

JOHN WAIHEE
GOVERNOR OF HAWAII



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190
KEITH W. AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DOFAW
QUALITY CONTROL

P.O. BOX 621
HONOLULU, HAWAII 96809

February 16, 1994

DEPUTIES
JOHN P. KEPPELER, II
DONAL HANAIKE
AQUACULTURE DEVELOPMENT
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RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE HISTORIC PRESERVATION
STATE PARKS
WATER AND LAND DEVELOPMENT

In reply, please refer to:
REF: DOFAW

Mr. Lesley Segundo
Office of Environmental Quality Control
Central Pacific Plaza
220 South King Street
Fourth Floor
Honolulu, Hawaii 96813

Subject: Emergency Watershed Protection Project Coordinator -
"Roadside Fuel Hazard Reduction" - Island of Kauai

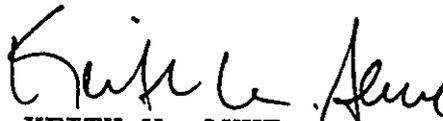
Dear Mr. Segundo:

The Division of Forestry and Wildlife (DOFAW) filed a draft Environmental Assessment with your office in May of 1993 for the above mentioned federal grant project. Subsequently, we received notification from the Office of State Planning that federal grant programs were no longer required to follow the State Clearinghouse Review Procedures in September of 1993.

Mr. John Bedish, DOFAW Coordinator for that project was notified by telephone by Mr. Charles Carole of the Office of State Planning that the project no longer fell under the auspices of your office. However, DOFAW elected to revise and re-publish the draft Environmental Assessment after the initial May 1993 public notice to gain further input into the project, which was done in December of 1993. Comments were responded to and a "Finding of Negative Declaration" was published on February 6, 1994.

Please find enclosed copies of the revised Environmental Assessment and the Negative Declaration notice as you requested, so that you may close out your files on this project.

Sincerely,


KEITH W. AHUE

Enclosures

1994-03-08-KA-FEA-Kauai Roadside Fuel Hazard
Reduction

Environmental Assessment
for Roadside Fuel Hazard Reduction,
Emergency Watershed Protection Project, Kauai

- I. Proposing Agency: Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), Kauai District.
- II. Approving Agency: Department of Land and Natural Resources, Division of Forestry and Wildlife.

III. Agencies Consulted or Informed:

- ✓ USDA Forest Service
- ✓ USDA Soil Conservation Service
- ✓ USDI Fish & Wildlife Service
- ✓ Kauai RC&D Forestry Committee
- ✓ Kauai Civil Defense
- ✓ Kauai Fire Department
- ✓ Kokee Natural History Museum
- ✓ Sierra Club Legal Defense Fund, Inc.
- ✓ State Civil Defense
- ✓ Division of State Parks
- ✓ Division of Historic Preservation
- ✓ National Tropical Botanical Garden
- ✓ Garden Island RC&D
- ✓ West Kauai Soil & Water Conservation District

IV. Summary of Proposed Action:

A. Project Summary: The potential for dangerous wildfire in the forested watersheds of Western Kauai is very high due to a combination of factors. First, there is a great quantity of litter/woody fuel on the ground, largely generated as a byproduct of Hurricane Iniki. Second, there has been a long period of dry weather, and there is concern that the dry trend may continue. Third, there is a great deal of public activity in the area, which contributes to possible ignition sources. Recent illegal camping, campfires, and several wildfires - at least one intentionally set - reinforce the threat and need for concern.

Access to the area is limited, consisting primarily of ridge top roads. Only two roads traverse from ridge to ridge - the main highway, Highway 550, and the "Contour Road", an unpaved forest reserve road, which parallels 550 downslope for some 7 miles. Within the forest areas that abut the ridge and contour roads, there is a great quantity of tree litter and debris. Fuel, then, is readily available adjacent to the roads, where it has the highest potential for ignition by users. The tree canopy often overtops the roads, affording a continuity of fuel from one side of the road to the other.

These conditions greatly compromise DOFAW's ability to react to and control wildfires. Without fuel breaks, fires can gain momentum, and destroy more acreage.

The hazards associated with fire immediately adjacent to or over the limited road network create hazardous conditions for fire suppression activities.

The proposed project is to selectively remove fuel along those forest roads that most logically partition the threatened area. This will distance fuels from possible ignition sources, interrupt the continuity of the fuels, and provide improved and safer access possibilities in the event of a wildfire.

The need for the project was identified in the "Kauai Wildfire Mitigation Plan", dated January 1993, prepared by the Division of Forestry and Wildlife, with assistance from the USDA Forest Service and input from the State Fire Council, State Civil Defense, Kauai Civil Defense, and Kauai Fire Department.

The project will be accomplished utilizing a grant from the U.S.D.A. Soil Conservation Service with matching funds from the State of Hawaii.

B. Project Location: This project is located within the Puu Ka Pele Forest Reserve, and portions of Kokee and Waimea Canyon State Parks and Kekaha Game Management Area; TMK: 1-2-01: por. parc. 3, 6, & 7, TMK: 1-4-01, por. parc. 2, 13, & 14, Waimea, Kauai.

The project will be along unimproved roads west of the Kokee Road (Highway 550). The clearing work will start approximately one-half (1/2) mile west of the Highway.

1. Base Proposal: The Base Proposal is to clear along the Contour Road, which is about 3/4 to 1 mile west of Highway 550 and runs parallel with the highway. If a fire were to start in the lower ridges, this would be the main access route and line of defense for DOFAW to attempt to prevent any fire from reaching Highway 550, Kokee and Waimea Canyon State Parks, leased cabin sites, and other improvements.

PROJECT LOCATION	TOTAL CLEARING		PARTIAL CLEARING	
	Estimated Miles	Estimated Acres	Estimated Miles	Estimated Acres
Contour Road (Papaalai to Kauhao - Project Length: 7.3 miles)				
Papaalai to Haelele Ridge	2.5	61	1.0	24
Haelele to Polihale	0.5	12	1.0	24
Polihale to Kaaweiki	0.3	7	1.2	29
Kaaweiki to Kauhao	0.0	0	0.8	19
TOTAL:	3.3	80	4.0	96

2. Additive alternatives: These are ridge roads, that are proposed

as supplemental phases, that will give DOFAW the ability to attempt to compartmentalize any fires on the western ridges. Alternates 4 and 5 as well as portions of Alternates 1 and 3 (as shown on the enclosed project map), that were proposed in the original project, have been eliminated because of environmental considerations and funds available. Following are the three (3) alternatives that will be accomplished.

PROJECT LOCATION	TOTAL CLEARING		PARTIAL CLEARING	
	Estimated		Estimated	
Alternate	Miles	Acres	Miles	Acres
1. Haeleele Ridge Road	4.0	97	2.75	66
2. Kauhao Ridge Road (Both side of the road)			2.4	58
(one side of the road)	1.3	15	1.3	15
3. Papaalai Ridge Road	2.5	60	1.0	24
TOTAL:	7.8	172	7.45	163

C. Proposed Treatment: Removal of fuel and creation of firebreaks by clearing vegetation along selected forest access roads.

Nature of clearing:

1. **"Total Clearing"** In areas where introduced tree species predominate, treatment will consist of the complete removal of trees and other vegetation, to include tree stumps.
2. **"Partial Clearing"** In areas without introduced tree species, and where native trees and plants predominate, treatment will consist of removing only dead and downed trees and their associated stumps. Standing live native trees and other live native vegetation will not be removed.
3. **"Limited Partial Clearing"** Areas within 100' of known Candidate 2 native species, treatment will consist of the removal of dead and downed trees immediately adjacent to the roadway, only when such action will not disturb the Candidate 2 plants. No equipment, such as skidders or bulldozers will be permitted to enter these areas. Areas are marked on the ground with pink flagging, and accounts for approximately 50% of areas designated for "Partial Clearing".

Width of treatment - Clearing may extend to 100' on either side of the road on slopes of less than 60%, and to 60' on either side of the road where slopes exceed 60%.

On cut banks where soil stability is a concern, stumps will be left to stabilize the soil.

Disposal of Debris - All removed trees will be ground or chipped. Chips will be used as a mulch to reduce soil erosion by distributing the chips over the cleared areas to a depth not to exceed 8" (depths exceeding 8" increase the potential for spontaneous combustion). Excess chips must be removed and disposed of by the Contractor. As the chips decompose, ground cover will be re-established in most of the areas.

Salvage - All dead and downed native tree species (such as koa, kauila, etc.), removed from the project areas remain the property of the State and will be decked by the Contractor. The salvaged material will be sold by public auction at a later date.

V. Summary of Environmental Effects:

The project area is located on the Southwestern side of the Island of Kauai. The project sites range from 1,000 feet to 3,500 feet above sea level with rainfall averaging from 30 to 50 inches per year.

A. Soils: The soils are within the Makaweli-Waiawa-Niu association; characterized by deep, gently sloping to steep, well-drained soils that have a dominantly moderately fine textured or fine textured subsoil and shallow, steep and very steep, well-drained soils over basalt bedrock on uplands. Also included is the Rough broken land-Mahana-Kokee association; characterized by shallow to deep, very steep, rough broken land and deep, moderately sloping to very steep, well-drained soils that have a medium-textured to fine-textured subsoil on uplands.

B. Botanical: Much of the project area was previously cleared after Hurricane Iwa to remove dead and down material for fuel hazard reduction. Vegetation throughout the project area consists primarily of large planted stands of Eucalyptus robusta, Eucalyptus saligna, other smaller stands of various Eucalyptus spp., and Slash and Loblolly pines, with understories of lantana, blackberry, molasses and kikuyu grass and native species such as uki, pukiawe, aalii, and ukiuki. There are also pockets of native species in the higher elevations consisting primarily of koa, ohia, kauila, iliahi, etc. with an understory of native and non-native species.

A survey conducted by staff of the National Tropical Botanical Garden during the period from July 12 to September 15, 1993, located plants listed by the U.S. Fish and Wildlife Service as Candidate 2. There were no listed endangered species found within the project area.

(See attached Botanic Survey Report for list of plants).

C. Archaeology: Archival research indicates that these ridges were once forest exploitation areas (for feathers, canoe logs, etc.), and temporary camp-sites and access trails are expected to be the primary sites found. A survey by Historic

Preservation Division staff of most project areas (certain ridge tops have not been surveyed yet) found that extensive alteration of the ridge lines has occurred in this century for forest planting and other activities, making it highly unlikely that significant historic sites remain. If significant sites are found, then all significant historic sites shall be preserved. All areas where significant historic sites are found shall have debris carefully removed from the area, without vehicles or heavy equipment being on or near the sites, and long-term protection measures shall be established in consultation with the State Historic Preservation Division.

To cover the possibility of significant historic sites being found during construction, DOFAW staff will supervise clearing work; In addition, a qualified archaeologist shall brief the construction crew on the likely appearance of such sites. Known sites will be flagged prior to starting work and pointed out to the Contractor. This way, if sites are found, the construction crew shall stop work on the immediate vicinity of such sites. A qualified archaeologist will then be hired to document such sites, to propose significance evaluations, and to propose mitigation measures. Normal compliance steps will be followed for the treatment of any such sites found.

Three sites will not be disturbed because of the possibility of significant historic sites being located. The locations are:

1. Haelele Ridge Road - The project will stop at the top of Kepapa Ridge. Possible historic sites may occur at the bottom of the valley, at the vicinity of Kepapa Springs.
2. Kauhao Ridge Road - An area covered with Ti plants, which could be a possible site near the fork in the road, approximately 2.5 miles from the start of the project.
3. Papaalai Road - An area exists at the beginning of this proposed alternative, which may contain a site.

VI. Assessment and Alternatives:

The project will create fuel breaks and improve access which will reduce the likelihood and associated hazards of a major wildfire in the area. A large wildfire has the potential to destroy thousands of acres of forests, as well as facilities and improvements such as state parks, military facilities, and leaseholds. Damage to the surrounding forests could create a severe erosion and flooding problem. If a fire should occur, the clearings would give fire fighters the opportunity to contain the fire quickly and prevent the fire from spreading over a larger area.

Options considered in the "Kauai Wildfire Mitigation Plan" include: 1) utilization, 2) piling and burning, 3) air curtain burning, 4) yarding and decking, 5) chipping and spreading, 6) no action, and 7) a combination of the above.

Following are explanations of the options from the "Kauai Wildfire Mitigation Plan". Costs are based on similar work in California and discussion with local equipment operators on Kauai by the assessment team.

1. **Utilization** - This would be the best option if there is a demand. However, with all the downed wood in the urban and rural areas, people most likely will not be searching it out in other areas. Costs for this option would be administrative only to issue permits, sign areas and provide enforcement. The assessment team checked with the Lihue Plantation Power Generating Plant. They were not interested in any chip material as it is not compatible with their burners.
2. **Piling and burning** - This option is effective for hazard reduction. However, there is always the risk of escaped fires with any burning, even with all precautions taken. Kauai's suppression resources are limited in the event of a fire escape. Burning also would impact air quality. Depending on fuel load, costs for hand piling are approximately \$600/acre and \$150/acre for machine piling. Burning is approximately \$125/acre.
3. **Air curtain Burning** - This option involves moving material with equipment to a central site along a road and feeding it into an Air Curtain Burner. This is a trench-burning process which utilizes forced air to make combustion more efficient. Escape potential and smoke emissions are greatly reduced with this option. Costs are estimated at \$400/acre and require centralization and trenching.
4. **Yarding and Decking** - This option requires removing material from the forest and decking (organized stacking) it. Decks would be left for utilization or chipping if there is a market. This option is risky because without a known market for the material, it may remain as a fire hazard and an eyesore. Costs for this are approximately \$200/acre depending on the amount of material.
5. **Chipping and Spreading** - Chipping or grinding could be done by hand feeding a small chipper which would accommodate material 6-8 inches in diameter or less. This type of a chipper could be towed behind a truck and moved along a roadside as chipping is done. A large chipper or grinder, capable of chipping debris 30 inches in diameter or less, could also be used. Large material would be skidded to a central location to be fed into the chipper. Chips could be marketed if possible or

spread back onto the land. Chipped material should not exceed 8 inches to avoid spontaneous combustion. There are several pieces of equipment on the island of Kauai capable of performing this work. Costs would be approximately \$200/acre to yard the material, depending on volume. Grinding or chipping machines are currently \$400/hour with a 150 yd./hour chip capacity, according to local operators.

6. **No action** - Under this option, no action would be taken. The risk of fire associated with this option may be very little in remote locations with rainy climates. Risk of fire may be increased however, in areas of high use, heavy fuels and dry climate. There would be no costs for fuel treatment, but costs for fire suppression will rise as will environmental impacts as acres are burned and fuel consumed increases.

Considerations 1-5 involve clearing, with variations on the disposal of cleared materials. Should DOFAW take the "No Action" option, it may not be able to properly respond to or manage a large wildfire. The resource damage would be considerable, and could impact both natural and man-made features.

After considering the risks and values involved, funds available, and market demand for the available wood, DOFAW has decided to accomplish the project by clearing and chipping or grinding and spreading the debris. Salvage would involve decking and selling the native wood species with minimum log sizes of 8 inches in diameter by 4 feet in length.

VII. Proposed Mitigation:

- A. Work will be closely supervised by DOFAW staff to ensure quick resolution of any issues that arise.
- B. DOFAW has consulted on-site with the USDI Fish & Wildlife Service regarding plant concerns and proposed actions. DOFAW staff will mark known pockets of native plants for protection, even if these occur in areas where introduced trees predominate. Only dead and down trees and branches will be removed immediately adjacent to the roadway. Equipment will not be allowed in areas with candidate species populations.
- C. There are areas within the project area that contain Candidate 2 plants that are, because of their location, not likely to survive, regardless of any clearing action. Examples would be Chamaesyce atrococca that have germinated at the base of cut banks, where overhanging soil and debris threatens to cover them. In these areas, DOFAW will attempt to re-locate these to protected sites nearby.

- D. Weed Control - To prevent the further spread of weeds in the project area, mowing and mechanical control will be employed in the cleared areas, when the weeds start to grow back, where the slopes permit. In an attempt to minimize disturbance, no clearing activity will take place amongst or adjacent to Endangered or Candidate 2 plants.

For long term control of alien weeds, DOFAW will be utilizing a grant from the U.S. Forest Service for hurricane recovery to conduct research on biological control of alien weeds and to produce known biological agents for release on Kauai.

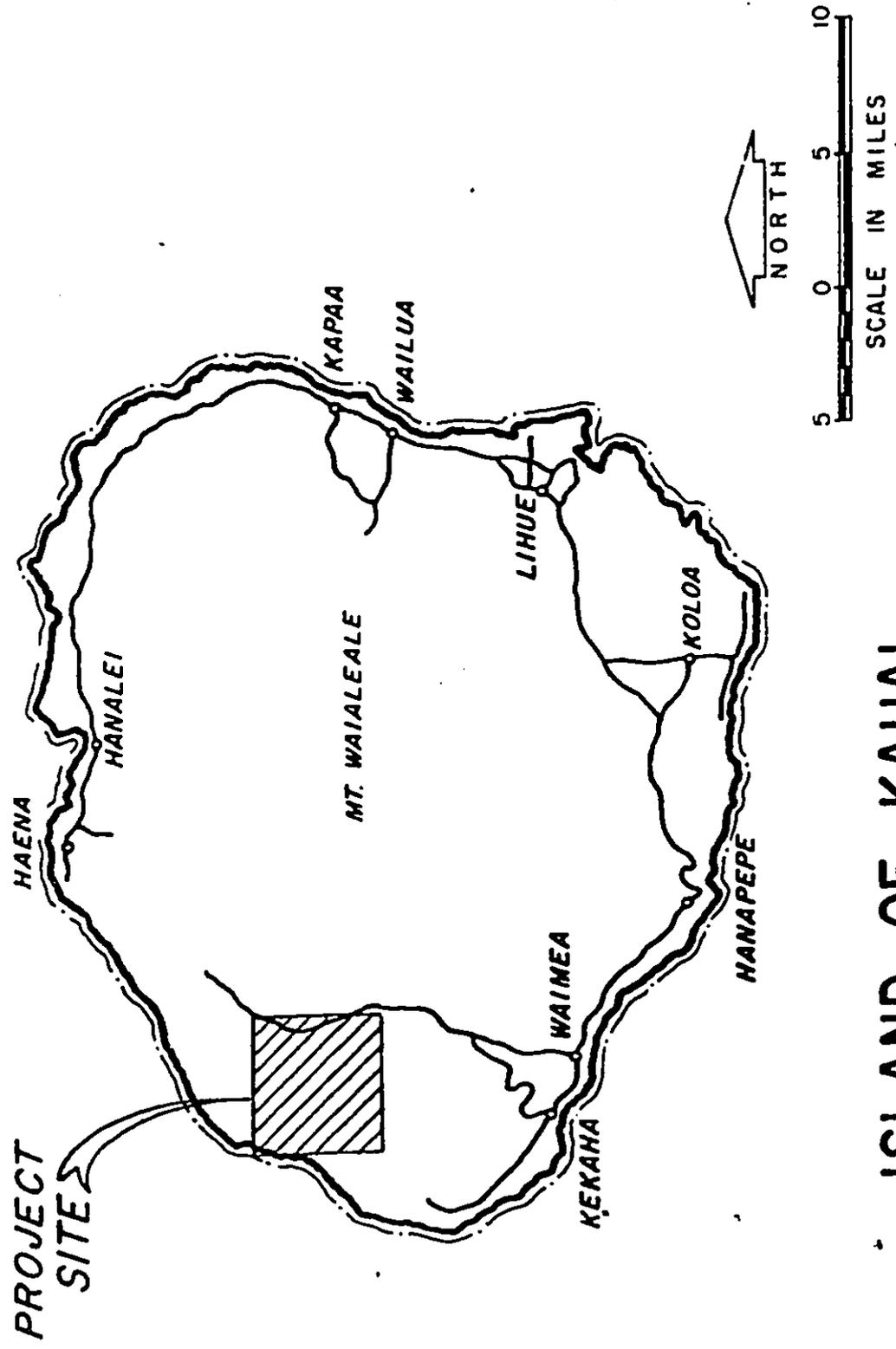
- E. To cover the possibility of buried temporary campsites found during construction, a qualified archaeologist will brief the construction crew on the likely appearance of such sites. This way if such sites are found, the construction crew shall stop work in the immediate vicinity of such sites. A qualified archaeologist will then be hired to document such sites, to propose significance evaluations, and to propose mitigation measures. Normal compliance steps will be followed for the treatment of any such sites found.

VIII. Determination:

That a Negative Declaration is appropriate for this project.

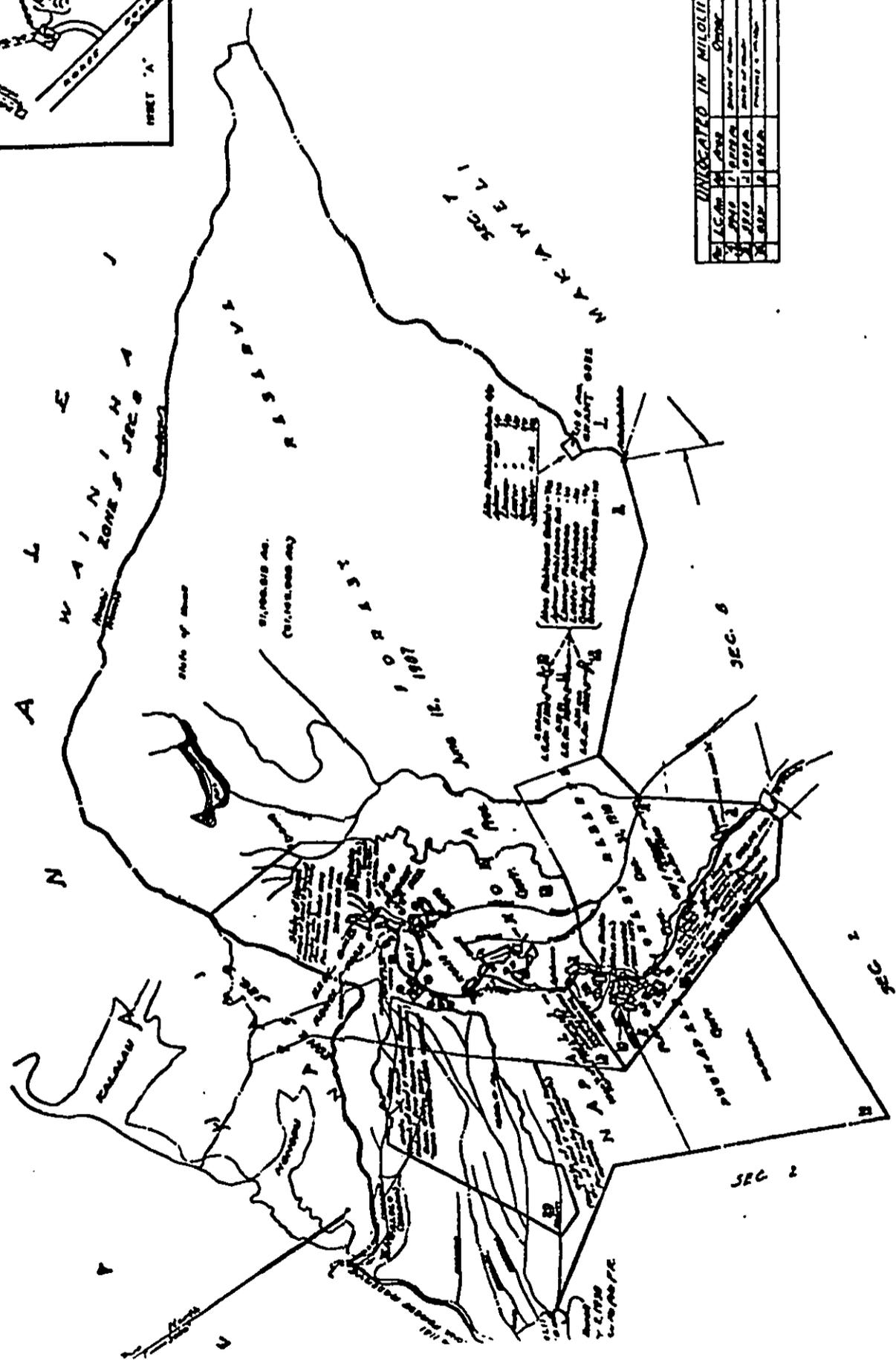
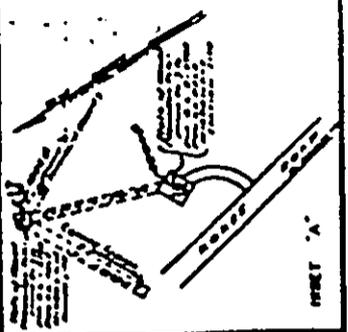
IX. Determination Support:

The reasons for support of a Negative Declaration are stated in the above.



ISLAND OF KAUAI

1 4 01



UNDEVELOPED IN 1907	
SEC. 1	100%
SEC. 2	100%
SEC. 3	100%
SEC. 4	100%
SEC. 5	100%
SEC. 6	100%

From Original Survey

TAXATION MAPS OF THE	
TERRITORY OF HAWAII	
TAX MAP	
FOURTH	DIVISION
DATE	SEC. PLAT.
1	4
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Be sure of the accuracy of the map by comparing it with the original survey records.

SUBJECT TO CHANGE

KONA FOREST RESERVE, WAIMEA, KAUAI

Attachment 1.

Kokee Survey

Alternates 1 through 3, Polihale Ridge, Ka'aweiki Ridge

The Contour Road

July 12th - September 15th 1993

*Timothy Flynn, Melany H. Chapin
The National Tropical Botanical Garden
Lawai, Kauai, Hawaii*

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23 June 1993

Mr. Edwin Q. P. Petteys
Department of Land & Natural Resources
Division of Forestry & Wildlife
3060 Eiwa St., Room 306
Lihue, Hawaii 96766-1875

Dear Mr. Petteys,

After looking at the contract specifications and plans for the proposed debris clearance from forest areas of Kauai, we are submitting the following bid for a botanical survey of the sites.

Procedures:

1. Walk-through survey of designated areas with emphasis placed on locating all threatened and endangered, proposed threatened and endangered, and Category 1 and 2 plants (See attached list).
2. Said plants will be visibly flagged as will a line from the plant to the nearest roadside. Mileages from recognizable landmarks to each location will also be noted.
3. A report of the survey results will be distributed to Kauai District Forestry and Wildlife Administrator and other offices as requested.
4. This report will include a list of all plants seen on each section of the survey (i.e. Papaalai to Haelele Ridge, Haelele to Polihale, etc.) and the locations of each rare plant finding.

Work Schedule: July 15, 1993 to September 15, 1993

Names of Technical Personnel and Person-Days Required:

<i>Name</i>	<i>Title</i>	<i>Person-Days</i>
Tim Flynn	Botanist	12
Melany Chapin	Botanist	12

Proposed Cost:

24 days at \$400.00 per day = \$9,600.00

Timothy Flynn _____

Melany H. Chapin _____

1993-1994

Kokee Survey Field Days

July 1993

S	M	T	W	T	F	S
					1	2
4	5	6	7	8	9	10
11	12	13	14	15	16	17
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25	26	27	28	29	30	31

August 1993

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September 1993

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24	25	26	27	28	29	30
31						

November 1993

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December 1993

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19	20	21	22	23	24	25
26	27	28	29	30	31	

July

12 Review Area with Alvin-Drive Through.
 15 Alt 3 - Kahalu Ridge South Side
 20 Alt 3 - Kahalu Ridge, North Side
 22 Alt 3 - Papa'alai Ridge, North & South
 27 Alt 1 - Ha'ele'ele Ridge
 29 Alt 1 - Ha'ele'ele Ridge

August

3 Alt 1 - Kepapa Springs
 5 Alt 2 - Kauhao Ridge, with Tim Boess
 12 Alt 2 - Kauhao
 24 Contour Road - North End
 26 Contour Road, Central Road
 31 Contour Road, South End

September

2 Polihale Ridge
 7 Ka'aweiki Ridge

January 1994

S	M	T	W	T	F	S
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30	31					

February 1994

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March 1994

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April 1994

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May 1994

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29	30	31				

June 1994

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26	27	28	29	30		

Kokee Survey - Alternate No. 1
26th of July & 8th of August 1993
North & South Aspects of Ha'ele'ele Ridge, Including Kepapa Springs
 * Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia confusa</i>	(Formosa Koa)	Fabaceae
<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Acacia mearnsii</i>	(Black Wattle)	Fabaceae
<i>Acanthospermum australe</i>	(Spiny-bur)	Asteraceae
<i>Adiantum hispidulum</i>	(Maidenhair fern)	Pteridaceae
<i>Alyxia oliviformis</i>	(Maile)	Apocynaceae
<i>Antidesma platyphyllum</i>		
var. <i>hillebrandii</i>	(Hame)	Euphorbiaceae
<i>Axonopus fissifolius</i>	(Narrow-leaved carpet-grass)	Poaceae
<i>Bidens pilosa</i>	(Ki nehe)	Asteraceae
<i>Bidens sandwicensis</i>		
subsp. <i>sandwicensis</i>		Asteraceae
<i>Blechnum occidentale</i>	(Blechnum fern)	Blechnaceae
<i>Bobea brevipes</i>	(Ahakea lau li'i)	Rubiaceae
<i>Casuarina glauca</i>	(Ironwood)	Casuarinaceae
<i>Chamaecrista nictitans</i>		
subsp. <i>patellaria</i> var. <i>glabrata</i>	(Partridge Pea)	Fabaceae
* <i>Chamaesyce atrococca</i>	('Akoko)	Euphorbiaceae
<i>Chrysopogon aciculatus</i>		Poaceae
<i>Cladina skottsbergii</i>	(Old Man's Beard)	Cladoniaceae
<i>Cladonia pacifica</i>	(British Soldier)	Cladoniaceae
<i>Cladonia</i> sp.		Cladoniaceae
<i>Cocculus trilobus</i>	(Huehue)	Menispermaceae
<i>Conyza bonariensis</i>	(Hairy Horseweed)	Asteraceae
<i>Coprosma waimeae</i>	('Olena)	Rubiaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Crocosmia x crocosmiflora</i>	(Montbretia)	Iridaceae
<i>Cryptocarya mannii</i>	(Holio)	Lauraceae
* <i>Cyanea leptostegia</i>	(Hala lua)	Campanulaceae
<i>Desmodium incanum</i>	(Spanish Clover)	Fabaceae

<i>Dianella sandwicensis</i>	('Uli 'uki)	Liliaceae
<i>Dicranopteris linearis</i>	(Uluhe)	Gleicheniaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Doodia kunthiana</i>		Blechnaceae
<i>Embelia pacifica</i>	(Kilioe)	Myrsinaceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Gahnia beecheyi</i>		Cyperaceae
<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Hedyotis knudsenii</i>		Rubiaceae
<i>Hedyotis terminalis</i>	(Manono)	Rubiaceae
<i>Hypochoeris radicata</i>	(Hairy Cat's Ear)	Asteraceae
<i>Hyptis pectinata</i>	(Comb Hyptis)	Lamiaceae
<i>Indigofera suffruticosa</i>	('Iniko)	Fabaceae
<i>Ipomoea indica</i>	(Blue Morning-Glory)	Convolvulaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Leucaena leucocephala</i>	(Koa haole)	Fabaceae
<i>Lophostemon confertus</i>	(Brush box)	Myrtaceae
<i>Melaleuca quinquenervia</i>	(Paperbark)	Myrtaceae
<i>Melia azedarach</i>	(Chinaberry)	Meliaceae
<i>Melicope peduncularis</i>		Rutaceae
<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Microlepia strigosa</i>	(Palapalai)	Dennstaedtiaceae
<i>Myoporum sandwicense</i>	(Naio)	Myoporaceae
<i>Myrica faya</i>	(Firetree)	Myricaceae
<i>Myrsine lanaiensis</i>	(Kolea)	Myrsinaceae
<i>Nestegis sandwicensis</i>	(Olopuu)	Oleaceae
<i>Odontosoria chinensis</i>	(Pala'a)	Lindsaeaceae
<i>Olea europaea</i>		
<i>subsp. africana</i>	('Oliwa)	Oleaceae
<i>Opuntia ficus-indica</i>	(Panini)	Cactaceae

<i>Panicum nephelophilum</i>	(Konakona)	Poaceae
<i>Paspalum dilatatum</i>	(Dallis grass)	Poaceae
<i>Paspalum urvillei</i>	(Vasey grass)	Poaceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Passiflora ligularis</i>	(Lemiwai)	Passifloraceae
<i>Passiflora</i> cv. <i>Banana Poka</i>	(Banana poka)	Passifloraceae
<i>Pinus</i> sp.	(Pine)	Pinaceae
<i>Pipturus albidus</i>	(Mamaki)	Urticaceae
<i>Plantago lanceolata</i>	(Narrow-leaved plantain)	Plantaginaceae
<i>Pleomele aurea</i>	(Hala pepe)	Agavaceae
<i>Pluchea carolinensis</i>		Asteraceae
(Syn. <i>Pluchea symphytifolia</i>)	(Sourbush)	Sapindaceae
<i>Pouteria sandwicensis</i>	('Ala'a)	Myrtaceae
<i>Psidium guajava</i>	(Common guava)	Myrtaceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Psilotaceae
<i>Psilotum nudum</i>	(Moa)	Rubiaceae
<i>Psychotria hexandra</i>	(Kopiko)	Rubiaceae
<i>Psychotria mariniana</i>	(Kopiko)	
<i>Psydrax odorata</i>		Rubiaceae
(Syn. <i>Canthium odoratum</i>)	(Alahe'e)	Dennstaedtiaceae
<i>Pteridium decompositum</i>	(Bracken)	Pteridaceae
<i>Pteris x hillebrandii</i>	(Sword Brake)	Rubiaceae
<i>Richardia brasiliensis</i>		Asteraceae
* <i>Remya kauaiensis</i>		Rosaceae
<i>Rubus argutus</i>	(Blackberry)	Santalaceae
<i>Santalum ellipticum</i>	(Iliahi)	
<i>Santalum freycinetianum</i>		Santalaceae
var. <i>pyrularianum</i>	(Iliahi)	Goodeniaceae
<i>Scaevola gaudichaudii</i>	(Naupaka kuahiwi)	Anacardiaceae
<i>Schinus terebinthifolius</i>	(Christmasberry)	Poaceae
<i>Schizachyrium condensatum</i>	(Beardgrass)	Poaceae
<i>Setaria verticillata</i>	(Foxtail)	Malvaceae
<i>Sida fallax</i>	('Ilima)	Verbenaceae
<i>Stachytarpheta urticifolia</i>	(Canyon veroain)	

<i>Stenotaphrum secundatum</i>	(St. Augustine Grass)	Poaceae
<i>Streblus pendulinus</i>	('A'ia'i)	Moraceae
<i>Styphelia tameiameia</i>	(Pukiaue)	Epacridaceae
<i>Usnea sp.</i>	(Tree Lichen)	Usneaceae
<i>Vaccinium dentatum</i>	(Ohelo)	Ericaceae
<i>Verbena litoralis</i>	(Owi)	Verbenaceae
<i>Waltheria indica</i>	('Uhaloa)	Sterculiaceae
<i>Wedelia trilobata</i>	(Wedelia)	Asteraceae
<i>Wikstroemia oahuensis</i>	('Akia)	Thymelaeaceae

Areas dominated by native Hawaiian vegetation were tagged with three pink flagging tapes. Specific rare or important taxa were tagged with pink flagging tape (marked with *) and flagged out to the road. Alternate number 1, Ha'ele'ele Ridge, had two areas we believe should have no tree removal, due to the abundance of native Hawaiian species, dominated by *Acacia koa* and *Stephylia tameiameia* as well as populations of *Santalum ellipticum* (Iiahi) and *Santalum freycinetianum* var. *pyrularianum* (Iiahi). They are located:

- 2.5 miles in through 2.9 miles.
- End elevation is 2,400 feet.
- North & South sides of each ridge.

Kokee Survey - Alternate No. 2
5th & 12th of August 1993
North & South Aspects of Kauhau Ridge

* Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia confusa</i>	(Formosa Koa)	Fabaceae
<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Acacia mearnsii</i>	(Black wattle)	Fabaceae
<i>Albizia lebeck</i>	(Siris Tree)	Fabaceae
<i>Alphitonia ponderosa</i>	(Kauila)	Rhamnaceae
<i>Alyxia oliviformis</i>	(Maile)	Apocynaceae
<i>Artemisia australis</i>	(Hinahina-kuahiwi)	Asteraceae
<i>Casuarina equisetifolia</i>	(Ironwood)	Casuarinaceae
<i>Casuarina glauca</i>	(Ironwood)	Casuarinaceae
* <i>Chamaesyce atrococca</i>	('Akoko)	Euphorbiaceae
<i>Cladina skottsbergii</i>	(Old Man's Beard)	Cladoniaceae
<i>Cladonia pacifica</i>	(British Soldier)	Cladoniaceae
<i>Cladonia sp.</i>		Cladoniaceae
<i>Cocculus trilobus</i>	(Huehue)	Menispermaceae
<i>Coprosma waimaeae</i>	('Olena)	Rubiaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Crocosmia x crocosmiiflora</i>	(Montbretia)	Iridaceae
<i>Cryptomeria japonica</i>	(Sugi, Cedar)	Taxodiaceae
<i>Cupressus macrocarpa</i>	(Monterey cypress)	Cupressaceae
<i>Dianella sandwicensis</i>	('Uki 'uki)	Liliaceae
<i>Dicranopteris linearis</i>	(Uluhe)	Gleicheniaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Eucalyptus microcorys</i>	(Tallow wood)	Myrtaceae
<i>Eucalyptus globulus</i>	(Blue Gum)	Myrtaceae
<i>Fraxinus uhdei</i>	(Tropical Ash)	Oleaceae
<i>Gahnia beecheyi</i>		Cyperaceae

<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Indigofera suffruticosa</i>	('Iniko)	Fabaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Leucaena leucocephala</i>	(Haole koa)	Fabaceae
* <i>Lobelia niahauensis</i>		Campanulaceae
<i>Mangifera indica</i>	(Mango)	Anacardiaceae
<i>Melaleuca quinquerivaria</i>	(Paperbark)	Myrtaceae
<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Myoporum sandwicense</i>	(Naio)	Myoporaceae
<i>Odontosoria chinensis</i>	(Pala'a)	Lindsaeaceae
<i>Opuntia ficus-indica</i>	(Panini)	Cactaceae
<i>Paspalum dilatatum</i>	(Dallis grass)	Poaceae
<i>Passiflora cv. Banana Poka</i>	(Banana poka)	Passifloraceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Passiflora ligularis</i>	(Lemiwai)	Passifloraceae
<i>Pinus elliottii</i>	(Slash Pine)	Pinaceae
<i>Pinus patula</i>	(Mexican Weeping Pine)	Pinaceae
<i>Pinus sp.</i>		Pinaceae
<i>Pityrogramma austroamericana</i>		Pteridaceae
<i>Plantago lanceolata</i>	(Narrow-leaved plantain)	Plantaginaceae
<i>Pleomele aurea</i>	(Hala pepe)	Agavaceae
<i>Pluchea carolinensis</i>		
(Syn. <i>P. symphytifolia</i>)	(Sourbush)	Asteraceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Myrtaceae
<i>Psidium guajava</i>	(Common Guava)	Myrtaceae
<i>Psilotum nudum</i>	(Moa)	Psilotaceae
<i>Psydrax odorata</i>		
(Syn. <i>Canthium odoratum</i>)	(Alahe'e)	Rubiaceae
<i>Pteridium decompositum</i>	(Bracken)	Dennstaedtiaceae
<i>Rubus argutus</i>	(Blackberry)	Rosaceae

<i>Santalum freycinetianum</i>		
<i>var. pyrularianum</i>	(Iliahi)	<i>Santalaceae</i>
<i>Scaevola gaudichaudii</i>	(Naupaka)	<i>Goodeniaceae</i>
<i>Scaevola procera</i>	(Naupaka kuahiwi)	<i>Goodeniaceae</i>
<i>Setaria verticillata</i>	(Foxtail)	<i>Poaceae</i>
<i>Sida fallax</i>	(Ilima)	<i>Malvaceae</i>
<i>Styphelia tameiameia</i>	(Pukiaue)	<i>Epacridaceae</i>
<i>Usnea sp.</i>		<i>Usneaceae</i>
<i>Waltheria indica</i>	(Uhaloa)	<i>Sterculiaceae</i>
<i>Wilkesia gymnoxiphium</i>	(Iliau)	<i>Asteraceae</i>

Areas dominated by native Hawaiian vegetation were tagged with three pink flagging tapes. Specific rare or important taxa were tagged with pink flagging tape and flagged out to the road. Alternate number 2, Kauhao Ridge, has abundant *Chamaesyce atrococca* populations as well as a single area abundant in *Santalum freycinetianum var. pyrularianum*. The following are mile markers where these populations are tagged:

Miles

- 0.3 to Gate, north & south of ridge, 2930' ele.
- 0.1 West of Gate, north & south of ridge
- 0.2 North of ridge
- 0.4 North of ridge
- 0.45 South of ridge
- 0.6 North & South sides of ridge (*Santalum*)
- 0.8 North side of ridge
- 1.1 South side of ridge

Kokee Survey - Alternate No. 3
15th, 20th & 22nd of July 1993
North & South Aspects of Kahelu & Papa'alai Ridges

* Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia confusa</i>	(Formosa Koa)	Fabaceae
<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Adiantum hispidulum</i>	(Maidenhair fern)	Pteridaceae
<i>Alyxia oliviformis</i>	(Maile)	Apocynaceae
<i>Anagallis arvensis</i>	(Scarlet pimpernel)	Primulaceae
<i>Antidesma platyphyllum</i>		
<i>var. hillebrandii</i>	(Hame)	Euphorbiaceae
<i>Axonopus fissifolius</i>	(Narrow-leaved carpet-grass)	Poaceae
<i>Bidens pilosa</i>	(Ki nehe)	Asteraceae
<i>Blechnum occidentale</i>	(Blechnum fern)	Blechnaceae
<i>Bobea brevipes</i>	(Ahakea lau li'i)	Rubiaceae
<i>Carex wahuensis</i>		
<i>subsp. wahuensis</i>		Cyperaceae
<i>Casuarina glauca</i>	(Ironwood)	Casuarinaceae
<i>Cibotium glaucum</i>	(Hauptu)	Cyatheaceae
<i>Cladina skottsbergii</i>	(Old Man's Beard)	Cladoniaceae
<i>Cladonia pacifica</i>	(British Soldier)	Cladoniaceae
<i>Cladonia sp.</i>		Cladoniaceae
<i>Coprosma foliosa</i>	(Pilo)	Rubiaceae
<i>Coprosma waimeae</i>	('Olena)	Rubiaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Crocsmia x crocosmiiflora</i>	(Montbretia)	Iridaceae
<i>Cryptocarya mannii</i>	(Holio)	Lauraceae
<i>Dianella sandwicensis</i>	('Uki 'uki)	Liliaceae
<i>Dicranopteris linearis</i>	(Uluhe)	Gleicheniaceae
<i>Diospyros hillebrandii</i>	(Lama)	Ebenaceae
<i>Diplazium sandwichianum</i>	(Hoio)	Dryopteridaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Doodia kunthiana</i>		Blechnaceae
<i>Dryopteris fusco-atra</i>		Dryopteridaceae
<i>Elaeocarpus bifidus</i>	(Kalia)	Elaeocarpaceae

<i>Elephantopus mollis</i>	(Elephant's Foot)	Asteraceae
<i>Emilia coccinea</i>	(Flora's paintbrush)	Asteraceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Erechtites valerianifolia</i>	(Fireweed)	Asteraceae
<i>Erigeron karvinskianus</i>	(Daisy fleabane)	Asteraceae
<i>Eriobotrya japonica</i>	(Loquat)	Rosaceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Freycinetia arborea</i>	('Ie'ie)	Pandanaceae
<i>Gahnia beecheyi</i>		Cyperaceae
<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Hedyotis terminalis</i>	(Manono)	Rubiaceae
<i>Hypochoeris radicata</i>	(Hairy Cat's Ear)	Asteraceae
<i>Ipomoea indica</i>	(Blue Morning-Glory)	Convolvulaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Lophostemon confertus</i>	(Brush box)	Myrtaceae
<i>Marattia douglasii</i>	(Mule's Foot Fern)	Marattiaceae
<i>Melaleuca quinquerivaria</i>	(Paperbark)	Myrtaceae
<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Microlepia strigosa</i>	(Palapalai)	Dennstaedtiaceae
<i>Nestegis sandwicensis</i>	(Olopua)	Oleaceae
<i>Odontosoria chinensis</i>	(Pala'a)	Lindsaeaceae
<i>Olea europaea</i>		
<i>subsp. africana</i>	('Oliwa)	Oleaceae
<i>Oxalis corniculata</i>	(Yellow wood sorrel)	Oxalidaceae
<i>Panicum nephelophilum</i>	(Konakona)	Poaceae
<i>Paspalum dilatatum</i>	(Dallis grass)	Poaceae
<i>Paspalum urvillei</i>	(Vasey grass)	Poaceae
<i>Passiflora</i> cv. <i>Banana Poka</i>	(Banana poka)	Passifloraceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Passiflora ligularis</i>	(Lemiwai)	Passifloraceae

<i>Pennisetum clandestinum</i>	(Kikuyu grass)	Poaceae
<i>Physalis peruviana</i>	(Poha)	Solanaceae
<i>Pisonia sandwicensis</i>	(Papala kepa)	Nyctaginaceae
<i>Plantago lanceolata</i>	(Narrow-leaved plantain)	Plantaginaceae
<i>Pleomele aurea</i>	(Hala pepe)	Agavaceae
<i>Pluchea carolinensis</i>		
(Syn. <i>P. symphytifolia</i>)	(Sourbush)	Asteraceae
<i>Prunus persica</i>	(Peach)	Rosaceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Myrtaceae
<i>Psilotum nudum</i>	(Moa)	Psilotaceae
<i>Psychotria hexandra</i>	(Kopiko)	Rubiaceae
<i>Psychotria marianiana</i>	(Kopiko)	Rubiaceae
<i>Pteridium decompositum</i>	(Bracken)	Dennstaedtiaceae
<i>Rhynchelytrum repens</i>	(Natal redtop)	Poaceae
<i>Ricinus communis</i>	(Castor bean)	Euphorbiaceae
<i>Rubus argutus</i>	(Blackberry)	Rosaceae
<i>Rubus rosifolius</i>	(Thimbleberry)	Rosaceae
<i>Santalum freycinetianum</i>		
var. <i>pyrularianum</i>	(Iliahi)	Santalaceae
<i>Scaevola gaudichaudii</i>	(Naupaka)	Goodeniaceae
<i>Scaevola procera</i>	(Naupaka kuahiwi)	Goodeniaceae
<i>Setaria verticillata</i>	(Foxtail)	Poaceae
<i>Smilax melastomifolia</i>	(Uhi)	Smilacaceae
<i>Solanum americanum</i>	(Popolo)	Solanaceae
<i>Stachytarpheta urticifolia</i>	(Canyon vervain)	Verbenaceae
<i>Styphelia tameiameia</i>	(Pukiaue)	Epacridaceae
<i>Syzigium sandwicensis</i>	('Ohi'a ha)	Myrtaceae
<i>Thelypteris dentata</i>	(Downy Woodfern)	Thelypteridaceae
<i>Thelypteris parasitica</i>		Thelypteridaceae
<i>Usnea sp.</i>		Usneaceae
<i>Vaccinium dentatum</i>	(Ohelo)	Ericaceae
<i>Verbena litoralis</i>	(Owi)	Verbenaceae
<i>Wikstroemia oahuensis</i>	('Akia)	Thymelaeaceae

Areas dominated by native Hawaiian vegetation were tagged with three pink flagging tapes. Specific rare or important taxa were tagged with pink flagging tape and flagged out to the road. Alternate number 3, Kahelu Ridge, had two areas designated for no tree removal, due to the abundance of native Hawaiian species. The first area is located:

- 3,000 feet elevation.
- 0.5 miles in from the junction of Kahelu Ridge Road & Papaalai Ridge Road.
- North side of Kahelu Ridge.

The second area is:

- 2,830 feet elevation.
- 0.85 miles to 0.90 miles in from the junction of Kahalu Ridge Road & Papaalai Ridge Road.
- North side of Kahelu Ridge.

Alternate number 3, Papaalai Ridge had three areas of dryland native Hawaiian forest dominated by *Acacia koa* and *Stephania tameiameia*. The first area, a narrow gulch, is located:

- 0.85 to 0.95 miles in from the junction of Kahalu Ridge Road & Papaalai Ridge Road.
- South side of Papaalai Ridge.

The second area is located:

- 1.20 miles in from the junction of Kahalu Ridge Road & Papaalai Ridge Road.
- 2,830 feet elevation.
- South side of Papaalai Ridge.

The third area is located:

- 1.20 to 1.40 miles in from the junction of Kahalu Ridge Road & Papaalai Ridge Road to the end of the survey area.
- 2,830 to 2,700 feet elevation.
- North and South side of Papaalai Ridge.

Kokee Survey - Contour Road
24th, 26th & 31th August 1993

* Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Acacia mearnsii</i>	(Black Wattle)	Fabaceae
<i>Acanthospermum australe</i>	(Spiny-bur)	Asteraceae
<i>Adiantum hispidulum</i>	(Maidenhair fern)	Pteridaceae
<i>Ageratum conyzoides</i>	(Maile hohono)	Asteraceae
<i>Alphitonia ponderosa</i>	(Kauila)	Rhamnaceae
<i>Alyxia oliviformis</i>	(Maile)	Apocynaceae
<i>Anagallis arvensis</i>	(Scarlet pimpernel)	Primulaceae
<i>Antidesma platyphyllum</i>		
var. <i>hillebrandii</i>	(Hame)	Euphorbiaceae
<i>Axonopus fissifolius</i>	(Narrow-leaved carpet-grass)	Poaceae
<i>Blechnum occidentale</i>	(Blechnum fern)	Blechnaceae
<i>Bobea brevipes</i>	(Ahakea lau li'i)	Rubiaceae
<i>Carex meyenii</i>		Cyperaceae
<i>Carex wahuensis</i>		
subsp. <i>wahuensis</i>		Cyperaceae
<i>Casuarina equisetifolia</i>	(Ironwood)	Casuarinaceae
<i>Chamaecrista nictitans</i>		
subsp. <i>patellaria</i> var. <i>gibrata</i>	(Partridge Pea)	Fabaceae
* <i>Chamaesyce atrococca</i>	('Akoko)	Euphorbiaceae
<i>Charpentiera elliptica</i>	(Papala)	Amaranthaceae
<i>Cibotium glaucum</i>	(Haupu)	Cyatheaceae
<i>Cirsium vulgare</i>	(Thistle)	Asteraceae
<i>Cladina skottsbergii</i>	(Reindeer Moss)	Cladoniaceae
<i>Cladonia pacifica</i>	(British Soldier)	Cladoniaceae
<i>Cladonia</i> sp.		Cladoniaceae
<i>Conyza bonariensis</i>	(Hairy Horseweed)	Asteraceae
<i>Coprosma waimeae</i>	('Olena)	Rubiaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Corynocarpus laevigatus</i>	(Karakanut)	Corynocarpaceae
<i>Crassocephalum crepidioides</i>		Asteraceae
<i>Cuphea carthagenensis</i>	(Tarweed)	Lythraceae
<i>Cupressus macrocarpa</i>	(Monterey cypress)	Cupressaceae

* <i>Cyanea leptostegia</i>	(Hala lua)	Campanulaceae
<i>Cyathea cooperi</i>		Cyatheaceae
<i>Dianella sandwicensis</i>	('Uki 'uki)	Liliaceae
<i>Dicranopteris linearis</i>	(Uluhe)	Gleicheniaceae
<i>Diplazium sandwichianum</i>	(Hoio)	Dryopteridaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Doodia kunthiana</i>		Blechnaceae
<i>Dryopteris fusco-atra</i>		Dryopteridaceae
<i>Dryopteris unidentata</i>		Dryopteridaceae
<i>Elaeocarpus bifidus</i>	(Kalia)	Elaeocarpaceae
<i>Emilia coccinea</i>	(Flora's paintbrush)	Asteraceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Erechtites valerianifolia</i>	(Fireweed)	Asteraceae
<i>Erigeron karwinskianus</i>	(Daisy fleabane)	Asteraceae
<i>Eriobotrya japonica</i>	(Loquat)	Rosaceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus globulus</i>	(Blue Gum)	Myrtaceae
<i>Eucalyptus microcorys</i>	(Tallow wood)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Ficus indica</i>	(Fig)	Moraceae
<i>Freycinetia arborea</i>	('Ie'ie)	Pandanaceae
<i>Gahnia beecheyi</i>		Cyperaceae
<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Hedychium gardnerianum</i>	(Kahili Ginger)	Zingiberaceae
<i>Hedyotis knudsenii</i>		Rubiaceae
<i>Hedyotis terminalis</i>	(Manono)	Rubiaceae
<i>Hypochoeris radicata</i>	(Hairy Cat's Ear)	Asteraceae
<i>Hyptis pectinata</i>	(Comb Hyptis)	Lamiaceae
<i>Ipomoea indica</i>	(Blue Morning-Glory)	Convolvulaceae
<i>Korthalsella remyana</i>	(Hulumoa, Mistletoe)	Viscaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Lythrum maritimum</i>	(Lythrum)	Lythraceae
<i>Melaleuca quinquenervia</i>	(Paperbark)	Myrtaceae
<i>Melicope barbiger</i>	(Uahiapele)	Rutaceae
<i>Melicope peduncularis</i>		Rutaceae

<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Microlepia strigosa</i>	(Palapalai)	Dennstaedtiaceae
<i>Myrica faya</i>	(Firetree)	Myricaceae
<i>Myrsine lanaiensis</i>	(Kolea)	Myrsinaceae
<i>Nestegis sandwicensis</i>	(Olopua)	Oleaceae
<i>Odontosoria chinensis</i>	(Pala'a)	Lindsaeaceae
<i>Olea europaea</i>		
<i>subsp. africana</i>	('Oliwa)	Oleaceae
<i>Panicum nephelophilum</i>	(Konakona)	Poaceae
<i>Paspalum urvillei</i>	(Vasey grass)	Poaceae
<i>Passiflora</i> cv. Banana Poka	(Banana poka)	Passifloraceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Passiflora ligularis</i>	(Lemiwai)	Passifloraceae
<i>Pennisetum clandestinum</i>	(Kikuyu grass)	Poaceae
<i>Persea americana</i>	(Avocado)	Lauraceae
<i>Physalis peruviana</i>	(Poha)	Solanaceae
<i>Phytolacca octandra</i>	(Pokeweed)	Phytolaccaceae
<i>Pinus</i> spp.	(Pine)	Pinaceae
<i>Pipturus albidus</i>	(Mamaki)	Urticaceae
<i>Pisonia sandwicensis</i>	(Papala kepau)	Nyctaginaceae
<i>Pittosporum kauaiense</i>	(Ho'awa)	Pittosporaceae
<i>Pityrogramma austroamericana</i>	(Gold Backed Fern)	Pteridaceae
<i>Plantago lanceolata</i>	(Narrow-leaved plantain)	Plantaginaceae
<i>Pleomele aurea</i>	(Hala pepe)	Agaraceae
<i>Pluchea carolinensis</i>		
(Syn. <i>P. symphytifolia</i>)	(Sourbush)	Asteraceae
<i>Pouteria sandwicensis</i>		Sapindaceae
<i>Prunus cerasifera</i> x <i>P. salicina</i>	(Methley plum)	Rosaceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Myrtaceae
<i>Psidium guajava</i>	(Common Guava)	Myrtaceae
<i>Psilotum nudum</i>	(Moa)	Psilotaceae
<i>Psychotria hexandra</i>	(Kopiko)	Rubiaceae
<i>Psychotria mariniana</i>	(Kopiko)	Rubiaceae
<i>Pteridium decompositum</i>	(Bracken)	Dennstaedtiaceae
<i>Pteris excelsa</i>		Pteridaceae

<i>Rhynchelytrum repens</i>	(Natal redtop)	Poaceae
<i>Ricinus communis</i>	(Castor bean)	Euphorbiaceae
<i>Rubus argutus</i>	(Blackberry)	Rosaceae
<i>Rubus rosifolius</i>	(Thimbleberry)	Roseaceae
<i>Sadleria cyatheoides</i>	(Amau)	Blechnaceae
<i>Santalum freycinetianum</i> var. <i>pyrularianum</i>	(Iliahi)	Santalaceae
<i>Scaevola gaudichaudii</i>	(Naupaka)	Goodeniaceae
<i>Scaevola procera</i>	(Naupaka kuahiwai)	Goodeniaceae
<i>Schizachyrium condensatum</i>	(Beardgrass)	Poaceae
<i>Sechium edule</i>	(Chayote, Pipinella)	Cucurbitaceae
<i>Setaria palmifolia</i>	(Palm grass)	Poaceae
<i>Setaria verticillata</i>	(Bristly Foxtail)	Poaceae
<i>Smilax melastomifolia</i>	(Uhi)	Smilacaceae
<i>Stachytarpheta urticifolia</i>	(Canyon vervain)	Verbenaceae
<i>Streblus pendulinus</i>	('A'ia'i)	Moraceae
<i>Styphelia tameiameia</i>	(Pukiawe)	Epacridaceae
<i>Syzigium sandwicensis</i>	('Ohi'a ha)	Myrtaceae
<i>Usnea sp.</i>	(Old Man's Beard)	Usneaceae
<i>Vaccinium dentatum</i>	(Ohelo)	Ericaceae
<i>Verbena litoralis</i>	(Owi)	Verbenaceae
<i>Wikstroemia oahuensis</i>	('Akia)	Thymelaeaceae
<i>Wilkesia gymnoxiphium</i>	(Iliau)	Asteraceae
<i>Xylosma hawaiiense</i>	(Maua)	Flacourtiaceae
<i>Zanthoxylum dipetalum</i>	(Kawa'u)	Rutaceae

Specific rare or important taxa were tagged with pink flagging tape and flagged out to the road, or individuals were tagged if located near roadsides. The Contour Road had an abundance of *Chamaesyce atrococca* ('akoko) populations. It was unusual to find a single plant or just a few individuals. Populations seemed to consist of a minimum of 5 to 6 plants but more commonly were found between 25 and 50 plants, if not more. Due to the profusion of this species not every individual was tagged, but attempts were made to tag at least every 5 to 10 feet. The populations of 'akoko consisted of juveniles, seedlings, immature and mature shrubs. When found growing, the community extended from the actual roadside back exceeding 100 feet. The number of the 'akoko makes it difficult to list mileage or altitudes where they were found. The flagged areas should make the location of the individuals or populations obvious.

A few plants of *Cyanea leptostegia* (C2 status), were discovered and tagged. Since not all of them were along the roadside, pink flagging was brought out to the road.

A few individuals of *Santalum freycinetianum* var. *pyrularianum*, *Alphitonia ponderosa*, *Xylsoma hawaiiense* and *Antidesma platyphyllum* var. *hillebrandii* (Hame) were found tagged with pink flagging tape from the initial survey.

Kokee Survey - Ka'aaweiki Ridge

7 September 1993

• Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia confusa</i>	(Formosa Koa)	Fabaceae
<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Acacia mearnsii</i>	(Black Wattle)	Fabaceae
<i>Acanthospermum australe</i>	(Spiny-bur)	Asteraceae
<i>Araucaria sp.</i>	(Norfolk Island Pine)	Araucariaceae
<i>Axonopus fissifolius</i>	(Narrow-leaved carpet-grass)	Poaceae
<i>Blechnum occidentale</i>	(Blechnum fern)	Blechnaceae
<i>Carex wahuensis</i>		
<i>subsp. wahuensis</i>		Cyperaceae
<i>Casuarina glauca</i>	(Ironwood)	Casuarinaceae
<i>Casuarina equisetifolia</i>	(Ironwood)	Casuarinaceae
<i>Centella asiatica</i>	(Asiatic Pennywort)	Apiaceae
<i>Chamaecrista nictitans</i>		
<i>subsp. patellaria var. glabrata</i>	(Partridge Pea)	Fabaceae
<i>Cirsium vulgare</i>	(Thistle)	Asteraceae
<i>Cladina skottsbergii</i>	(Reindeer Moss)	Cladoniaceae
<i>Cocculus trilobus</i>	(Huehue)	Menispermaceae
<i>Coprosma waimeae</i>	('Olena)	Rubiaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Cupressus macrocarpa</i>	(Monterey cypress)	Cupressaceae
<i>Dianella sandwicensis</i>	('Uki 'uki)	Liliaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Erigeron karvinskianus</i>	(Daisy fleabane)	Asteraceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus globulus</i>	(Blue Gum)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Gahnia beecheyi</i>		Cyperaceae
<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Hedychium gardnerianum</i>	(Kahili Ginger)	Zingiberaceae
<i>Hedychium flavescens</i>	(Yellow Ginger)	Zingiberaceae

<i>Hypochoeris radicata</i>	(Hairy Cat's Ear)	Asteraceae
<i>Hyptis pectinata</i>	(Comb Hyptis)	Lamiaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Leucaena leucocephala</i>	(Koa haole)	Fabaceae
<i>Melaleuca quinquenervia</i>	(Paperbark)	Myrtaceae
<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Myoporum sandwicense</i>	(Naio)	Myoporaceae
<i>Myrica faya</i>	(Firetree)	Myricaceae
<i>Paspalum urvillei</i>	(Vasey grass)	Poaceae
<i>Passiflora</i> cv. Banana Poka	(Banana poka)	Passifloraceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Pinus</i> spp.	(Pine)	Pinaceae
<i>Plantago lanceolata</i>	(Narrow-leaved plantain)	Plantaginaceae
<i>Pluchea carolinensis</i> (Syn. <i>Pluchea symphytifolia</i>)	(Sourbush)	Asteraceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Myrtaceae
<i>Psidium guajava</i>	(Common Guava)	Myrtaceae
<i>Psilotum nudum</i>	(Moa)	Psilotaceae
<i>Psydrax odorata</i> (Syn. <i>Canthium odoratum</i>)	(Alahe'e)	Rubiaceae
<i>Pteridium decompositum</i>	(Bracken)	Dennstaedtiaceae
<i>Rhynchelytrum repens</i>	(Natal redtop)	Poaceae
<i>Rubus argutus</i>	(Blackberry)	Rosaceae
<i>Rubus rosifolius</i>	(Thimbleberry)	Roseaceae
<i>Scaevola gaudichaudii</i>	(Naupaka)	Goodeniaceae
<i>Scaevola procera</i>	(Naupaka kuahiwi)	Goodeniaceae
<i>Schizachyrium condensatum</i>	(Beardgrass)	Poaceae
<i>Setaria palmifolia</i>	(Palmgrass)	Poaceae
<i>Setaria verticillata</i>	(Bristly Foxtail)	Poaceae
<i>Sida fallax</i>	('Ilima)	Malvaceae
<i>Stachytarpheta urticifolia</i>	(Canyon vervain)	Verbenaceae
<i>Styphelia tameiameia</i>	(Pukiawe)	Epacridaceae
<i>Thelypteris parasitica</i>	(Downy Woodfern)	Thelypteridaceae
<i>Usnea</i> sp.	(Old Man's Beard)	Usneaceae

Waltheria indica
Wilkesia gymnoxiphium

(*'Uhaloa*)
(*Iliau*)

Sterculiaceae
Asteraceae

Kokee Survey - Polihale Ridge
2 September 1993

* Indicates Federally Listed, Federally Proposed, Category 1 or Category 2 Status Plants

<i>Acacia koa</i>	(Koa)	Fabaceae
<i>Adiantum hispidulum</i>	(Maidenhair fern)	Pteridaceae
<i>Alphitonia ponderosa</i>	(Kauila)	Rhamnaceae
<i>Alyxia oliviformis</i>	(Maile)	Apocynaceae
* <i>Bidens sandwicensis</i> subsp. <i>confusa</i>		Asteraceae
* <i>Chamaesyce atrococca</i>	('Akoko)	Euphorbiaceae
<i>Cocculus trilobus</i>	(Huehue)	Menispermaceae
<i>Cotoneaster pannosa</i>		Rosaceae
<i>Cordyline fruticosa</i>	(Ti)	Agavaceae
<i>Cryptomeria japonica</i>	(Sugi, Cedar)	Taxodiaceae
<i>Dianella sandwicensis</i>	('Uki 'uki)	Liliaceae
<i>Dodonaea viscosa</i>	('A'ali'i)	Sapindaceae
<i>Eragrostis variabilis</i>	(Kawelu)	Poaceae
<i>Eucalyptus citriodora</i>	(Lemon-Scented Gum)	Myrtaceae
<i>Eucalyptus robusta</i>	(Swamp Mahogany)	Myrtaceae
<i>Gahnia beecheyi</i>		Cyperaceae
<i>Grevillia robusta</i>	(Silk Oak)	Proteaceae
<i>Hypochoeris radicata</i>	(Hairy Cat's Ear)	Asteraceae
<i>Hyptis pectinata</i>	(Comb Hyptis)	Lamiaceae
<i>Lantana camara</i>	(Lantana)	Verbenaceae
<i>Leucaena leucocephala</i>	(Koa haole)	Fabaceae
<i>Melaleuca quinquenervia</i>	(Paperbark)	Myrtaceae
<i>Melinis minutiflora</i>	(Molasses grass)	Poaceae
<i>Metrosideros polymorpha</i>	(Ohia Lehua)	Myrtaceae
<i>Myrica faya</i>	(Firetree)	Myricaceae
<i>Nephrolepis multiflora</i>	(Boston Fern)	Dryopteridaceae
<i>Opuntia ficus-indica</i>	(Panini)	Cactaceae
<i>Paspalum urvillei</i>	(Vasey grass)	Poaceae
<i>Passiflora</i> cv. <i>Banana Poka</i>	(Banana poka)	Passifloraceae
<i>Passiflora edulis</i>	(Passion fruit)	Passifloraceae
<i>Passiflora ligularis</i>	(Lemiwai)	Passifloraceae
<i>Pinus</i> spp.	(Pine)	Pinaceae

<i>Pleomele aurea</i>	(Hala pepe)	Agavaceae
<i>Pluchea carolinensis</i>		Asteraceae
(Syn. <i>P. symphytifolia</i>)		Myrtaceae
<i>Psidium cattleianum</i>	(Strawberry guava)	Myrtaceae
<i>Psidium guajava</i>	(Common Guava)	
<i>Psydrax odorata</i>		Rubiaceae
(Syn. <i>Canthium odoratum</i>)	(Alahe'e)	Dennstaedtiaceae
<i>Pteridium decompositum</i>	(Bracken)	Poaceae
<i>Rhynchelytrum repens</i>	(Natal redtop)	Rosaceae
<i>Rubus argutus</i>	(Blackberry)	Goodeniaceae
<i>Scaevola gaudichaudii</i>	(Naupaka)	Anacardiaceae
<i>Schinus terebinthifolius</i>	(Christmasberry)	Poaceae
<i>Setaria verticillata</i>	(Bristle Foxtail)	Verbenaceae
<i>Stachytarpheta urticifolia</i>	(Canyon vervain)	Epacridaceae
<i>Styphelia tameiameia</i>	(Pukiatoe)	Usneaceae
<i>Usnea</i> sp.	(Old Man's Beard)	Ericaceae
<i>Vaccinium dentatum</i>	(Ohelo)	Verbenaceae
<i>Verbena litoralis</i>	(Owi)	Sterculiaceae
<i>Waltheria indica</i>	('Uhaloa)	Thymelaeaceae
<i>Wikstroemia oahuensis</i>	('Aka)	Asteraceae
<i>Wilkesia gymnoxiphium</i>	(Iliau)	Asteraceae
<i>Wilkesia hobbayi</i>	(Dwarf Iliau)	

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Attachment 2.

**Archaeological Reconnaissance Survey for
Emergency Watershed Protection along Ridge
Roads in the *Koke'e* Uplands**

Koke'e, Waimea District, Island of Kaua'i

**Nancy A. McMahon, M.A.
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Department of Land and Natural Resources**

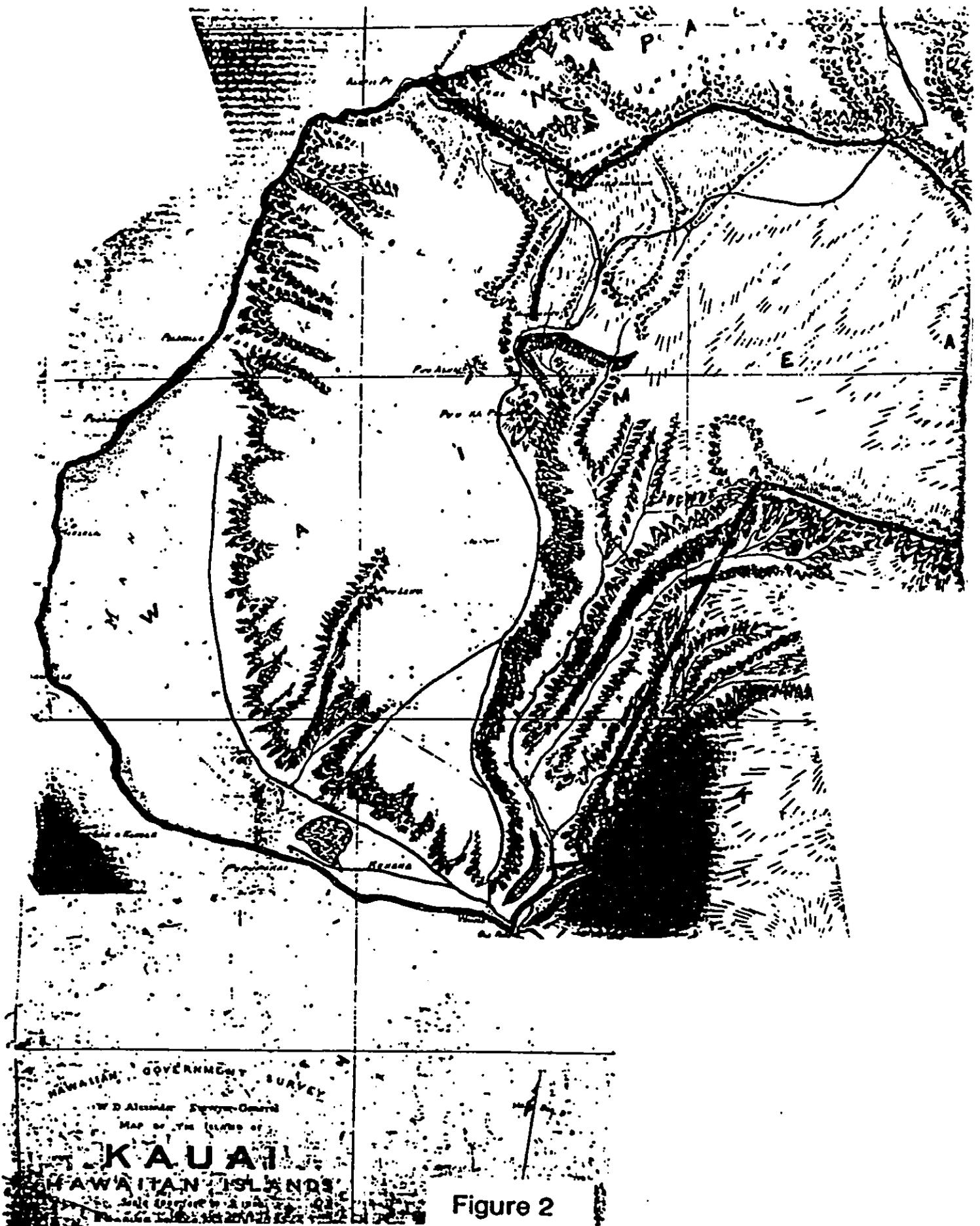
April 1993

INTRODUCTION

This report presents the results of an archaeological reconnaissance survey conducted along the ridge roads within the *Pu'u Ka Pele* and *Na Pali-Kona* Forest Reserve, *Koke'e* and *Waimea Canyon* State Parks and *Kekaha* Game Management area. Figures 1-3 locate the project area. The survey was conducted by the Hawaii State Historic Preservation Division on behalf of Division of Forestry and Wildlife.

The Division of Forestry and Wildlife is preparing a Environmental Assessment for roadside fuel hazard reduction for watershed protection utilizing a USDA grant for Emergency Watershed Protection. The project entails clearing both sides of the roads to a distance of 100 feet, except where slopes exceed 60%, then clearing will be to 60 feet. Within the Game Management area 200 foot strips will be cleared (Kyono per. comm.). Debris removed in the area will be chipped and redistributed over the clear areas except within the Game Management area. Here debris will be removed and the soil will be harrowed to a minimum depth of six inches to plant Bahia grass (*Paspalum notatum*)

The basic purpose of the fieldwork was to identify any historic sites within the ridge road corridors, to determine the significance of each site and to recommend any mitigation which may prove necessary. The reconnaissance survey was conducted March 28 through April 1, 1993 by SHPD Archaeologist for the County of Kau'i, Nancy McMahan. On March 28, 1993, Kaipō Akana and Roy Yokotake assisted in the reconnaissance survey.



ENVIRONMENTAL SETTING

The research area is within today's judicial district of *Waimea*. It is in the mountainous area beyond *Waimea* canyon up to the first ridge of the *Na Pali* coast area. The area is comprised of a series of narrow, upland valleys and intervening ridges. These ridges descend onto the coastal plain of *Polihale* in *Mana* or they drop directly to the sea in cliffs in the cases north of *Polihale*. The project area encompasses just over 30 miles of roads on these ridges (Figs. 4-5).

The project area is underlain by rocks of the *Napali* formation. Each ridge is a mass of rhyodacite between flows of basalt (Macdonald and Abbot 1970:359). Elevations in the project area range from c. 1200 ft. to 3500 ft AMSL. The ridgetop terrain ranges from level to undulating.

The research area is located within the *Napali* Coast Hydrogeologic Zone. The permeable *Napali* Formation lava flows predominate in this area, cut by numerous dikes. High-level ground water is impounded by the numerous dikes along the *Napali* Coast and provides flow to many small springs common to the steep valley walls of the area. However, there are only two perennial streams in the area, *Ha'elele* Valley and *Kauhao* Valley. In general, the area is known for being dry uplands.

Soils are upland soils. There is only one major soil series in the project area, the *Koke'e* Series of well-drained soils on the uplands. It consists of *Koke'e* silty clay loam. "These soils developed in material weathered from basic igneous rock, probably mixed with volcanic ash" (Foote et.al 1972:71).

The climate of the project area is that of a dry leeward upland area. The average rainfall ranges from 50-75 inches per year. Two physiographic designations are given for parts of the project area: *Pu'u Ka Pele* Dissected Uplands and *Na Pali* Cliffs and Valley (Armstrong 1983:70). The former is the remnant of the volcanic shield which rises about the coastal plain and is cut by numerous valleys. The latter is the well known high-cliffed volcanic coast. Its vegetation consists of a moderately dense forest of *'ohia* (*Metrosideros collina* [Forst.] Gray) and *koa* (*Acacia koa* Gray) with an understory of various shrubs and grasses.





Figure 6
U.S. Geological Survey map showing the known sites and areas still needing survey.

AHUPUA'A & PROJECT AREA SETTLEMENT PATTERNS

The project area lies within the *ahupua'a* of *Waimea* in *Kona* or *Waimea* district, with the exception of one ridge which in the *ahupua'a* of *Molili'i* in the *Na Pali* district. The *ahupua'a* of *Waimea* was an extremely large *ahupua'a*. It was retained as Crown Land during the *Mahele* (*Indices of Awards* 1929: 28). The 1875 boundary certificate indicates that the *ahupua'a* encompassed 92,646 acres or approximately 27% of the total land surface area of *Kaua'i* (Gay 1874). The *Indices of Awards* lists *Waimea* as an *ahupua'a* with the District of *Kona*, the 1875 certificate of boundaries indicates that the lands of *Waimea* are within its own district, so the district in which the *ahupua'a* lies is not quite clear.

Historical Information

The focale area of land use in *Waimea* was the main valley floor and coastal plain of *Waimea*, with a secondary focus on the coastal plain and swampy lands of *Polihale* and *Mana*. Here were the taro lands and major housing areas of *Waimea*. Over 152 claims were submitted for *Waimea*, and the *Indices of Awards* list some 116 awardees. Most of the awards occur in the present day town of *Waimea* and along the *Waimea* River. Three claims were made in the *Kekaha* area (Native Testimony, n.d. Vol. 11:157 and Native Register, n.d. Vol. 9:244, 397). *Kekaha* was a separate *ahupua'a* of *Waimea* (Handy 1972:427). Valdemar Knudsen, lessee of the crown lands in western *Kaua'i* and *konohiki* under *Kamehameha* IV, noted in a letter that most of the *ahupua'a* of *Waimea* was river bottom with associated *kuleanas* (the taro lands), with grazing land along the hillsides (Knudsen 1866).

A portion of the project area is located in the traditional district of *Na Pali*. This is *Molili'i* Ridge Road. It is in the *ahupua'a* of *Molili'i*. Only two *kuleana* grants were listed in the *Indices of Awards*. Their location is unknown.

Inland of these focale areas were the upland valleys. The valleys to the east of *Waimea* valley had more water, and many may have had some permanent habitations and associated dryland fields. The *Koke'e* uplands and narrow valleys had much less water, as seen, and had no Land Commission Awards given. References imply that the *Koke'e* uplands were largely an area exploited for forest resources: forest bird for feathers, wood materials, famine food resources (e.g. ferns) and freshwater food sources (e.g. 'opae and 'o'opu). The area above *Niu* Ridge near *Pu'u 'Opae* and *Pu'u Moi*, were said to be an area where trees were felled and worked into canoes (Handy & Handy 1972:411). Access trails, water sources and temporary campsites are expected with such resource patterns. Handy

and Handy (1972) describe trails that led from ridges to the sea. As noted by Gahran (1978, quoting Stauder), "These Hawaiians probably constructed temporary campsites but little remains of these features". In other words, archaeological remnants of these camps may be hard to find.

Major trails are reported to have gone up along the *Waimea* valley side of the project area — up *Waimea Valley*, through *Koke'e*, over *Alakai Swamp* where the trail was built up with sticks, down *Maunahina Ridge* and into *Wainiha Valley* (Damon 1930). This is just outside the project area.

Handy and Handy (1972:400, 412) suggest that the forest once extended down the ridges and valleys covering a greater area than now seen. They suggest that small gulches probably contained year round streams, and they recorded names of dry streams. They seem to imply that permanent dwellings and planting sites were present in the uplands, although no solid evidence is given for this claim. Handy and Handy's descriptions of planting areas give some insight into types of archaeological sites that might be present if some planting did occur. On the hillsides were low walled-in remains of sweet potato patches (1972:270). Arrowroot (*pia*) was planted in small patches in moist woodland and grassland slopes of moderate elevation (1972:183).

Sandalwood harvesting of the early 1800's impacted the uplands of *Waimea*. The distance to transport the wood from this area was many miles from the sea ports, so other locations for harvesting were more economical. In the late 1800s ranching and cane cultivation began to impact the forest in the *Koke'e Uplands*. Ranching at first was primitive, with cattle and horses running wild, until walls and fences were erected. With the sugar plantations, water was needed. Ditches and reservoirs were built in this uplands to transport the water to the cane lands. Plantation camps and house sites were constructed for the workers who were mainly Chinese to have easy access for maintenance purposes. Tree planting occurred in the 1930's under the sponsorship of the Civilian Conservation Corps. Several military projects took place in the *Koke'e* area during World War II. NASA, the Navy and the Air Force still have tracking stations in *Koke'e*.

Archaeological Information

Only six surveys have taken place in the area: Bennett (1931), Ching (1974, 1978a, b), Kikuchi (1982), Thrum (1907), Yent (1982) and Walker and Rosendahl (1990). These reports were brief reconnaissance surveys. Only one of two historic sites have been identified in the project area: complex 50-30-01-19 (*Ahuloulu* heiau and house sites around *Pu'u Ka Pele* crater on the edge of

Waimea canyon) and *Kaumuaia heiau* (50-30-01-22) on the ridge of *Kaumuohua* over looking *Na Pali* coast, See Figure 5.

From Bennett-Archaeology of Kauai (1931:104)

Site 19. Ahuloulu heiau, on the seaward side of the Puu Ka Pele crater cone at the edge of Waimea canyon.

This heiau consists of a walled enclosure the outside dimensions of which are 37 by 41 feet. The walls are 4 feet wide and badly broken. In front of this structure is a flat area about 50 by 50 feet without paving or boundaries. Back of the enclosure there is a paved platform 8 by 12 feet. This platform is backed by a large rock, the plugged-up holes in which indicate that it might have been used as a depository for umbilical cords.

Site 20. House sites, around the crater of Puu Ka Pele.

The remains of seven house sites are indicated by stones in line forming a terrace with a flat space behind. Some of these house sites measured 30 feet in width and 20 feet in depth. Some of the terracing stones were good-sized boulders. The dirt has washed down from above covering the original platform. On top of the crater cone there is a flat platform 30 feet by 30 feet, slightly terraced, in which river stones and coral are found.

Site 21. House sites, toward the sea from Puu Ka Pele on the north side of the road.

A series of house sites are located on top of a flat ridge, the edge of which is lined with stones for 50 feet or more. There are several cross divisions. Fireplaces consisting four or more stones placed in a rectangle are in evidence on several of these divisions.

Site 22. *Kaumuaiea* (*Kaumuaie*) heiau, in the forest of Milolii on the ridge of *Kaumuohua*.

In the forest above Halemanu is a small clearing known as *Kaumuaiea*. Here there are a few stones in a rough line, but not forming a platform or definite outline. Thurmon describes this heiau as a small shrine and says that no platform remains to indicate its location.

[Note: Bennett's sites 19-21 were combined into site 19 by the Hawaii Historic Places Review Board in 1981 when placing the sites on the Hawaii Register of Historic Places.] In 1974, Francis Ching (A.R.C.H.) was contracted by the State of *Hawai'i* to inventory the archaeological sites of *Kaua'i*, and the survey reinvestigated the sites of Bennett (1931). The updated records are in the SHPD inventory files.

Summary of the *Ahupua'a* & Project Area Settlement Pattern

Based on the patterns that emerge through the historical and archaeological material, it appears that *Waimea's* permanent habitation areas were mainly on the lower valley floor, the coastal plains, along the lower foothills, and perhaps some in the upper valleys east of *Waimea* canyon. Irrigated taro would have been in the coastal swamps and river bottoms. Cultivation undoubtedly extended up the narrow upper valleys and may have extended up onto some of the ridges -- in the form of dryland cultivation. Major religious sites were also located on prominent lookouts in the uplands overlooking *Waimea* canyon and *Na Pali* coast and on the coastal plains. A number of access trails also existed in the area. These trails would run from valleys to the ridge tops.

In the project area, temporary habitation sites are likely to have been located on the forested ridge areas. Ranching walls and access trails should also be located on the upland ridges. Possible plantation camps evidence are likely which would include house foundations and refuse areas.

FIELD METHODS FOR THIS SURVEY

The reconnaissance was undertaken over a five day period. A 100% archaeological inventory survey was impossible due to dense vegetation (hurricane debris) and time constraints. Therefore many areas were observed solely from a vehicle driving down the ridge roads. Large sections of the project area had been impacted from tree planting projects which have taken place since the 1930s (Maps of file with the Division of Forestry and Wildlife, DLNR, Kauai District Office). These areas are not expected to contain historic sites. They were highly visible in the field because the trees are planted in parallel rows. These areas were not likely to contain historic sites. Areas that might possibly historic sites were walked briefly when vegetation made it possible.

Other locations where certain plant types which indicated possible undisturbed areas which might contain prehistoric sites, were found and flagged with yellow flagging tape for areas that need to be monitored or areas to use caution. These selected areas are: near the junction of *Papa'alai* and the contour road, *Ha'elele* Ridge, *Polihale* Ridge, *Kauhao* Ridge and *Miloli'i* Ridge. There are several areas that were unsurveyed: *Ha'elele* Ridge, *Polihale* Ridge, *Kepapa* Springs Road., *Kauhao* Ridge, *Pu'u 'Opae* Ridge Road and *Miloli'i* Road between *Makaha* junction and *Miloli'i* Ridge Road

FINDINGS

One historic site (50-30-05-499) was found at the end of *Polihale* Ridge Road, and it was out of the project area. It is a stone alignment, one to two courses high. Large basalt stones form the base with smaller cobbles on top. Earthen fill is directly behind the small 5 meter alignment. It is believed to be a planting area for sweet potato because of the soil fill behind the rock alignment.

No other historic sites were found. Several plantation camp and house locations were noted by Kaipō Akana, a local informant (Fig. 5), but no remains except ornamental plants could be seen in this area.

The findings are discussed by each ridge road investigated (from south to north).

Contour Road *Papa'alai* to *Kauhao*

Length: 7.3 miles Divided into four separate areas.

I. *Papa'alai* to *Ha'ele'ele* (length 3.5 miles)

At the junction of *Papa'alai* and the contour road, a former plantation camp existed. No historic sites were found. The area has been bulldozed. Opposite the ditchman's house near Pu'u Lua Reservoir is said to be another plantation camp. The exact location is unknown. The irrigation ditch parallels most of this route. Heavy earth disturbance occurred in constructing this ditch. This could have possibly destroyed historic sites.

II. *Ha'ele'ele* to *Polihale* (length 1.5 miles)

No significant historic sites found. Several reforestation areas occur here.

III. *Polihale* to *Ka'aweiki* (length 1.5 miles)

No significant historic sites found. Several reforestation areas occur here.

IV. *Ka'aweiki* to *Kauhao* (length .8 miles)

No significant historic sites found. Several reforestation areas occur here.

Papa'alai/Kahelu Ridge Road

Length: 3.75 miles

About 1 mile from the Contour Road junction is another single plantation camp house was there. The exact location of this house was not found during this survey.

No significant historic sites found.

Kekaha Game Management Area

Length: 8.25 miles

Area: 200 acres

The area has been separated by the ridges. Much of the area has been in cane cultivation.

Mana Ridge Road

No significant historic sites found.

'Ohai'ula Ridge Road

No significant historic sites found.

Kolo Ridge Road

No significant historic sites found.

Lapa Ridge Road (Lapa Loop)

Length: 1.7 miles

No significant historic sites found.

Near the shelters (off the Contour Road near *Lapa Loop* in *Lapa Valley*, a plantation camp was said to exist). Nothing was found in the area. A forest fire had occurred in the area several years ago. The area has been replanted.

Ha'ele'ele Ridge Road

Length: 7.45 miles

Additional survey is needed for *Kepapa Springs Road*. Possible remnant terraces existed down the sides of the cliff where the road now exists.

Although no significant historic sites were found surveying is needed from *Kepapa Springs Road* down both forks. The *Ha'ele'ele Valley* has several significant historic sites (Bennett 1931 and Ching 1974).

Informants Kapiro Akana and Roy Yokotake investigated the valley in

November 1992 about found various types of sites. The area is extremely sensitive.

Survey is needed for *Kepapa* Springs Road. Possible remnant terraces existed down the sides of the cliff where the road now exists. Sections of the ridge have been extensively reforested.

***Polihale* Ridge Road**

Length: 4.8 miles

One significant historic site (499) was found along the left fork near the *pali*. It is believed to be out of the project area. This ridge area should be surveyed if heavy equipment will be used in the area.

Although no significant historic sites were found surveying is recommended.

***Ka'aweiki* Ridge Road**

Length: 4.1 miles

No significant historic sites were found.

***Kauhao* Ridge Road**

Length: 4.0 miles

Where the road forks and makes a loop, several *ti* plants were seen. The vegetation was too thick to investigate thoroughly. Area should be surveyed.

***Makaha* Ridge Road**

Length: 1.7 miles

No significant historic sites found.

***Miloli'i* Ridge Road**

Length: 4.05 miles

Miloli'i Road between *Makaha* junction and *Miloli'i* Ridge Road is the location for site 22 *Kaumuaiea* (*Kaumuaie*) *Heiau*. It was not relocated. The location on the SHPD quad map may be a mistake. It is possible located at a higher ridge elevation. Bennett (1931) does not locate this site on his island map. No additional historic sites were found in this ridge road area.

Survey should be done in this area.

Pu'u 'Opae Ridge Road

Length: 1.5 miles

This ridge was not investigated during this survey. It is uncertain if significant historic sites possibly exist in the area.

Survey should be done in this area. Area has been extensively replanted. Cane cultivation existed in much of the area.

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Department of Land and Natural Resources.

CONCLUSION

The upland plateau and ridges were examined during this brief reconnaissance survey. The project area is located in the upland forest zone, which was exploited by early Hawaiians for various raw materials (bird feathers, canoe logs, famine food, etc.). The types of archaeological sites associated with such zones are access trails, temporary campsites and exploitation sites – all of which are quite hard to identify as they tend to be subsurface deposits of quite small size without associated architecture (with the exclusion of caves used as campsites). In the 1870s, Chinese made plantation camps in the area. These would appear to leave archaeological remains such as house foundation, garden plots and trash dumps.

Due to the bulldozing and deep tillage associated with sugarcane cultivation, reforestation and military use of the upland areas near the roads, no evidence of historic sites were found in the areas surveyed. Some additional areas could be undisturbed, however, and these areas still need archaeological survey.

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Attachment 3.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Office
P.O. Box 50167
Honolulu, Hawaii 96850



RECEIVED

93 NOV 29 P1:53

In reply refer to: LAM

Mr. Michael Buck
Administrator
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

DEC 2 1993	INFORMATION
PLANTS	COMMENTS
RECEIVED	APPROVAL
NOVA	DEPT REPLY
INDEXED	INITIALS
SERIALIZED	SIGNATURE

Dear Michael:

On October 7 and 8, Dr. Loyal Mehrhoff of this office accompanied John Bedish (Division of Forestry and Wildlife), Alvin Kyono (Division of Forestry and Wildlife), Tim Flynn (National Tropical Botanical Garden), and Melanie Chapin (National Tropical Botanical Garden) on a site visit to the proposed Roadside Fuel Hazard Reduction Project on Kauai.

As explained to Dr. Mehrhoff, the project has undergone significant reductions in scope since its inception. In its current configuration, the project is restricted to portions of the Contour road, Papaalai/Kalehu Ridge road, Haeleele Ridge road, and Kauhao Ridge road (see attached map). Roadsides will be cleared of all standing and down trees to a ground distance of between 60 and 100 feet on both sides. Exceptions to this procedure will be made as follows:

- (a) Where koa is reestablishing, young koa will be retained;
- (b) Areas with a significant component of native vegetation have been marked and will only have dead or down fuel removed; and
- (c) Areas within 100 feet of Chamaesyce atrococca populations, which is a candidate for Federal listing, will only have dead or down trees removed from the area immediately adjacent to the roadway. Off-road use of skidders or bulldozers will not be allowed in areas with candidate species populations. The Division of Forestry and Wildlife indicated that it wanted to use this project as an opportunity to undertake active management of Chamaesyce atrococca by conducting

controlled reintroduction of this candidate species into areas which had burned in the past. Observations in the field suggest that this species is fire-intolerant.

There are no Federally proposed or listed endangered plant species within the project area. All areas in the original project description which contained endangered species have been excluded from the current project area.

I would like to take this opportunity to suggest that the project formally address weed abatement. There is an obvious need to control alien weeds so as to reduce their spread and prevent the further alteration of native forests. It would also seem to be important to control alien weeds, especially grasses, from a fire control perspective. Earlier drafts did not specifically identify how this project intended to prevent alien weed species from spreading into cleared areas. These drafts also did not identify who was responsible for weed monitoring and weed control nor did it clearly describe the methods by which invasive weeds would be controlled.

Thank you for considering our comments on this project.

Sincerely,

Robert W. Rosa
for/ Robert P. Smith
Field Supervisor



OFFICE OF STATE PLANNING

Office of the Governor

MAILING ADDRESS: P.O. BOX 3540, HONOLULU, HAWAII 96811-3540
STREET ADDRESS: 250 SOUTH HOTEL STREET, 4TH FLOOR
TELEPHONE: (808) 587-2846, 587-2800

MAR 8 1994

JOHN WAIHEE, GOVERNOR

FAX: DIRECTOR'S OFFICE 587-2848
PLANNING DIVISION 587-2824

Ref. No. P-4518

SEP 7 8 24

September 2, 1993
STATE OF HAWAII

DIVISION OF AQUATIC RESOURCES	
Director	<input checked="" type="checkbox"/> Suspended Date
Deputy Director	<input checked="" type="checkbox"/> Swift Reply
Chief of Staff	<input type="checkbox"/> Reply Direct
Administrative Services	<input type="checkbox"/> Comments
Information Services	<input type="checkbox"/> Information
Legal Services	<input type="checkbox"/> Comp. Act & File
Public Affairs	<input type="checkbox"/> Return to:
Records Management	<input type="checkbox"/> Copies to:
Secretary	<input type="checkbox"/> Remarks:
Office Services	

MEMORANDUM

TO: Honorable Keith W. Ahue, Chairperson
Department of Land and Natural Resources

FROM: Mary Lou Kobayashi *Mary Lou Kobayashi*
Planning Program Administrator

SUBJECT: State Clearinghouse Review--Termination of Use of the Single Point of Contact and Executive Order 12372 - Intergovernmental Review of Federal Programs

As of July 1, 1993, the State of Hawaii has discontinued its participation in Executive Order 12372 - Intergovernmental Review of Federal Programs. Therefore, applications for Federal grant programs no longer have to be submitted to the State Clearinghouse for review. We are returning your attached project application.

If you have any questions, please call Charles Carole at 587-2804.

Attachment

RECEIVED

Div. of Land and Resources

JOHN WAIHEE
GOVERNOR

'94 FEB 10 P3:19



BRUCE S. ANDERSON, Ph.D.
INTERIM DIRECTOR

FOR THE
STATE OF HAWAII

STATE OF HAWAII

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

220 SOUTH KING STREET

FOURTH FLOOR

HONOLULU, HAWAII 96813

TELEPHONE (808) 586-4185

FACSIMILE (808) 586-2452

February 9, 1994

The Honorable Keith W. Ahue, Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Mr. John Bedish

Dear Mr. Ahue:

Subject: Environmental Assessment for Roadside Fuel Hazard
Reduction, Emergency Watershed Protection Project, Kauai

We understand that the Department of Land and Natural Resources has
issued a negative declaration for the subject project.

Pursuant to subsection 343-5(b), Hawaii Revised Statutes, please
submit the following to our office:

1. Letter of Negative Declaration determination;
2. Four copies of the Final Environmental Assessment which
includes all comment letters and their responses; and
3. OEQC Bulletin Publication Form.

If you have any questions, please call Jeyan Thirugnanam at
586-4185.

Sincerely,

Bruce S. Anderson
fr BRUCE S. ANDERSON, Ph.D.
Interim Director

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

February 4, 1994

Mr. Mark Smaalders
Sierra Club Legal Defense Fund, Inc.
223 South King Street
Austin Building - Suite 400
Honolulu, HI. 96813

Re: Response to comments; Revised Environmental Assessment,
Emergency Watershed Protection Project, Kauai.

Dear Mr. Smaalders:

The following is in response to your comments of January 25,
1994 to the revised environmental assessment for the above
mentioned project:

COMMENTS under the heading, "Insufficient Discussion of
Alternatives"

"The alternatives presented, with the exception of the
'No Action Option', all call for removal and/or
elimination of burnable material. There is no
discussion of why 60-100 foot clearings were deemed
necessary (for example, why not 30"?), no discussion of
how the chance of fires-being set could be reduced, and
no discussion of how the clearing program could affect
the native forest. To make the consideration of
alternatives meaningful, options other than clearing
should be explored, as well as varying degrees of
clearing. The costs associated with a major fire should
be presented to allow the reader to judge whether the
costs and impacts of this project are in fact
justified."

"The EA should contain information on the history of
fires in the project area. What was the fire experience
after Hurricane Iwa? Is this information helpful in
determining the need and justification for the project?
If so, the EA should provide it. In general, some
evidence should be provided regarding the effectiveness
of road clearing and fire break construction in keeping
fires from spreading allowing for containment. This

KEITH W. AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANA'KE

AQUACULTURE DEVELOPMENT
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AQUATIC RESOURCES
BOATING AND OCEAN
RECREATION
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

Mr. Mark Smaalders
Page 2

would help inform the public as to the need and justification for the project."

RESPONSE: After consideration and discussion with USDA Forest Service Fire Management Advisors, clearing was deemed to be the only viable alternative. We have to remove fuel in order to effectively reduce hazards and create fire breaks. Distances were determined based on vegetation heights and densities. Recommendations from advisors for fire breaks were for a 300 foot width, which is considerably wider than the ones we are proposing. We reduced the recommendations in an effort to reduce impacts, particularly to native plants. This, of course, does increase the fire risk correspondingly. Varying degrees of clearing, as we determined them, are to reduce impacts on native plants. However, partial clearing leaves fuel, which from a fire perspective is not an ideal solution. Costs of a major fire are quite difficult to estimate and usually only reflect part of the total loss. The loss of related resources is even more difficult to quantify, running the range from developed structures to endangered species and habitat, which often are at best intangible. Direct suppression cost for a major fire could easily run into millions of dollars.

As we have often stated in the past, the use of fire history is not a good predictor for future fires. Considering the dry conditions, the existing high level of fuel loading in the area as well as the high rate of public use and the abundant evidence of illegal fires, the potential for a serious fire in the project area is very high.

The road clearing project ensures access to fire fighting crews and may also serve to provide fire breaks. If these roads are not cleared to provide access, we may not be able to safely send fire fighting personnel into threatened areas. There might not be time later to construct needed fire breaks. Not having access to strategic fire break locations could gravely compromise our ability to effectively fight fires.

COMMENTS under the heading: "Proposed Mitigation"

"Although we conclude from the revised EA that Bahia grass (Paspalum notatum) will not be used for erosion control as was formerly proposed, the impact of other alien plants on native species and forest, and the potential for erosion both remain as serious concerns. The statement in the revised EA (at § VII.D.) suggests that "mowing and mechanical control will be employed in the cleared areas, when weeds start to grow back, where the slopes permit." Does DOFAW have experience in this

Mr. Mark Smaalders

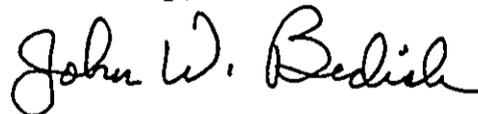
Page 3

area of Kauai that leads it to believe that this will be successful? Does DOFAW have experience with the use of chipped trees and plant materials as an erosion control measure? Is there a contingency plan for dealing with erosion if it becomes excessive, or plans to monitor erosion and stream sedimentation? Has DOFAW considered the use of native grasses to both limit erosion and limit the spread of alien plants. These questions, as well as the underlying issues, must be addressed in the final EA.

RESPONSE: Regarding weed control, the USDA-Forest Service has told us that while a chipped residue cover remains in cleared areas, we can expect that it will restrict germination of any seeds present under it. We are also confident that the chipped residue cover will serve as a mulch and act as a protective retardant to erosion for several years. The use of mulch covers for reduction of erosion is recommended by the USDA-Soil Conservation Service. As the mulch breaks down, we will consider whether or not a ground cover needs to be established to retard erosion and the spread of alien plants. If it appears that a ground cover needs to be established, we will utilize expertise from both the USDA-Forest Service and Soil Conservation Service to determine what kind of replacement vegetation to use on the cleared areas, as well as establishment and management techniques that would be needed. One of the major considerations will be not to create new levels of dangerous fuels and bring us back into a dangerous situation. We would be looking for something that is not flammable and that could serve to break the continuity of the fuels. Another consideration would be the ease of establishing and subsequent maintenance needs.

Please rest assured that the questions you have raised have and will continue to be considered in any management decisions, that are needed to carry out DOFAW's assigned responsibilities to protect the land and related resources in the project area.

Sincerely,



John W. Bedish
Wildlife Biologist



SIERRA CLUB LEGAL
DEFENSE FUND, INC.

The Law Firm for the Environmental Movement

RECEIVED

'93 JAN 26 P2:21

FOREST SERVICE
STATE OF HAWAII

Sumner, Mi. McKinley

Ansel Adams

223 South King Street, Austin Building, Suite 400, Honolulu, Hawaii 96813 (808) 599-2436 FAX (808) 521-6841

MID-PACIFIC OFFICE

Paul P. Spaulding, III
Managing Attorney

Denise E. Antolini
Staff Attorney

Eric S. Walters
Project Attorney

Marjorie F.Y. Ziegler
Mark Smaalders
Resource Analysts

Michele Y. Kusunoki
Office Manager

January 25, 1994

John Bedish
Division of Forestry and Wildlife
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Re: Revised Environmental Assessment for Roadside Fuel
Hazard Reduction, Emergency Watershed Protection Project,
Kaua'i

HOME OFFICE

San Francisco, California

Dear John:

REGIONAL OFFICES

Bozeman, Montana
Denver, Colorado
Juneau, Alaska
New Orleans, Louisiana
Seattle, Washington
Tallahassee, Florida
Washington, D.C.

Aloha! The Sierra Club Legal Defense Fund provides the following comments on the Division of Forestry and Wildlife (DOFAW) proposal for roadside fuel hazard reduction in Waimea, Kaua'i. We remain fully supportive of DOFAW's aim of reducing the hazard of wildfires, particularly in Hawai'i's native forests, and appreciate DOFAW's efforts to both improve the environmental assessment for and minimize the adverse environmental impacts associated with the project.

DOFAW has failed, however, to address in the revised Environmental Assessment (EA) several concerns that we and others raised in comments on the original EA for this project, and which have not been negated as a result of modifications in the scope and design of the project. We believe it is essential for DOFAW to seriously consider the issues outlined below, and to address them in a way that justifies the chosen course of action.

We look forward to such a full analysis in the final EA for this project.

Insufficient Discussion of Alternatives. The revised EA's discussion of alternatives (based on the "Kauai Wildfire Mitigation Plan") remains insufficient to allow a meaningful comparison between different hazard reduction strategies. The alternatives presented, with the exception of the "No Action" option, all call for



removal and/or elimination of burnable material. There is no discussion of why 60-100 foot clearings were deemed necessary (for example, why not 30'?), no discussion of how the chance of fires being set could be reduced, and no discussion of how the clearing program could affect native forest. To make the consideration of alternatives meaningful, options other than clearing should be explored, as well as varying degree of clearing. The costs associated with a major fire should be presented, to allow the reader to judge whether the costs and impacts of this project are in fact justified.

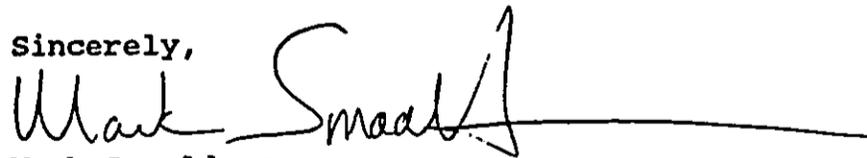
The EA should contain information on the history of fires in the project area. What was the fire experience after Hurricane 'Iwa? Is this information helpful in determining the need and justification for the project? If so, then the EA should provide it. In general, some evidence should be presented regarding the effectiveness of road clearing and fire-break construction in keeping fires from spreading, and allowing for containment. This would help inform the public as to the need and justification for the project.

Proposed Mitigation. Although we conclude from the revised EA that Bahia grass (Paspalum notatum) will not be used for erosion control as was formerly proposed, the impacts of other alien plants on native species and forest, and the potential for erosion both remain as serious concerns. The statement in the revised EA (at § VII.D.) suggests that "mowing and mechanical control will be employed in the cleared areas, when weeds start to grow back, where the slopes permit." Does DOFAW have experience in this area of Kaua'i that leads it to believe that this will be successful? Does DOFAW have experience with the use of chipped trees and plant material as an erosion control measure? Is there a contingency plan for dealing with erosion if it becomes excessive, or plans to monitor erosion and stream sedimentation? Has DOFAW considered the use of native grasses and other plants to both limit erosion and limit the spread of alien plants? These questions, as well as the underlying issues, must be addressed in the final EA.

Thank you for the opportunity to comment on this revised EA. We encourage DOFAW to respond fully to these comments in the final EA, and to seriously consider the issues in making a final determination on whether to proceed with this project.

If we can be of any assistance, please do not hesitate to call us.

Sincerely,


Mark Smaalders

cc: Ed Petteys, DOFAW Kaua'i

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
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February 4, 1994

KEITH W. AHUE, CHAIRPERSON
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Ms. Suzanne Marinelli
Sierra Club, Hawaii Chapter
P. O. Box 1172
Hanalei, HI 96714

Dear Ms. Marinelli:

Re: Response to Comments: Revised Environmental Assessment,
Emergency Watershed Protection Project (EWPP), Kauai

The following is in response to your comments of January 8,
1994, on the above mentioned document:

COMMENT: "Most of the information I got in June was from the contract specifications document handed out to potential bidders on the project - not from the EA. When I tried yesterday to get a copy of the latest 'contract specifications' document, I was told that no more were available. Does this mean that most of the substantial information about your project is not provided to the public?"

RESPONSE: No. The specifications were in the process of being revised to conform to the changes resulting from the public comments on the initial EA. The revised EA showed the modifications that resulted in the proposed project. You were supplied with the latest specifications at our meeting with you and other members of the public. We are always willing to provide relevant information.

COMMENT: "Even more disturbing, I was told that the contract had already been awarded to a construction firm on Oahu. If this is the case, are we merely engaging in an exercise in futility when we comment on this? Is this legal?"

RESPONSE: The federal grant money came with a requirement that the funds had to be obligated by July 6, 1993, or they would be forfeited. The only way to obligate them was to award a contract, which was done on June 30, 1993, after the close of bidding. However the contractor cannot proceed

Suzanne Marinelli
Page 2

until the public review process has been completed, all needed modifications are incorporated and all relevant comments addressed. No order to proceed can be issued to the contractor until the NEPA Process has been completed.

COMMENT: "What studies have been consulted for other areas of the U.S. regarding fire prevention? In what areas would the no action alternative be appropriate?"

RESPONSE: Studies in other areas are not relevant to the situation in Kokee. A fire mitigation plan was completed for the island of Kauai, which included two different fuel assessments. This plan listed the Kokee Area as having the most critical fire potential on the island from the available fuel stand point. We know of no areas where the "No Action" alternative would be appropriate given the fire potential that exists.

COMMENT: "What states fight wildfires?"

RESPONSE: They all do.

COMMENT: "What is the wilderness recovery profile of areas allowed to burn? i.e. Yellowstone, Glacier, etc.?"

RESPONSE: We don't know and do not feel that they are applicable to Kokee, as it is not a totally natural area.

COMMENT: "What is the fire history of the proposed clear cut areas?"

RESPONSE: We assume you mean the proposed total clearing areas and do not feel that their fire history is relevant considering the high availability of fuel and the potential fire hazard that exists.

COMMENT: "What part of the clear cut areas are on ceded Hawaiian lands? Were consultations made in the Hawaiian Community before any decisions were made? What responses were received?"

RESPONSE: We do not know what portion is on ceded Hawaiian land. However, Hawaiian groups had the same availability to our proposals as any other group in the general public and had equal opportunity to comment if they so desired. No comments were received from Hawaiian groups.

COMMENT: "Who is liable for fires that result from the clear cutting process, etc.?"

Suzanne Marinelli
Page 3

RESPONSE: The contractor is responsible for any hazard or expense resulting from his action.

COMMENT: "What portion of Kokee is currently covered with invasive weed species such as lantana, banana poka, etc.?"

RESPONSE: The invader plant species you refer to are pretty well evenly distributed throughout the Kokee Area.

COMMENT: "If Bahia grass were to be planted, etc.?"

RESPONSE: The grass planting proposal has been removed from the project, hence it is no longer a factor in the proposal and has no relevance in this discussion which pertains to the published EA.

COMMENT: "In Section 02111-2, #E of the contract specifications, I found this 'The State reserves the right to sell or dispose of any forest resource on work segments not yet started and on segments already completed and authorized for payment.' What is the projected income for such sales? etc."

RESPONSE: No assessment has been made of projected income from timber sales. The scope of the proposed project requires the contractor to stack any dead or downed woody material that has marketable value for the state to dispose of at public auction at a later date. The state cannot carry out logging operations ad infinitum in this project.

COMMENT: "How does eliminating 22.5 miles of wilderness project protect that wilderness? etc."

RESPONSE: This project puts into place measures to protect the entire forested area and its resources from wild fire and provides a means to safely insert fire fighting crews into strategic areas should that action become necessary.

COMMENT: "It seems to me if you really want to preserve Kokee, that you'd fund some fire towers and a few more employees from here on Kauai., etc."

RESPONSE: These comments do not address the need for fire breaks and as previously stated the federal grant money cannot be spent for the purposes that you suggest.

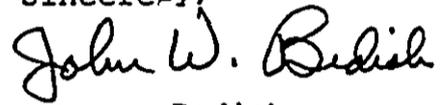
Please be assured that DOFAW has attempted to consider every aspect and need created by the very real fire hazard that exists in the Kokee Area and has actively solicited and considered public input. As part of this process and as the

Ms. Suzanne Marinelli
Page 4

responsible official, designated to carry out the management responsibility for the Kokee Public Lands identified in this project, the Chairman of the Board of Land and Natural Resources has determined that the issuance of a negative declaration adequately fulfills NEPA Requirements.

Thank you for your interest and input regarding this effort.

Sincerely,



John W. Bedish
Wildlife Biologist



SIERRA CLUB, HAWAII CHAPTER

JAN 14 P3:00

The Arcade Building, Room 201
212 Merchant Street, Honolulu, Hawaii 96813
P.O. Box 2577, Honolulu, Hawaii 96803
(808) 538-6616

P.O. Box 1172
Hanalei
Hawaii 96714
(808) 826 6877

January 8, 1994

Mr. John W. Bedish, Wildlife Biologist
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

Aloha, Mr. Bedish:

In June, 1993, I submitted comments on a draft Environmental Assessment regarding the proposed wildfire mitigation plan for Kokee. I raised many questions in my letter regarding both the need for the project, and the way in which it was to be executed. This week I received the 'revised draft E.A. and Notice of Negative Declaration pertaining to Job #64-KF-F.' While the new document is much more substantial than the first, my concerns and worries are no less.

These are some of the things that trouble me:

1. Your press release of December 26, 1993 says, in part, 'the Division of Forestry and Wildlife feels that the original concerns that were expressed have been fully recognized and addressed by the revised document that is now offered for review.' I must respectfully disagree. Below I have listed many of the questions I first asked in June; they are still unanswered.

2. Most of the information I got in June was from the 'contract specifications' document handed out to potential bidders on the project - not from the E.A. When I tried yesterday to get a copy of the latest 'contract specifications' document, I was told that no more were available. Does this mean that most of the substantial information about your project is not provided to the public?

3. Even more disturbing, I was told that the contract HAD ALREADY BEEN AWARDED - to a construction firm on O'ahu. If this is the case, are we merely engaging in an exercise in futility when we comment on this? Is this legal?

Recycled paper



January 8, 1994
Page two

Following are some of the questions I asked back in June, which I feel are still unanswered by the latest amended E.A.:

What studies have been consulted for other areas of the U.S. regarding fire prevention? In what areas would the no-action alternative be considered appropriate?

Which the United States fight wildfires? Which do not? How comparable are their success rates? What is the wilderness recovery profile of areas allowed to burn (i.e., Yellowstone, Glacier National Park, etc.)? How relevant are they to Kokee?

What is the fire history of the proposed clearcut areas?

What part of the proposed clearcut area is on ceded Native Hawaiian land? Were consultations made in the Hawaiian community before any decisions were made? If so, what responses did you receive?

Who is liable for fires that result from the clearcutting process (the contract specs discuss fire danger from bulldozer sparks, and the dangers of spontaneous combustion from laying mulch too deeply)?

What proportion of Kokee is currently covered in invasive weed species such as lantana, banana poka, etc.?

If Bahia grass were to be planted (as indicated in the first set of documents), what weed control measures - other than mowing 'when the weeds start to grow back', would be undertaken? How invasive are the weeds mentioned above? How successful have control measures been in the past with these weeds?

Does the opportunity exist for native revegetation to occur on its own after Bahia grass is planted?

How similar is this grass to the African cattle-food grass, Kikuyu, which has been planted in the wilderness areas here in the past? I'm told the kikuyu's roots are so deep that it prevents native revegetation altogether.

In Section 02111-2, #E of the contract specs, I found this: 'The state reserves the right to sell or dispose of any forest resource on work segments not yet started and on segments already completed and authorized for payment.' What is the projected income for such sales? How long would they go on? As this is worded, could the state not simply undertake logging, ad infinitum, of the resource?

January 8, 1994
Page three

Like many other people, I have countless other questions about this project - Why? How does eliminating 22½ miles of wilderness protect that wilderness? Does moving the project out of sight of the highway make it okay? You propose total and partial clearcutting for 511 acres of Kokee's wilderness; that's a lot of forest eliminated and turned into a lawn. How much of Kokee has burned in this century?

It seems to me that if you really want to preserve Kokee, you'd fund some fire towers and a few more employees from here on Kauai. Those employees could actually enforce the 'no open fires' policy. They could derive an income in the process, rather than enriching the coffers of a company on O'ahu. And we could keep our forest. It may be broken and battered, but it's a forest, one that's survived hurricane damage for many thousands of years.

In closing, I ask that a full and complete environmental impact statement be prepared for this questionable project, and that a public hearing be held to garner public input.

Kind regards,



Suzanne Marinelli
Vice President for the
Pacific Basin

cc: Sierra Club Legal Defense Fund
Donna Honaike
Keith Ahue

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

February 4, 1994

Ms. Sheila Heathcote
P. O. Box 154
Makaweli, HI 96796

Dear Ms. Heathcote:

Thank you for your interest in the emergency watershed protection project that we plan to carry out in the Kokee Area; While we share your concerns, the very real threat of wildfire and the high amount of fuel/storm debris in the area create a very dangerous situation for people, who might get trapped in the Kokee Forest should fire break out. As you may or may not be aware, recreational use of the area is quite high. We must also be concerned about private residences, as well as the various camp areas that are in the area. There have already been several fires in the area, one of which we know was deliberately set. Luckily there were personnel in the vicinity so they could put them out before they got out of control.

Further, past history of fires is meaningless when given the dry weather conditions that have existed since the hurricane struck. While it is true that there has been some rain recently, the overall situation in Kokee is still way behind normal precipitation. The high amount of highly combustible fuel lying on the ground creates conditions that would cause any fire to rapidly get out of control and at the same time could prevent our being able to insert a fire fighting team without putting them at extreme risk.

While we share your concern about the native forest and agree with you that Kokee is unique, we also feel that the existing threat more than justifies the conservative action that we propose to take.

Sincerely,

A handwritten signature in cursive script that reads "John W. Bedish".

John W. Bedish
Wildlife Biologist

KEITH W. AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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JOHN P. KEPPELER, II
DONNA L. HANAKE

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Sheila Heathcote
P.O. Box 154
Makaweli, HI 96769
(808) 335-3814 PH/FAX

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93 JAN 13 P2:05

FORESTRY
STATE DEPARTMENT

January 10, 1993

Mr. John W. Bedish
Division of Forestry and Wildlife
1151 Punchbowl St., Rm 325
Honolulu, HI 96813

Dear Mr. Bedish,

I am appalled at the proposed clearing of back roads in Kokee State Park. At a time when our island is in a very severe crisis involving endangered native plant and bird species, the clearing of 511 acres of native and non-native forest in the Kokee area is unthinkable.

Many years ago I lived in the state of Maine, where forest fires are a common occurrence. They are not started by arsonists or careless campers. Lightning strikes cause the majority of forest fires, which are a natural part of the forest's regeneration process.

After a fire, new vegetation would again begin to grow in the highly fertile ashes and soil. Soon, the new growth would grow tall and strong and shoots of the second layer of forest regrowth would develop under the protective canopy.

I am not saying that a forest fire would have the same results on Kauai, because I am not a botanist or forest ranger. But the odds of a big forest fire occurring in Kokee are, historically, very small. The funds appropriated to this disastrous clearing would be much better spent on park and forest rangers and fire towers, like most parks in other parts of the United States and world already have.

Last week, I conducted an interview with President Clinton's Secretary of the Interior, Bruce Babbitt, when he visited Kauai. One quote that remains foremost in my mind is when he said, "Kauai is such a unique place. I hope the people in charge of this island are very careful to preserve the natural environment and learn from the mistakes of other places."

How can we justify such a terrible mistake as cutting down our beautiful forest and planting some horrible type of grass that will soon become as much of a plague and threat to the native vegetation as blackberry, lantana and banana poka have become?

Kauai is one of the few Hawaiian Islands that has remained green. Compared to the extensive over-grazing on Maui and the Big Island by cattle, and the barren landscape of Lanai and Kahoolawe, Kauai is still a beautiful, peaceful green environment for both residents and visitors alike.

Kauai islanders hunt animals for food and sport in the forest. Native birds struggle to maintain their symbiosis

with the unique flora of Kokee and the Alakai swamp, in which they evolved. Scientists, students and naturalists from all over the world come to Kauai to study and revel in the beautiful unique vegetation and eco systems that occur on our island -- that are found NO WHERE ELSE IN THE WORLD.

Please leave the Kokee forest as it is. Kokee has survived many hurricanes with downed trees and will survive many more. I venture to say that the forest always has and will fare better than mankind, with our man-made buildings, commercial developments and plans such as this one.

Widening the secondary roads is a short cut to something much larger and far more grave than the POSSIBILITY of a forest fire. It will only hasten the death of our incredible natural environment.

Don't ruin Kauai. It's is all we have got.

Mahalo Nui Loa,

Sheila Heathcote, Journalist

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

February 4, 1994

KEITH W. AHUE, CHAIRPERSON
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Ms. Sybil Frances
P. O. Box 340
Waimea, HI 96796

Dear Ms. Frances:

Thank you for your interest in the emergency watershed protection project that we plan to carry out in the Kokee Area; While we share your concerns, the very real threat of wildfire and the high amount of fuel/storm debris in the area create a very dangerous situation for people, who might get trapped in the Kokee Forest should fire break out. As you may or may not be aware, recreational use of the area is quite high. We must also be concerned about private residences, as well as the various camp areas that are in the area. There have already been several fires, one of which we know was deliberately set. Luckily there were personnel in the vicinity so they could put them out before they got out of control.

Further, past history of fires is meaningless, when given the dry weather conditions that have existed since the hurricane struck. While it is true that there has been some rain recently, the overall situation in Kokee is still way behind normal precipitation. The high amount of highly combustible fuel lying on the ground contributes to the conditions that would cause any fire to rapidly get out of control and at the same time could prevent our being able to insert a fire fighting team without putting them at extreme risk.

While we share your concern about the native forest and agree with you that Kokee is unique, we also feel that the existing threat more than justifies the conservative action that we propose to take.

Sincerely,

A handwritten signature in cursive script that reads "John W. Bedish".

John W. Bedish
Wildlife Biologist

Division of Forestry and
Wildlife Office: Bedish

(808)
Ph. 335 3302

In response to the States proposed Kokee land clearing on 500 acres for the purpose of fire control: by Sybil Frances-P.O box 340, Wainea, Kauai Hi., 96796 -- Jan. 14, 1994
Please hold off on this project until we look at it again.

This is the right time for a new beginning, a continuation from where each of us was in 1993, a new global perspective in the recreation of Paradise everywhere. For me I begin again on Kauai, my birthplace, at Kokee where my fondest memories still linger, with the forests and all the rich minds and hearts who care to make the next step in each of ~~his~~ ^{her} own ways. I am asking for help from those of you who believe a conscious design is needed for a forest full of tall grey, broken, leafless, dead trees, a result of two hurricanes. But, are they really dead and useless to be smashed down and pushed over nature's nursery by bulldozers. Would the ceremonial canoe builder enter the forest in such a way without checking it out with the birds, the trees themselves, the forest floor? No he would not and neither would I. Already I see new life in decomposing trees from Hurricane Eva along the Kokee trails--moss, ferns, lichens, small Ohia Lehua trees, are busily recreating nature in these logs. What right do we have to destroy this?

Kauai is like a small pizza I am dividing into eight parts or eight Ahupuaas--two of these parts represent a dimension I have not yet discovered. Kauai is a part of the larger pizza HAWAII which is a part of the very much larger pizza, EARTH. And I'm calling all of these pizzas PARADISE PIZZAS because that's what many of us want to recreate. Each piece in each pizza is connected to the other and to the larger pizza and on and on. So making a design in the Ahupuaa fashion in one section has to consider all sections in all pizzas. Once a design is made with sensible and sustainable placement of carefully selected trees, shrubs, vines, flowers, grasses, ponds, ditches, swales, meadows, in relationship to houses, roads, wildlife and fire control etc., it can be implemented with very little use of big machinery. Once the work is completed, you have a permanent and sustainable and manageable productive forests for all life to enjoy--we who enjoy the forests and its many uses become the stewards who give back more than we take out, who recreate wetlands for water purification.. We will heal ourselves by learning to work with nature.

I am ready to begin to make this design with State, County, and local citizens who like this connective approach for these 500 acres and my own back yard, ^{wherever I like.} I have had some

brief training in Permaculture Principles that come from various disciplines, ecology, energy conservation landscape design, environmental science--the design is based on

Relative location

Each element performs many functions
Each important function is supported by many elements
Efficient energy planning with zones and sectors
Emphasis on the use of biological resource over fossil fuel resources
Energy recycling on site (fuel and human energy)
Using and accelerating natural plant succession to establish favorable sites and soils.
Polyculture and diversity of beneficial species for a productive, interactive system.
Use of edges and natural patterns for best effect

The core of Permaculture is design which is a connection between things. Its net water, or a chicken, or the tree. It is how the water, the chicken, the tree are connected. To enable a design component (ponds, house, woodlot, gardens, windbreaks, firebreaks, to function efficiently, we must put it in the right place--at Kekes we're talking about people living and working with nature and its time for a design or two. So, please, work with us and ~~infinite~~ ^{see} ~~to~~ ^{as} work with you. This land ^{as} belongs to itself--we can only work with it--it wants careful and considerate thought then a small amount of manipulation done with hand tools--chain saws for the firewood, chippers for mulch--some to be sold, some to stay--some fallen trees to stay for nature's nursery. Let's make the design, put in the fire breaks first, then carefully, and selectively ~~implement~~ ^{implement} the design by first removing any trees that could fall and hurt someone and recycling them first on the land itself and selling what is left over to help support the work. Please respond to this request. This land has legal owners; ~~but~~ ^{but} it really is ~~the~~ ^{is} the responsibility of us all--we need a few simple rules that we all help each other to follow. I feel confident that we ^{will} all be working together in the near future. Please let me know when I can sit down with you to talk. I'm enclosing a graph that shows how contemporary western agriculture can change into a Permaculture or Permanent Agriculture and the results that will happen. These principles can be applied to some of the hurricane stricken forest--Excuse this letter full of corrections. I'm running out of time. Thank you for reading this. *Amelia Spilbrauer*

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

February 4, 1994

Mr. Matthew B. Harms
P. O. Box 611
Lawai, HI 96725

Dear Mr. Harms:

The following responds to your comments regarding the proposed emergency watershed protection project on the island of Kauai:

COMMENT: "A resolution to the mentioned 'illegal fires' problem was not addressed. Even with the proposed project, nothing is advocated for the prevention of the fires. A few dollars spent to prevent the fire could save many thousands needed to extinguish a fire."

RESPONSE: The federal grant money funding this project are dedicated for cleanup of storm damage and restoration of the area to the condition it was in prior to the storm event. Fire prevention measures were not mentioned for this reason. However, fire prevention measures are on-going parts of regular DOFAW forest management programs.

COMMENTS: "Access Roads/fire breaks, if these are being cleared for the reasons stated, 'Then I can see no justification for:
(a) The clearing of both portions of the parallel ridge roads in Alternate #3. They are redundant and only one needs to be cleared.
(b) The clearing of both branches of the fork at the ridge in Alternate #1 (Ha'ele'ele)
(c) The clearing of the side road (To Kapaa Spring) in Alternate #1 (Ha'ele'ele).
(d) The clearing of the Contour Road, the circle (or loop) by the picnic area would only require a single to be cleared."

"Any monies not used to clear the above areas could be used to improve the road beds themselves (put gravel or whatever) or for weed control (concern #3)."

KEITH W. AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPeler, II
DONA L. HANA'IKE

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Mr. Matthew Harms
Page 2

RESPONSE: The areas we have designated for clearing are intended to give fire fighting crews, the greatest number of options and/or access points for reaction in the event of a fire. As was stated earlier, EWP funds may only be used to restore an area to what it was before the storm event. Any road surfacing with gravel where none was present before, etc., would not qualify for the terms of the grant.

COMMENTS: "Weed Control: 'Mowing and mechanical treatment' I'm not sure that enough thought and consideration has been put into the area of weed control.

(a) 'Long term control' Research grant for biological control does not present a solution. It is like the research grant for the eradication of fruit flies on Kauai. It came up with all kinds of ideas and alternatives, but no actual control for the flies."

RESPONSE: There are many areas where much is unknown about biological controls for vegetation. The emphasis needs to be long term so that we can have a basis to prioritize our limited resources to get the most possible benefit for the funds invested.

COMMENT (b) "Mowing and mechanical control will be an ever resistent and continuing problem even after the funds for this project have all been expended. If not continually kept under control blackberry and lantana (as well as others) quickly re-infest open spaces. Also the current staff are struggling to keep up with the volume of work needed to maintain their present responsibilities."

RESPONSE: We will be carrying out mechanical treatment as necessary under regular programs, recognizing that this amounts to an additional expense.

COMMENT: "The possibility of using herbicides to do emergency weed control on the greatly increased volume of open land resulting from this project could have an extremely negative impact on the area in general (both flora and fauna).

RESPONSE: We are not considering the use of herbicides at this point in time.

Thank you for your interest in the proposed emergency watershed protection project.

Sincerely,

John W. Bedish

John W. Bedish
Wildlife Biologist

TO: John W. Bedish DLNR Div. of Forestry and Wildlife
 From: Matthew B. Harris P.O. Box 611, Lawai HI 96765
 Subject: Proposed Emergency Watershed Protection Project, Kauai

94 JAN 25

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I believe the overall purposes and intents of this project are good. I do have several concerns as referenced in the "Amended" Environmental Assessment

- 1) a resolution to the mentioned "illegal fires" problem was not addressed. Even with the proposed project nothing is advocated for the prevention of the fires. A few dollars spent to prevent the fire could save ^(many) thousands needed to extinguish a fire.
- 2) Access Roads / Fire Breaks if these are going to be cleared for the reasons stated "Access/compartmentalization" then I can see no justification for:
 - (a) the clearing of both portions of the parallel ridge roads in alternate #3 They are redundant and only one needs to be cleared.
 - (b) The clearing of both branches of the fork at the end of the ridge in alternate #1 (Ua'e'e'e)
 - (c) The clearing of the side road (to Kapepe spring) in alternate #1. (Ua'e'e'e)
 - (d) The clearing on the contour road the circle (or loop) by the picnic area would only require a single ~~road~~ ^{road} to be

cleared.

Any monies not used to clear the above areas could be used to improve the roadbeds themselves (put gravel or whatever) or for weed control (concern #3)

3) weed control: "Mowing and Mechanical Control" I'm not sure that enough thought and consideration has been put into the area of weed control.

(a) long term control: "research grant for biological control" does not present a solution it is like ~~the~~ ^{the} research grant for the eradication of Fruit Flies on Kauai. It came up with a lot of ideas + alternatives but no actual control for the flies.

(b) mowing and mechanical control will be an everpresent and continuing problem even after the funds for this project have all been expended. If not continually kept under control Blackberry and Lantana (as well as others) quickly re-infest open spaces. Also the current staff are struggling to keep up with the volume of work needed to maintain their present responsibilities

The possibility of using herbicides to do "emergency" weed control on the greatly increased ~~some~~ volume of "open" land, resulting from this project ~~is~~ could have an extremely negative impact on the area in general (both flora + fauna)

Mahalo

Thoms

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

KEITH W. AHUE, CHAIRPERSON
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February 4, 1994

Katherine E. Walker
308 Kaokolo Place
Kapaa, HI 96746

Dear Ms. Walker

The following is in response to your comments of January 21, 1994, to the revised Environmental Assessment for the Proposed Emergency Watershed Protection Project (EEWP), on the island of Kauai:

COMMENT: "If the primary concern is man-made destruction caused by accidental fires spreading from camp fires or arson, then would it not be better to spend these funds on enforcement of fire safety laws? Implementing a fire prevention program would be a creative way to lessen the potential threat of fires, while providing much needed jobs in our community."

"One of the main problems with the argument for clearing is that it is only a short-term solution. Once the area is cleared, weeds and non-native species, which are already destroying parts of Kokee, will grow and become a 'fire hazard' requiring continual maintenance after the federal funding has ended. This is not a long term solution to a long term problem but merely an attempt to meet the requirements of a federal agency whose representatives may not have even set foot in the forests of Kokee."

RESPONSE: EEWP funds are dedicated to removing existing threats to life and property, which is represented by the existing potential fire threat in the watersheds of Kokee. These funds, by law, may not be used for other purposes such as your suggestion for enforcement. These concerns are on going parts of existing Division programs, which are being carried out in the project area.

Regarding the control of weeds, the EA states that manual weed control is and will be carried out to prevent the growth of weedy fuels. We have made a commitment to do this, which will end up being a better situation than exists at the present time.

There have been numerous field reviews to provide technical assistance by representatives of appropriate federal agencies

Katherine E. Walker
Page 2

including USDA, both the Forest Service and the Soil Conservation Service and the Federal Emergency Management Agency.

COMMENT: "The other primary concern I have is what guarantee do we have that native species won't be inadvertently destroyed in the process of total clearing, etc."

RESPONSE: There unfortunately will be some native species destroyed in areas where total clearing is carried out. We have never proposed to save every native plant. We are sure that any impacts on threatened or endangered plants will be very minimal. Two separate botanical reviews have been completed and resulted in the marking of all significant plant areas. Our proposals have also been reviewed by the U. S. Fish and Wildlife Service. These actions have resulted in the elimination of some areas from any clearing work, as well as limiting the amount of clearing in others. Because of the continuous supervision the Kauai Staff will exercise over the operation, we are comfortable that newly discovered archaeological sites or significant plants will be given appropriate protection.

COMMENT: "The visual impact of the clearing has been minimized in the documents which emphasize the area as one surrounding 'unimproved roads. I question the prudence of this kind of clearing anywhere in Kokee because of the present proliferation of alien species that have already ruined parts of that region. This is just inviting more of the same. Could you not see fit to spend some of that money in prevention and the planting of native species?"

RESPONSE: Again, EWPP funds may not be spent for fire prevention or native species planting. Alien species are already present in considerable abundance in the area. Given mulching and weed control, this project should not add significantly to the already existing weed problem. Weeds must be weighed against the alternative of losing the entire area to fire, which is a very real possibility.

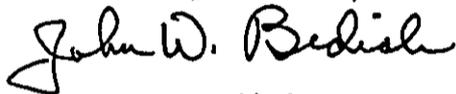
COMMENT: "Lastly, I would like to express concern over the rumor that the contract has already gone out for bid. If this is true, then the whole process of soliciting comments from the public is a sham and a real insult to Kauai residents. I hope this is not true and look forward to hearing from you on this matter."

Katherine E. Walker
Page 3

RESPONSE: The contract indeed was put out to bid in order to avoid losing the federal funds and meet the grant deadline. The project specifications remain subject to modification based on the EA and public input. Further, the notice to proceed order has been held up to ensure that public input is fully considered in finalizing the final plan. Public input has greatly modified what was originally proposed and hence has had a very real influence on the planning of this project.

Thank you for your interest and input into this proposal.

Sincerely,



John W. Bedish
Wildlife Biologist

RECEIVED

93 JAN 25 P3:35

FOREST SERVICE
STATE OF HAWAII

January 21, 1994

John Bedish
Division of Forestry & Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

Re: E.A. for Roadside Fuel Hazard Reduction,
Emergency Watershed Protection Project, Kaua'i

Dear Mr. Bedish:

Thank you for sending a copy of the revised draft Environmental Assessment and Notice of Negative Declaration pertaining to Job No. 64-KF-F, "Clearing of Debris from Various Forest Areas, Kaua'i, Hawai'i." I appreciate the detail with which you addressed many of the community's concerns, e.g. how "flagging" of archeological sites would be conducted, how wood would be "salvaged" and that you have a plan for soil stabilization in areas where that is a concern.

I understand the need for reducing the potential for destructive forest fires in Koke'e, however, I question the proposed method of clearing as the best solution. If the primary concern is man-made destruction caused by accidental fires spreading from campfires or arson then would it not be better to spend these funds on enforcement of fire safety laws? According to your document and related press, there appears to be no plan for deterring these types of fires. Implementing a fire prevention program would be a creative way to lessen the potential threat of fires while providing much-needed jobs in our community.

One of the main problems with the argument for clearing is that it is only a short-term solution. Once the area is cleared, weeds and non-native species, which are already destroying parts of Koke'e, will grow and become a "fire hazard" requiring continual maintenance after the federal funding has ended. This is not a long-term solution to a long-term problem but merely an attempt to meet the requirements of a federal agency whose representatives may not have even set foot in the forests of Koke'e.

The other primary concern I have is what guarantee do we have that native species won't be inadvertently destroyed in the process of "total clearing"? How can you be sure there are no native species or "no Federally proposed or listed endangered plant species within the project area" (United States Department of the Interior letter to Michael Buck)? Wasn't an endangered species recently destroyed by accident?

As to the plan for preventing destruction of plants and cultural sites, is it realistic to state that the construction crew will stop if they step on a site or trample the last remaining species of a native plant? Won't it be too late to call the botanist or archaeologist? Do you think it will be enough for "a qualified archaeologist" to "brief the construction crew on the likely appearance of [archeological] sites.." and wait until the crew finds (and damages) the site and then "the construction crew shall stop work in the immediate vicinity of such sites..." (Environmental Assessment for Roadside Fuel Hazard Reduction, Emergency Watershed Protection Project, Kaua'i, p.8, item E). This sounds like the damage will have already been done and the procedure will be one of spin control with the public on how sorry the Department is to have destroyed these plants and archaeological sites.

The visual impact of the clearing has been minimized in the documents which emphasize the area as one surrounding "unimproved roads." I question the prudence of this kind of clearing anywhere in Koke'e because of the present proliferation of alien species that have already ruined parts of that region. This is just inviting more of the same. Could you not see fit to spend some of that money in prevention and the planting of native species?

Lastly, I would like to express concern over the rumor that the contract has already gone out to bid. If this is true then the whole process of soliciting comments from the public is a sham and a real insult to all Kaua'i residents. I hope this is not true and look forward to hearing from you on this matter.

Thank you for the opportunity to express my concerns.

Sincerely,



Katherine E. Walker
308 Kaakolo Place
Kapa'a, Hawai'i 96746

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813
February 4, 1994

KEITH W. AHUE, CHAIRPERSON
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

Ms. Margaret Hunter
P. O. Box 876
Kapaa, HI 96746

Dear Ms. Hunter:

Thank you for your interest in the rehabilitation work that is proposed in the hurricane devastated Kokee Watershed Area. You may rest assured that the entire project will be supervised by Staff members of the Division of Forestry and Wildlife, who are trained in plant identification and are very familiar with the native plants that are found in the area. We have provided further safe guards in that all of the areas where work is to be done have been surveyed and clearly marked by trained botanists and archaeologists. They will be shown to the people who will be doing the work before the operation starts and as I previously stated, all work will be supervised, As far as planting back native trees, unfortunately the funds from the federal grant to be used to do the work are dedicated to cleanup operations only and may not be used for other purposes such as replanting work.

The only clearing work that is to be done is what we feel is the minimum to reduce the existing fire hazard that has been caused by the storm-downed vegetation and to clear key access roads to allow safe entrance for fire-fighting crews in the event of a wildfire. The wood chips that will be left after the clearing work has been done will provide temporary erosion control for the cleared areas and as they decompose, will be replaced by under-story vegetation that is suited to the area.

Sincerely,

A handwritten signature in cursive script that reads "John W. Bedish".

John W. Bedish
Wildlife Biologist

Jan 21, 1994

Dear Mr. ^{Bediah} ~~Petters~~.

As a kawai resident and Kokee Museum volunteer I have to let you know I am requesting you have people to monitor the bulldozer operators, in areas that you use them, to make sure they do not cut or run over native plants. I was happy to see that some areas will be only limited and partially cleared I hope you will use some of your funds to plant native trees back into the areas that will be cleared especially in the areas that are more extensively cleared. Kokee is a wonderful asset for kawai residents as well as a tourist attraction please don't turn even part of it into a woodchip covered "puking lot".

Sincerely and hopefully

Margaret Hunter

934

'934 JUN 24 P1:21

File: State / Budget

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

February 4, 1994

KEITH W. AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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JOHN P. KEPPELER, II
DONA L. HANA'IKE

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PROGRAM
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STATE PARKS
WATER AND LAND DEVELOPMENT

Kate and Nevin Reinard
P. O. Box 36
Makaweli, HI 96769

The following is in response to your comments of January 22, 1994, concerning the emergency watershed protection project on the island of Kauai:

- 1) "Need for training and continuous supervision of the contractor's employees."

COMMENT: "Your proposed treatment plan containing a 3-step approach (total, partial and limited partial clearing depending upon the percentage of native species and the presence of Candidate 2 plants) is good, except that it is very dependent upon close monitoring and continuous supervision to be workable. The bull dozer and chain saw operators should be given botanical training in native species identification. We hope that DOFAW supervision of the project will be continuous throughout the project."

RESPONSE: Our intention is to provide botanical training and continuous supervision on site.

COMMENT: "We have heard from many people that a similar project, of clearing dead and downed debris from roadsides, was attempted after Hurricane Iwa but that it had to be stopped because the contractor and/or his associates were found to be cutting and hauling out live koa trees, etc. If we are wrong, please correct us."

RESPONSE: There was a similar emergency watershed protection project carried out in the same general area after Hurricane Iwa; however, the logging that you refer to was not a project that was conducted under the auspices of this Division. We would not allow this type of operation to go on under any of our operations.

Kate and Nevin Reinard
Page 2

COMMENT: "At any rate, we feel it is important to guard against this sort of thing. If DOFAW cannot provide the manpower to provide continuous supervision of the project, perhaps trained individuals could be deputized to fill in the gaps. Training for both the contractor's employees and deputized individuals could be provided by an organization like Hui O Ōāka/Kokee Museum."

RESPONSE: Present funding provides for a DOFAW employee, who is familiar with the location of native plants in the area well as their taxonomy, to be on site to supervise work throughout the operation.

2) "Proposed amendments to the clearing"

COMMENT: "In the areas that are predominately introduced species and slated for total clearing we would like to see all native species tagged and transplanted, or left in place (depending upon their size)."

RESPONSE: While we can not save every individual plant, we will be making every effort to save as many native plants as possible. Some will be transplanted, but as many as possible will be left in place..

COMMENT: "We would like very much to see all the live avocado trees spared. Most of the valleys intersecting the Contour Road have avocado trees near the road, many of which are loaded with fruit at this time. Although they are an introduced species, they are not invasive to any great extent. They provide a food resource and are of historical and ethnobotanical interest."

RESPONSE: If they are alive, avocado trees should be spared in those areas that are not designated for total clearing.

3) Debris removal

COMMENT: "If there are excess chips or other 'greenwaste', we hope that these will not be hauled to the landfill but that the nutrients be kept in the forest ecosystem, for instance, spreading them on eroded land needing topsoil replenished, or perhaps they could be made available to cabin owners, state parks, Kokee Museum or Lodge, for use in landscaping and native plant planting projects."

Kate and Nevin Reinard
Page 3

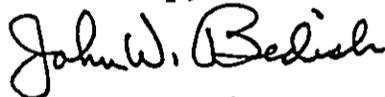
RESPONSE: Chips are the property of the contractor and their disposition is up to him. You may wish make a proposal to him.

4) Alien noxious weed control

Concerning your suggestions for setting up various test plots and monitoring them; we would be willing to consider any kind of a research proposal, anyone would like to make related to control of noxious plants.

We appreciate your interest in our proposal and thank you for your interest.

Sincerely,



John W. Bedish
Wildlife Biologist

RECEIVED

934 JAN 27 P2:30

FORESTRY DIVISION
STATE OF HAWAII

Kate and Nevin Reinard
P. O. Box 36
Makaweli, Hawai'i 96769

335-9975

January 22, 1994

Mr. John W. Bedish
Division of Forestry and Wildlife
1151 Punchbowl St, Rm. 325
Honolulu, Hawai'i 96813

Dear Mr. Bedish,

We would like to register some comments regarding the firebreak clearing project proposed for roads in Koke'e's forests on Kaua'i as outlined in your draft environmental assessment of Job No. 64-KF-F, dated December 26, 1993.

1) Need for training and continuous supervision of the contractor's employees

Your proposed treatment plan containing a 3-step approach (total, partial, and limited partial clearing depending upon the percentage of native species and the presence of Candidate 2 plants) is good except that it is very dependent upon close monitoring and continuous supervision to be workable. The bulldozer and chainsaw operators should be given botanical training in native species identification. We hope that DOFAW supervision of the project will be continuous throughout the entire operation.

We have heard from many people that a similar project, of clearing dead and downed debris from roadsides, was attempted after hurricane Iwa but that it had to be stopped because the contractor and/or his associates were found to be cutting and hauling out live koa trees, etc. If we are wrong please correct us.

At any rate, we feel it is very important to guard against this sort of thing. If DOFAW cannot provide the manpower to provide continuous supervision of the project, perhaps trained individuals could be deputized to fill in the gaps. Training for both the contractor's employees and deputized individuals could be provided by an organization like Hui O Laka/Koke'e Museum.

2) Proposed amendments to the nature of the clearing

In the areas that are predominately introduced species and slated for total clearing we would like to see all native species tagged and transplanted, or left in place (depending upon their size).

We would very much like to see all the live avocado trees spared. Most of the valleys intersecting the contour road have avocado trees near the road, many of which are loaded with fruit at this time. Although they are an introduced species, they are not invasive to any great extent, they provide a food resource, and are of historical and ethnobotanical interest.

Kate and Nevin Reinard
RE: Koke'e firebreak clearing
Page 2

3) Debris removal

If there are excess chips or other "greenwaste", we hope that these will not be hauled to the landfill but that the nutrients be kept in the forest ecosystem by, for instance, spreading them on eroded land needing topsoil replenished, or perhaps they could be made available to cabin owners, State Parks, Koke'e Museum or Lodge, for use in landscaping and native plant planting projects.

4) Alien noxious weed control

We commend your proposal to conduct research on biological control of alien weeds in conjunction with this project, and to use *mechanical control of weeds along the roadsides after the clearing*. We feel that the spread of alien species is a serious threat to Koke'e's native forest and want assurance that this project will not contribute to the noxious weed invasion problem.

Some suggestions we would have regarding this are that perhaps test plots *with ongoing monitoring*, could be conducted, in the interest of research into mechanisms of native forest regeneration after alien species removal:

1. Some areas could be planted in native species and "gardened".
2. Some areas could be planted in native species and have no after care.
3. A few native trees such as koa and ohia lehua could be planted in some areas with the expectation that the understory natives would move in from adjacent areas. "Nurse logs" could be moved into some areas to facilitate this.
4. Some areas would be planted in grass and mowed as is stated in your plan
5. Native low-growing ground cover types of plants could be planted in some areas, such as 'ohelo (*Vaccinium* sp.) or the indigenous white strawberry (as with the avocado trees, you'll notice we're gardeners at heart!).

Proposals, layout, and ongoing monitoring of test plots such as these would be a great research project for students studying ecosystem development and effectiveness of different noxious weed elimination regimes for native Hawaiian forests.

In summary, we feel that Kaua'i's native forest ecosystems are unique in the world and that every human activity conducted within them should have a clear focus on their preservation and enhancement. We hope that you can carry out this project carefully enough to stay within this goal. If more manpower is needed, for instance for transplanting native species or for deputy supervisors, we would be willing to assist. We would also appreciate receiving any more information you have about the details and specifications for this project. Thank you very much for your attention to these admittedly very sketchy proposals regarding your plan.

Respectfully submitted.

Kate Reinard
Nevin Reinard

cc: Ed Petteys
Wayne Souza
Tom Telfer
Jan Tenbruggencate
HPCC
Kaua'i Times



SIERRA CLUB, HAWAII CHAPTER

JAN 14 P3:00

The Arcade Building, Room 201
212 Merchant Street, Honolulu, Hawaii 96813
P.O. Box 2577, Honolulu, Hawaii 96803
(808) 538-6616

P.O. Box 1172
Hanalei
Hawaii 96714
(808) 826 6877

January 8, 1994

Mr. John W. Bedish, Wildlife Biologist
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

Aloha, Mr. Bedish:

In June, 1993, I submitted comments on a draft Environmental Assessment regarding the proposed wildfire mitigation plan for Kokee. I raised many questions in my letter regarding both the need for the project, and the way in which it was to be executed. This week I received the 'revised draft E.A. and Notice of Negative Declaration pertaining to Job #64-KF-F.' While the new document is much more substantial than the first, my concerns and worries are no less.

These are some of the things that trouble me:

1. Your press release of December 26, 1993 says, in part, 'the Division of Forestry and Wildlife feels that the original concerns that were expressed have been fully recognized and addressed by the revised document that is now offered for review.' I must respectfully disagree. Below I have listed many of the questions I first asked in June; they are still unanswered..

2. Most of the information I got in June was from the 'contract specifications' document handed out to potential bidders on the project - not from the E.A. When I tried yesterday to get a copy of the latest 'contract specifications' document, I was told that no more were available. Does this mean that most of the substantial information about your project is not provided to the public?

3. Even more disturbing, I was told that the contract HAD ALREADY BEEN AWARDED - to a construction firm on O'ahu. If this is the case, are we merely engaging in an exercise in futility when we comment on this? Is this legal?

Recycled paper



January 8, 1994
Page two

Following are some of the questions I asked back in June, which I feel are still unanswered by the latest amended E.A.:

What studies have been consulted for other areas of the U.S. regarding fire prevention? In what areas would the no-action alternative be considered appropriate?

Which the United States fight wildfires? Which do not? How comparable are their success rates? What is the wilderness recovery profile of areas allowed to burn (i.e., Yellowstone, Glacier National Park, etc.)? How relevant are they to Kokee?

What is the fire history of the proposed clearcut areas?

What part of the proposed clearcut area is on ceded Native Hawaiian land? Were consultations made in the Hawaiian community before any decisions were made? If so, what responses did you receive?

Who is liable for fires that result from the clearcutting process (the contract specs discuss fire danger from bulldozer sparks, and the dangers of spontaneous combustion from laying mulch too deeply)?

What proportion of Kokee is currently covered in invasive weed species such as lantana, banana poka, etc.?

If Bahia grass were to be planted (as indicated in the first set of documents), what weed control measures - other than mowing 'when the weeds start to grow back', would be undertaken? How invasive are the weeds mentioned above? How successful have control measures been in the past with these weeds?

Does the opportunity exist for native revegetation to occur on its own after Bahia grass is planted?

How similar is this grass to the African cattle-food grass, Kikuyu, which has been planted in the wilderness areas here in the past? I'm told the kikuyu's roots are so deep that it prevents native revegetation altogether.

In Section 02111-2, #E of the contract specs, I found this: 'The state reserves the right to sell or dispose of any forest resource on work segments not yet started and on segments already completed and authorized for payment.' What is the projected income for such sales? How long would they go on? As this is worded, could the state not simply undertake logging, ad infinitum, of the resource?

January 8, 1994
Page three

Like many other people, I have countless other questions about this project - Why? How does eliminating 22½ miles of wilderness protect that wilderness? Does moving the project out of sight of the highway make it okay? You propose total and partial clearcutting for 511 acres of Kokee's wilderness; that's a lot of forest eliminated and turned into a lawn. How much of Kokee has burned in this century?

It seems to me that if you really want to preserve Kokee, you'd fund some fire towers and a few more employees from here on Kauai. Those employees could actually enforce the 'no open fires' policy. They could derive an income in the process, rather than enriching the coffers of a company on O'ahu. And we could keep our forest. It may be broken and battered, but it's a forest, one that's survived hurricane damage for many thousands of years.

In closing, I ask that a full and complete environmental impact statement be prepared for this questionable project, and that a public hearing be held to garner public input.

Kind regards,



Suzanne Marinelli
Vice President for the
Pacific Basin

cc: Sierra Club Legal Defense Fund
Donna Honaike
Keith Ahue



SIERRA CLUB LEGAL DEFENSE FUND, INC.

The Law Firm for the Environmental Movement

RECEIVED

'93 JAN 26 P2:21

FORESTRY DIVISION
STATE OF HAWAII

Sumner, Mr. McKinley

Ansel Adams

223 South King Street, Austin Building, Suite 400, Honolulu, Hawaii 96813 (808) 599-2436 FAX (808) 521-6841

MID-PACIFIC OFFICE

Paul P. Spaulding, III
Managing Attorney

Denise E. Antolini
Staff Attorney

Eric S. Walters
Project Attorney

Marjorie F.Y. Ziegler
Mark Smaalders
Resource Analysts

Michele Y. Kusunoki
Office Manager

January 25, 1994

John Bedish
Division of Forestry and Wildlife
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Re: Revised Environmental Assessment for Roadside Fuel
Hazard Reduction, Emergency Watershed Protection Project,
Kaua'i

HOME OFFICE

San Francisco, California

Dear John:

REGIONAL OFFICES

Bozeman, Montana
Denver, Colorado
Juneau, Alaska
New Orleans, Louisiana
Seattle, Washington
Tallahassee, Florida
Washington, D.C.

Aloha! The Sierra Club Legal Defense Fund provides the following comments on the Division of Forestry and Wildlife (DOFAW) proposal for roadside fuel hazard reduction in Waimea, Kaua'i. We remain fully supportive of DOFAW's aim of reducing the hazard of wildfires, particularly in Hawai'i's native forests, and appreciate DOFAW's efforts to both improve the environmental assessment for and minimize the adverse environmental impacts associated with the project.

DOFAW has failed, however, to address in the revised Environmental Assessment (EA) several concerns that we and others raised in comments on the original EA for this project, and which have not been negated as a result of modifications in the scope and design of the project. We believe it is essential for DOFAW to seriously consider the issues outlined below, and to address them in a way that justifies the chosen course of action.

We look forward to such a full analysis in the final EA for this project.

Insufficient Discussion of Alternatives. The revised EA's discussion of alternatives (based on the "Kauai Wildfire Mitigation Plan") remains insufficient to allow a meaningful comparison between different hazard reduction strategies. The alternatives presented, with the exception of the "No Action" option, all call for



removal and/or elimination of burnable material. There is no discussion of why 60-100 foot clearings were deemed necessary (for example, why not 30'?), no discussion of how the chance of fires being set could be reduced, and no discussion of how the clearing program could affect native forest. To make the consideration of alternatives meaningful, options other than clearing should be explored, as well as varying degree of clearing. The costs associated with a major fire should be presented, to allow the reader to judge whether the costs and impacts of this project are in fact justified.

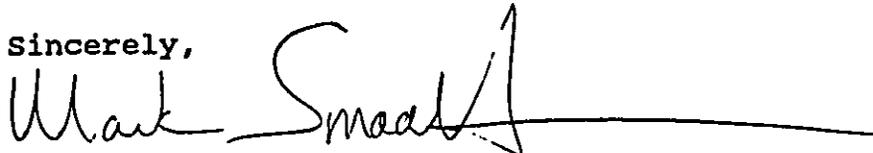
The EA should contain information on the history of fires in the project area. What was the fire experience after Hurricane 'Iwa? Is this information helpful in determining the need and justification for the project? If so, then the EA should provide it. In general, some evidence should be presented regarding the effectiveness of road clearing and fire-break construction in keeping fires from spreading, and allowing for containment. This would help inform the public as to the need and justification for the project.

Proposed Mitigation. Although we conclude from the revised EA that Bahia grass (Paspalum notatum) will not be used for erosion control as was formerly proposed, the impacts of other alien plants on native species and forest, and the potential for erosion both remain as serious concerns. The statement in the revised EA (at § VII.D.) suggests that "mowing and mechanical control will be employed in the cleared areas, when weeds start to grow back, where the slopes permit." Does DOFAW have experience in this area of Kaua'i that leads it to believe that this will be successful? Does DOFAW have experience with the use of chipped trees and plant material as an erosion control measure? Is there a contingency plan for dealing with erosion if it becomes excessive, or plans to monitor erosion and stream sedimentation? Has DOFAW considered the use of native grasses and other plants to both limit erosion and limit the spread of alien plants? These questions, as well as the underlying issues, must be addressed in the final EA.

Thank you for the opportunity to comment on this revised EA. We encourage DOFAW to respond fully to these comments in the final EA, and to seriously consider the issues in making a final determination on whether to proceed with this project.

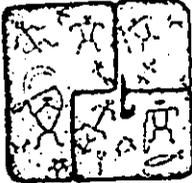
If we can be of any assistance, please do not hesitate to call us.

Sincerely,



Mark Smaalders

cc: Ed Petteys, DOFAW Kaua'i



Sheila Heathcote
P.O. Box 154
Makaweli, HI 96769
(808) 335-3814 PH/FAX

RECEIVED

93 JAN 13 P2:05

FORESTRY DIVISION
STATE OF HAWAII

January 10, 1993

Mr. John W. Bedish
Division of Forestry and Wildlife
1151 Punchbowl St., Rm 325
Honolulu, HI 96813

Dear Mr. Bedish,

I am appalled at the proposed clearing of back roads in Kokee State Park. At a time when our island is in a very severe crisis involving endangered native plant and bird species, the clearing of 511 acres of native and non-native forest in the Kokee area is unthinkable.

Many years ago I lived in the state of Maine, where forest fires are a common occurrence. They are not started by arsonists or careless campers. Lightening strikes cause the majority of forest fires, which are a natural part of the forest's regeneration process.

After a fire, new vegetation would again begin to grow in the highly fertile ashes and soil. Soon, the new growth would grow tall and strong and shoots of the second layer of forest regrowth would develop under the protective canopy.

I am not saying that a forest fire would have the same results on Kauai, because I am not a botanist or forest ranger. But the odds of a big forest fire occurring in Kokee are, historically, very small. The funds appropriated to this disastrous clearing would be much better spent on park and forest rangers and fire towers, like most parks in other parts of the United States and world already have.

Last week, I conducted an interview with President Clinton's Secretary of the Interior, Bruce Babbitt, when he visited Kauai. One quote that remains foremost in my mind is when he said, "Kauai is such a unique place. I hope the people in charge of this island are very careful to preserve the natural environment and learn from the mistakes of other places."

How can we justify such a terrible mistake as cutting down our beautiful forest and planting some horrible type of grass that will soon become as much of a plague and threat to the native vegetation as blackberry, lantana and banana poka have become?

Kauai is one of the few Hawaiian Islands that has remained green. Compared to the extensive over-grazing on Maui and the Big Island by cattle, and the barren landscape of Lanai and Kahoolawe, Kauai is still a beautiful, peaceful green environment for both residents and visitors alike.

Kauai islanders hunt animals for food and sport in the forest. Native birds struggle to maintain their symbiosis

with the unique flora of Kokee and the Alakai swamp, in which they evolved. Scientists, students and naturalists from all over the world come to Kauai to study and revel in the beautiful unique vegetation and eco systems that occur on our island -- that are found NO WHERE ELSE IN THE WORLD.

Please leave the Kokee forest as it is. Kokee has survived many hurricanes with downed trees and will survive many more. I venture to say that the forest always has and will fare better than mankind, with our man-made buildings, commercial developments and plans such as this one.

Widening the secondary roads is a short cut to something much larger and far more grave than the POSSIBILITY of a forest fire. It will only hasten the death of our incredible natural environment.

Don't ruin Kauai. It's is all we have got.

Mahalo Nui Loa,

Sheila Heathcote, Journalist

Division of Forestry and
Wildlife Office: Bedish

(808)

Ph. 335 3302

In response to the States proposed Kokee land clearing on 500 acres for the purpose of fire control: by Sybil Frances-P.O Box 340, Wainea, Kauai Hi., 96796 -- Jan. 14, 1994
Please hold off on this project until we look at it again.

This is the right time for a new beginning, a continuation from where each of us was in 1993, a new global perspective in the recreation of Paradise everywhere. For me I begin again on Kauai, my birthplace, at Kokee where my fondest memories still linger, with the forests and all the rich minds and hearts who care to make the next step in each of ~~his~~ own ways. I am asking for help from those of you who believe a conscious design is needed for a forest full of tall grey, broken, leafless, dead trees, a result of two hurricanes. But, are they really dead and useless to be smashed down and pushed over nature's nursery by bulldozers. Would the ceremonial canoe builder enter the forest in such a way without checking it out with the birds, the trees themselves, the forest floor? No he would not and neither would I. Already I see new life in decomposing trees from Hurricane Eva along the Kokee trails--moss, ferns, lichens, small Ohia Lehua trees, are busily recreating nature in these logs. What right do we have to destroy this?

Kauai is like a small pizza I am dividing into eight parts or eight Ahupuaas--two of these parts represent a dimension I have not yet discovered. Kauai is a part of the larger pizza HAWAII which is a part of the very much larger pizza, EARTH. And I'm calling all of these pizzas PARADISE PIZZAS because that's what many of us want to recreate. Each piece in each pizza is connected to the other and to the larger pizza and on and on. So making a design in the Ahupuaa fashion in one section has to consider all sections in all piazzas. Once a design is made with sensible and sustainable placement of carefully selected trees, shrubs, vines, flowers, grasses, ponds, ditches, swales, meadows, in relationship to houses, roads, wildlife and fire control etc., it can be implemented with very little use of big machinery. Once the work is completed, you have a permanent and sustainable and manageable productive forests for all life to enjoy--we who enjoy the forests and its many uses become the stewards who give back more than we take out, who recreate wetlands for water purification..We will heal ourselves by learning to work with nature.

I am ready to begin to make this design with State, County, and local citizens who like this connective approach for these 500 acres and my own back yard ^{wherever I live.} I have had some

brief training in Permaculture Principles that come from various disciplines, ecology, energy conservation landscape design, environmental science--the design is based on

Relative location

Each element performs many functions
Each important function is supported by many elements
Efficient energy planning with zones and sectors
Emphasis on the use of biological resource over fossil fuel resources
Energy recycling on site (fuel and human energy)
Using and accelerating natural plant succession to establish favorable sites and soils.
Polyculture and diversity of beneficial species for a productive, interactive system.
Use of edges and natural patterns for best effect

The core of Permaculture is design which is a connection between things. Its net water, or a chicken, or the tree. It is how the water, the chicken, the tree are connected. To enable a design component (ponds, house, woodlot, gardens, windbreaks, firebreaks, to function efficiently, we must put it in the right place---at Kekoa we're talking about people living and working with nature and its time for a design or two. So, please, work with us and ~~in~~ ^{Sec} ~~in~~ ^{as} work with you. This land ^{as} belongs to itself--we can only work with it--it wants careful and considerate thought then a small amount of manipulation done with hand tools--chain saws for the firewood, chippers for mulch--some to be sold, some to stay--some fallen trees to stay for nature's nursery. Let's make the design, put in the fire breaks first, then carefully, and selectively, ~~implement~~ ^{implement} the design by first removing any trees that could fall and hurt someone and recycling them first on the land itself and selling what is left over to help support the work. Please respond to this request. This land has legal owners, but it really is the responsibility of us all--we need a few simple rules that we all help each other to follow. I feel confident that we ^{will} all be working together in the near future. Please let me know when I can sit down with you to talk. I'm enclosing a graph that shows how contemporary western agriculture can change into a Permaculture or Permanent Agriculture and the results that will happen. These principles can be applied to some of the hurricane stricken forest - Excuse this letter full of corrections. I'm running out of time. Thank you for reading this. Sincerely, Spil Francis

TO: John W. Bedish DLNR Div. of Forestry and Wildlife
 From: Matthew B. Harms P.O. Box 611, Lawai HI 96765
 Subject: Proposed Emergency Watershed Protection Project, Kauai

94 JAN 25

RECEIVED
 LAWAI
 KAUAI

I believe the overall purposes and intents of this project are good. I do have several concerns as referenced in the "Amended" Environmental Assessment

1) a resolution to the mentioned "illegal fires" problem was not addressed. even with the proposed project nothing is advocated for the prevention of the fires. A few dollars spent to prevent the fire could save ^(many) thousands needed to extinguish a fire.

2) Access Roads/Fire Breaks if these are going to be cleared for the reasons stated "Access/compartmentalization" then I can see no justification for:

(a) The clearing of both portions of the parallel ridge roads in alternate #3 They are redundant and only one needs to be cleared.

(b) The clearing of both branches of the fork at the end of the ridge in alternate #1 (Ka'ele'ele)

(c) The clearing of the side road (to Kapepe spring) in alternate #1. (Ka'ele'ele)

(d) The clearing on the contour road The circle (or loop) by the picnic area would only require a single ~~road~~ ^{road} to be

cleared.

Any monies not used to clear the above areas could be used to improve the roadbeds themselves (put gravel or whatever) or for weed control (concern #3)

3) weed control: "Mowing and Mechanical Control" I'm not sure that enough thought and consideration has been put into the area of weed control.

(a) long term control: "research grant for biological control" does not present a solution it is like ~~the~~ ^{the} research grant for the eradication of Fruit Flies on Kauai. It came up with a lot of ideas + alternatives but no actual control for the flies.

(b) mowing and mechanical control will be an everpresent and continuing problem even after the funds for this project have all been expended. If not continually kept under control Blackberry and Lantana (as well as others) quickly re-infest open spaces. Also the current staff are struggling to keep up with the volume of work needed to maintain their present responsibilities

The possibility of using herbicides to do "emergency" weed control on the greatly increased ~~the~~ volume of "open" land, resulting from this project ~~is~~ could have an extremely negative impact on the area in general (both flora + fauna)

Mahalo
M/Homs

RECEIVED

'93 JAN 25 P3:35

FORESTRY DIVISION
STATE OF HAWAII

January 21, 1994

John Bedish
Division of Forestry & Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

Re: E.A. for Roadside Fuel Hazard Reduction,
Emergency Watershed Protection Project, Kaua'i

Dear Mr. Bedish:

Thank you for sending a copy of the revised draft Environmental Assessment and Notice of Negative Declaration pertaining to Job No. 64-KF-F, "Clearing of Debris from Various Forest Areas, Kaua'i, Hawai'i." I appreciate the detail with which you addressed many of the community's concerns, e.g. how "flagging" of archeological sites would be conducted, how wood would be "salvaged" and that you have a plan for soil stabilization in areas where that is a concern.

I understand the need for reducing the potential for destructive forest fires in Koke'e, however, I question the proposed method of clearing as the best solution. If the primary concern is man-made destruction caused by accidental fires spreading from campfires or arson then would it not be better to spend these funds on enforcement of fire safety laws? According to your document and related press, there appears to be no plan for deterring these types of fires. Implementing a fire prevention program would be a creative way to lessen the potential threat of fires while providing much-needed jobs in our community.

One of the main problems with the argument for clearing is that it is only a short-term solution. Once the area is cleared, weeds and non-native species, which are already destroying parts of Koke'e, will grow and become a "fire hazard" requiring continual maintenance after the federal funding has ended. This is not a long-term solution to a long-term problem but merely an attempt to meet the requirements of a federal agency whose representatives may not have even set foot in the forests of Koke'e.

The other primary concern I have is what guarantee do we have that native species won't be inadvertently destroyed in the process of "total clearing"? How can you be sure there are no native species or "no Federally proposed or listed endangered plant species within the project area" (United States Department of the Interior letter to Michael Buck)? Wasn't an endangered species recently destroyed by accident?

As to the plan for preventing destruction of plants and cultural sites, is it realistic to state that the construction crew will stop if they step on a site or trample the last remaining species of a native plant? Won't it be too late to call the botanist or archaeologist? Do you think it will be enough for "a qualified archaeologist" to "brief the construction crew on the likely appearance of [archeological] sites.." and wait until the crew finds (and damages) the site and then "the construction crew shall stop work in the immediate vicinity of such sites..." (Environmental Assessment for Roadside Fuel Hazard Reduction, Emergency Watershed Protection Project, Kaua'i, p.8, item E). This sounds like the damage will have already been done and the procedure will be one of spin control with the public on how sorry the Department is to have destroyed these plants and archaeological sites.

The visual impact of the clearing has been minimized in the documents which emphasize the area as one surrounding "unimproved roads." I question the prudence of this kind of clearing anywhere in Koke'e because of the present proliferation of alien species that have already ruined parts of that region. This is just inviting more of the same. Could you not see fit to spend some of that money in prevention and the planting of native species?

Lastly, I would like to express concern over the rumor that the contract has already gone out to bid. If this is true then the whole process of soliciting comments from the public is a sham and a real insult to all Kaua'i residents. I hope this is not true and look forward to hearing from you on this matter.

Thank you for the opportunity to express my concerns.

Sincerely,



Katherine E. Walker
308 Kaokolo Place
Kapa'a, Hawai'i 96746

Jan 21, 1994

Dear Mr. ^{Bedish} ~~Petleys~~.

As a Kauai resident and Kokee Museum volunteer I have to let you know I am requesting you have people to monitor the bulldozer operators, in areas that you use them, to make sure they do not cut or run over native plants. I was happy to see that some areas will be only limited and partially cleared. I hope you will use some of your funds to plant native trees back into the areas that will be cleared especially in the areas that are more extensively cleared. Kokee is a wonderful asset for Kauai residents as well as a tourist attraction please don't turn even part of it into a woodchip covered parking lot.

Sincerely and hopefully
Margaret Hunter

REC-111

'937 JUN 24 P1:21

FOREST & WILDLIFE
STATE OF HAWAII

M. Hunter
P.O. Box 816
Kapaa, HI
96746

GMF HONOLULU



DCR#1 012394 PM



Mr. J.W. Bedeah
Forestry Division
1151 Punchbowl St. Rm 325
Honolulu, HI 96813

January 22, 1994

Mr. John W. Bedish
Division of Forestry and Wildlife
1151 Punchbowl St, Rm. 325
Honolulu, Hawai'i 96813

RECEIVED
JAN 27 P 2:30

FOREST
STATE

Kate and Nevin Reinard
P. O. Box 36
Makaweli, Hawai'i 96769

335-9975

Dear Mr. Bedish,

We would like to register some comments regarding the firebreak clearing project proposed for roads in Koke'e's forests on Kaua'i as outlined in your draft environmental assessment of Job No. 64-KF-F, dated December 26, 1993.

1) Need for training and continuous supervision of the contractor's employees

Your proposed treatment plan containing a 3-step approach (total, partial, and limited partial clearing depending upon the percentage of native species and the presence of Candidate 2 plants) is good except that it is very dependent upon close monitoring and continuous supervision to be workable. The bulldozer and chainsaw operators should be given botanical training in native species identification. We hope that DOFAW supervision of the project will be continuous throughout the entire operation.

We have heard from many people that a similar project, of clearing dead and downed debris from roadsides, was attempted after hurricane Iwa but that it had to be stopped because the contractor and/or his associates were found to be cutting and hauling out live koa trees, etc. If we are wrong please correct us.

At any rate, we feel it is very important to guard against this sort of thing. If DOFAW cannot provide the manpower to provide continuous supervision of the project, perhaps trained individuals could be deputized to fill in the gaps. Training for both the contractor's employees and deputized individuals could be provided by an organization like Hui O Laka/Koke'e Museum.

2) Proposed amendments to the nature of the clearing

In the areas that are predominately introduced species and slated for total clearing we would like to see all native species tagged and transplanted, or left in place (depending upon their size).

We would very much like to see all the live avocado trees spared. Most of the valleys intersecting the contour road have avocado trees near the road, many of which are loaded with fruit at this time. Although they are an introduced species, they are not invasive to any great extent, they provide a food resource, and are of historical and ethnobotanical interest.

Kate and Nevin Reinard
RE: Koke'e firebreak clearing
Page 2

3) Debris removal

If there are excess chips or other "greenwaste", we hope that these will not be hauled to the landfill but that the nutrients be kept in the forest ecosystem by, for instance, spreading them on eroded land needing topsoil replenished, or perhaps they could be made available to cabin owners, State Parks, Koke'e Museum or Lodge, for use in landscaping and native plant planting projects.

4) Alien noxious weed control

We commend your proposal to conduct research on biological control of alien weeds in conjunction with this project, and to use mechanical control of weeds along the roadsides after the clearing. We feel that the spread of alien species is a serious threat to Koke'e's native forest and want assurance that this project will not contribute to the noxious weed invasion problem.

Some suggestions we would have regarding this are that perhaps test plots *with ongoing monitoring*, could be conducted, in the interest of research into mechanisms of native forest regeneration after alien species removal:

1. Some areas could be planted in native species and "gardened".
2. Some areas could be planted in native species and have no after care.
3. A few native trees such as koa and ohia lehua could be planted in some areas with the expectation that the understory natives would move in from adjacent areas. "Nurse logs" could be moved into some areas to facilitate this.
4. Some areas would be planted in grass and mowed as is stated in your plan
5. Native low-growing ground cover types of plants could be planted in some areas, such as 'ohelo (*Vaccinium* sp.) or the indigenous white strawberry (as with the avocado trees, you'll notice we're gardeners at heart!).

Proposals, layout, and ongoing monitoring of test plots such as these would be a great research project for students studying ecosystem development and effectiveness of different noxious weed elimination regimes for native Hawaiian forests.

In summary, we feel that Kaua'i's native forest ecosystems are unique in the world and that every human activity conducted within them should have a clear focus on their preservation and enhancement. We hope that you can carry out this project carefully enough to stay within this goal. If more manpower is needed, for instance for transplanting native species or for deputy supervisors, we would be willing to assist. We would also appreciate receiving any more information you have about the details and specifications for this project. Thank you very much for your attention to these admittedly very sketchy proposals regarding your plan.

Respectfully submitted,

Kate Reinard
Nevin Reinard

cc: Ed Petteys
Wayne Souza
Tom Telfer
Jan Tenbruggencate
HPCC
Kaua'i Times



JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

February 4, 1994

Press Release No. 94-01

FINAL NOTICE OF DETERMINATION OF NEGATIVE DECLARATION

**FOR EMERGENCY WATERSHED PROTECTION PROJECT
"ROADSIDE FUEL HAZARD REDUCTION"
Island of Kauai**

The potential for dangerous wildfire is very high in the forested watershed of Western Kauai, because of the great quantity of litter/woody fuel on the ground, a high degree of public use and the preponderance of dry weather conditions in the aftermath of Hurricane Iniki. The Division of Forestry and Wildlife, in consultation with concerned agencies, has developed measures to minimize the threat of wildfires.

The original draft notice of the availability of the Project Environmental Assessment and Notice of Negative Declaration for public review was published in the Honolulu Advertiser, as well as the Garden Isle and the Kauai Times on the island of Kauai in May, 1993. Modifications were made to the original project proposal, as a result of public comments, to address concerns regarding native plants and possible historic sites.

An amended environmental assessment was published in the same newspapers as before for public review on December 26, 1993. Comments received regarding the amended environmental assessment, while expressing individual concerns and opinions, did not offer substantive alternatives or counter proposals to the project. Responses to comments have been made in accordance with established procedures.

The consultations held and the comments from the public have resulted in the determination by the Division of Forestry and Wildlife, that a Negative Declaration is appropriate for this project and satisfies the requirements of the National Environmental Policy Act. Accordingly, a start work order will be issued to Royal Contracting Company, Ltd., to carry out the project as described in the amended



JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

February 4, 1994

Press Release 94-01

FINAL NOTICE OF DETERMINATION OF NEGATIVE DECLARATION

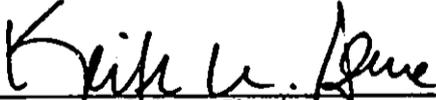
FOR EMERGENCY WATERSHED PROTECTION PROJECT
"ROADSIDE FUEL HAZARD REDUCTION"
Island of Kauai (CONTINUED)

environmental assessment after this notice has been
published.

Keith W. Ahue, Chairperson,
Board of Land and Natural Resources

APPROVED

DISAPPROVED


KEITH W. AHUE, Chairperson

NOTICE OF AVAILABILITY
"AMENDED ENVIRONMENTAL
ASSESSMENT
and
DETERMINATION OF NEGATIVE
DECLARATION FOR EMERGENCY
WATERSHED PROTECTION
PROJECT, "ROADSIDE FUEL HAZARD
REDUCTION"

Island of Kauai

The above mentioned document is available for public review and comment for 30 days, from the date of the publication of this notice, at the Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) Offices at the following locations:

3060 Eiwa Street Room 306 Lihoe, Kauai 96768 Telephone 241-3433 Contact: Edwin Petteys	1151 Punchbowl St. Room 325 Honolulu, Oahu, 96813 Telephone 587-0166 Contact: John Bedish
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Background: The original notice of the availability of the Project Environmental Assessment and Notice of Negative Declaration for public review was published in May, 1993.

As a result of public concerns that were voiced, the project was reviewed more extensively resulting in further studies to determine any presence of and potential effects on endangered species. Further botanical surveys were completed by staff members of the Kauai National Tropical Botanical Garden. Office and Field consultations were also carried out with the U.S. Fish and Wildlife Service. Further consultations were also carried out with the Office of Historic Preservation related to further safe guarding of any potential archaeological sites.

These efforts resulted in extensive modifications of the original proposal, including the elimination of several areas that were originally proposed for treatment.

Replies were prepared to the comments that were received in response to the original environmental assessment that was published. However, because the scope of the project modifications that have been made since that time, it was felt the publishing of these replies might create confusion related to the actions that are now planned. The Division of Forestry and Wildlife feels that the original concerns that were expressed have been fully recognized and addressed by the revised document that is now offered for review. Accordingly, copies of the revised document are being mailed to every one who commented on the original Environmental assessment and Notice of Negative Declaration, immediately following the publication of this notice.

Need for the Project: The potential for dangerous wildfire is very high in the forested watersheds of Western Kauai, because of the combination of factors left in the aftermath of Hurricane Iniki. First, there is a great quantity of litter/woody fuel on the ground, that was generated by hurricane Iniki. Secondly, the period after the hurricane, until recently, has been dominated by extremely dry weather that has increased the fuel potential of the storm debris. There has also been a great deal of public activity in the area, which further contributes to possible ignition sources. Recent illegal incidents of camping, untended camp fires and several wildfires, at least one of which was intentionally set, reinforce the threat and need for concern.

Anyone desiring to comment should send their written comments to John Bedish, Division of Forestry and Wildlife, 1151 Punchbowl Street, Room 325, Honolulu, HI, 96813. Comments will be accepted until January 25, 1994.

11/19/93
11/19/93

(A-25003)



JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

December 26, 1993

Press Release No. 93-14

NOTICE OF AVAILABILITY

**"AMENDED" ENVIRONMENTAL ASSESSMENT
and
DETERMINATION OF NEGATIVE DECLARATION
FOR EMERGENCY WATERSHED PROTECTION PROJECT,
"ROADSIDE FUEL HAZARD REDUCTION"
Island of Kauai**

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Room 306
Lihue, Kauai 96766
Telephone 241-3433
Contact: Edwin Petteys

1151 Punchbowl Street
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Telephone 587-0166
Contact: John Bedish

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JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

December 26, 1993

Press Release No. 93-14

NOTICE OF AVAILABILITY

**"AMENDED" ENVIRONMENTAL ASSESSMENT
and
DETERMINATION OF NEGATIVE DECLARATION
FOR EMERGENCY WATERSHED PROTECTION PROJECT
Island of Kauai (CONT.)**

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JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

February 4, 1994

Press Release No. 94-01

FINAL NOTICE OF DETERMINATION OF NEGATIVE DECLARATION

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"ROADSIDE FUEL HAZARD REDUCTION"
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JOHN WAIHEE
Governor

NEWS RELEASE DEPARTMENT OF LAND AND NATURAL RESOURCES
JOHN W. BEDISH 587-0166
Division of Forestry and Wildlife

February 4, 1994

Press Release 94-01

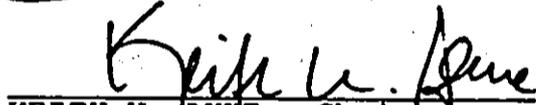
FINAL NOTICE OF DETERMINATION OF NEGATIVE DECLARATION

FOR EMERGENCY WATERSHED PROTECTION PROJECT
"ROADSIDE FUEL HAZARD REDUCTION"
Island of Kauai (CONTINUED)

environmental assessment after this notice has been
published.

Keith W. Ahue, Chairperson,
Board of Land and Natural Resources

APPROVED DISAPPROVED


KEITH W. AHUE, Chairperson