i under Kamehameha III.

The two small *kuleana* claims (L.C.A. 3765 and 3925) are of the size and location which generally fit the pattern of agricultural lands claimed by the *maka'ainana*, or commoners. The presence of these awards within the preserve indicates a probability that irrigated taro cultivation was occurring at elevations at least as high as c. 1200-1250 ft elevation within the valley bottom. The recorded testimony which accompanies these two claims may contain important information regarding the uses of these two *kuleana* in the nineteenth century. In addition, a field survey of the valley in the area of the two claims would be most

informative.

The sugar industry became established in the Lahaina District in 1849, with the opening of the Parsons Sugar Mill. During the next three decades, a number of small sugar companies were started in the District. These companies were eventually consolidated through purchase by Pioneer Mill. By the turn of the century, Pioneer Mill controlled 12,500 acres of land in Lahaina, Launiopoko, Wahikuli, and Ka'anapali.

The historic trail which follows along the south side of Honokawai Gulch within the Kapunakea Preserve was constructed by Pioneer Mill in order to access the water resources of Honokawai Stream. This trail, which dates to the early twentieth century, is an excellent example of a non-vehicular industrial transportation route. It presently does not contain any modern construction materials.

The Honokawai Tunnel, constructed by Pioneer Mill, extended across portions of the Kapunakea Preserve, between the Honokawai Stream intake and the Horner Reservoir.

The tax map of the Kapunakea Preserve area (4-4-07) shows an historic trail extending down the slopes of Pu'u Kukui and into Hanakao'o. The trail splits near the Honokao'o/Honokawai boundary and takes two routes toward the Ocean. The origin and purpose of this trail is presently unknown.

In summary, additional historical background research and archaeological field inventory work would provide significant information regarding the following areas and topics:

1. Traditional uses of upland forests and natural resources, access routes to the resources within the Preserve area, and through the Preserve area
2. Traditional agriculture in the Honokawai Stream bottom, particularly the area of the known *kuleana* land claims within the Preserve area
3. The Honokawai trail, intake, tunnel, and other historic industrial sites that might be present within the Preserve
4. The historic trail to Pu'u Kukui (origin and purpose)

(Prepared by Theresa K. Donham, SHPD, 12/15/94)

APPENDIX 5
IMPORTANT WEEDS OF KAPUNAKEA PRESERVE

COMMON NAME	SCIENTIFIC NAME
Priority weeds	
Strawberry guava	*Psidium cattleianum*
Tibouchina	*Tibouchina herbacea*
Blackberry	*Rubus argutus*
Hilo grass	*Paspalum conjugatum*
Molasses grass	*Melinis minutiflora*
Broomsedge	*Andropogon virginicus*
Silk oak	*Grevillea robusta*
Clidemia (Koster's Curse)*	*Clidemia hirta*
Other important weed species	
Christmas berry	*Schinus terebinthifolius*
Guava	*Psidium guajava*
Pamakani	*Ageratina adenophora*
Lantana	*Lantana camara*
Butterfly bush	*Buddleia asiatica*
Klu	*Acacia farnesiana*
White ginger	*Hedychium coronarium*

* = Potential threat – known from areas near the preserve.

APPENDIX 6
RESPONSES TO COMMENTS ON THE KAPUNAKEA PRESERVE DRAFT ENVIRONMENTAL ASSESSMENT

MAR 29 1995

University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

March 24, 1995
EA:00111

Ms. Betsy Gagne
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Ms. Gagne:

Draft Environmental Assessment (EA)
Kapunakea Preserve Natural Area Partnership
Lahaina, Maui

A perpetual conservation easement over 1,264 acres known as the Kapunakea Preserve on the island of Maui has been granted to The Nature Conservancy by Pioneer Mill Company, Ltd. Kapunakea Preserve is adjacent to two other natural areas which have been managed actively: Puu Kukui and Honokowai (comprising 13,000 acres of contiguous watershed). The goal of this project is to maintain the native ecosystem of rare plant's and animals in this area.

We have reviewed this Draft EA with the assistance of Sheila Conant, Zoology; Clifford Smith, Botany; and Malia Akutagawa of the Environmental Center.

The document is a well-balanced presentation of the significant problems (introduced weed species, rodents, and ungulates) threatening the viability of the preserve's native habitats and the various strategies developed to eliminate these problems. The impacts are presented in detail without any special pleading and it is obvious that the benefits will far outweigh any detrimental effects.

The following are minor comments and suggestions from our reviewers:

<u>Native Birds</u>

It is stated that four native birds were found in Kapunakea. (p. 6) There is no reference as to possible surveys conducted.

The iiwi is particularly rare. It would be interesting to see some documentation or field notes on the iiwi and other native bird species.

Pig Control

On page 13, the rationale for controlling pig populations is to prevent "extinction of plant or invertebrate populations, loss of soil via erosion, and dispersal of habitat-modifying weeds." It should also be noted in the Draft EA that pig control will also aid in the reduction of mosquito breeding sites. This is important, since mosquitos are vectors of *avian malaria*.

Captive Breeding and Seed Propogation Programs

Has The Nature Conservancy also considered the possibility of captive breeding and seed propogation programs of native rare and endangered plant and bird species? Efforts to breed and raise captive alala (the Hawaiian crow) and releasing juveniles in the wild after they have been vaccinated against avian malaria have proven successful for this critically endangered species. The Nature Conservancy may find that a similar program could be implemented for native birds found in Kapunakea.

The Nature Conservancy may also consider clearing small areas infested with introduced weeds and replacing them with cultivated native plants. In this way, new native habitat will be created piece-by-piece.

Conclusion

Overall the Draft EA is a well-prepared document that clearly explains the need and purpose of the program. This program will serve a major conservation effort on West Maui, enabling the integration of management activities in the associated natural area reserves and Pu'u Kukui Watershed. We encourage the endorsement of this proposal.

Thank you for the opportunity to review this Draft EA.

Sincerely,

John T. Harrison
Environmental Coordinator

cc: OEQC
Roger Fujioka
Wendy Fulks
Sheila Conant
Clifford Smith
Malia Akutagawa

The Nature Conservancy of Hawaii

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April 27, 1995

Mr. John T. Harrison, Environmental Coordinator
Environmental Center
University of Hawai`i at Manoa
Crawford 317
2580 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Harrison:

Thank you for reviewing and commenting upon the *Draft Kapunakea Environmental Assessment.* You raised several important points in your letter; these are discussed below.

Native Birds

The Nature Conservancy conducts annual forest bird surveys at Kapunakea Preserve. This is part of our resource monitoring program (briefly described on pages 17-18 of the Final Environmental Assessment). Three `i`iwi were detected during the 1994 survey. While this species is extremely uncommon on West Maui, `i`iwi are still fairly common on the Big Island and East Maui. As a result, the taxon has no federal status and is not considered rare by the Hawaii Natural Heritage Program. Even so, it is our hope that current efforts to improve the habitat at Kapunakea will help promote the recovery of `i`iwi on West Maui.

Pig Control

We have inserted text on page 13 of the Final Environmental Assessment noting that pig control should reduce the number of mosquito breeding sites, thereby benefiting native forest birds.

Captive Breeding and Seed Propagation Programs

In answer to your question about captive propagation of birds, the Conservancy is working with the state on a captive breeding project on East Maui, where the avian fauna is more intact. Specifically, we are cooperating with state forestry biologists conducting captive rearing tests with birds removed from the Conservancy's Waikamoi Preserve. We hope these efforts will produce important results that will be applicable to forest bird management in other natural areas, including those on West Maui. To date, researchers have not expressed much interest in working

on native forest birds in Kapunakea. The Conservancy would try to accommodate such research, if proposed by an appropriate agency.

We agree that for many rare plant species, *ex situ* propagation is needed to provide stock for outplanting, and as a hedge against extinction. The Conservancy has cooperated with the National Tropical Botanical Garden on several projects involving the collection and propagation of seeds from rare plants at other preserves. At Kapunakea, we intend to work with Lyon Arboretum or another organization to bring two of the preserve's rarest plants into cultivation: *Colubrina oppositifolia*, and *Alectryon macroccocus* var. *macroccocus*. Only one *C. oppositifolia* and only eight A. *macroccocus* var. *macroccocus* are currently known from West Maui, and neither taxon is reproducing successfully. For the most part, however, rare plant management efforts at Kapunakea are just getting underway. As appropriate, and as opportunities arise, we will work with partners to further the recovery of rare and endangered plants at Kapunakea Preserve through *ex situ* propagation.

Habitat restoration is another important management tool referred to in your letter. In several areas, notably Moomomi Preserve on Molokai, and Kanepuu Preserve on Lanai, the Conservancy is engaged in small-scale restoration projects. Fortunately, at Kapunakea Preserve, most of the habitat remains fairly intact, especially at upper elevations. In disturbed areas, and where aggressive non-native plants have invaded, we are encouraging the growth of native plants through selective pest plant removal.

Once again, thank you for your interest in this project; please feel free to contact me should you like to discuss any of these issues further.

Sincerely,

Mark White
Director of Maui Programs

cc
Alan Holt
Amy Lester
Peter Schuyler