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January 10, 2002

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

Finding of No Significant Impact (FONSI) for Bari Green and Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, Hawaii, HI

Thank you for your thoughtful review of the draft Environmental Assessment for the subject project.

The Department of Land and Natural Resources, Division of Forestry and Wildlife, has reviewed the comments received during the 30-day public comment period that began on November 23, 2001. The agency has determined that this project will not have significant environmental or cultural effects and has issued a FONSI. Please publish this notice in the January 23, 2002 OEQC Environmental Notice.

We hope that you will find that we have, in preparing the enclosed final Environmental Assessment, adequately addressed your concerns relating to harvesting and cultural impacts. You will note that we also distributed the draft Environmental Assessment to a number of additional agencies according to your request.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. You should already have a copy of the project summary on disk, which we submitted with the original draft EA. Please call me at 587-4174 if you have any questions, or if you require an additional copy of the project summary.

In addition to this Environmental Assessment, we are also be preparing a Forest Stewardship Contract Agreement for review and approval of the Board of Land and Natural Resources.

Sincerely,

Karl R. Dalla Rosa
Cooperative Resource Management Forester

FEB 8 2002

2002-02-08-HI-FEA-Green & Russo

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**FINAL
ENVIRONMENTAL ASSESSMENT FOR
(FOREST STEWARDSHIP) PROJECT**

APPLICANTS

BARI GREEN AND LOU RUSSO
P.O.Box 32
Papa'aloa, Hawaii 96780

APPROVING AGENCY

Department of Land and Natural Resources
Division of Forestry and Wildlife (DLNR-DOFAW)
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

DETERMINATION

Finding of No Significant Impact (FONSI).

DATE COMPLETED

JANUARY 10, 2002

PROPERTY DESCRIPTION

Location: Island of Hawaii, Hamakua Coast, Papaaloa Homesteads (Figures 1, 2 and 3)

Tax map key number: 3-3-5-01-69

Size: 16.51 acres

Elevation: ~1,000 feet elevation

Rainfall: ~ 125.inches of rainfall annually

Soil classification: Honokaa silty clay loam, low elevation, 10 to 20 percent slopes (HsD) and 20 to 35 percent slopes (HsE)

Existing vegetation: Current land cover consists of pasture grasses, remnant sugar cane and weedy exotics.

Proposed land cover: Plantation forest of high value hardwood trees.

INTRODUCTION - THE FOREST STEWARDSHIP PROGRAM

The Hawaii State Forest Stewardship (FS) Program provides technical and financial assistance to private landowners committed to the stewardship, conservation and enhancement of important forest resources that provide a variety of private and public benefits. *This assistance enables private landowners to develop and implement long-term multi-resource management plans to restore and maintain primary forest values including timber productivity, watershed productivity, wildlife habitat availability, non-timber forest product diversity, recreational opportunities and native forest resources.* The Program became effective in July 1991 through act 327 as enacted by the 1991 State Legislature. Any landowner wishing to enroll in the FS Program must first prepare and submit a pre-proposal, describing the current condition of the forest resources to be managed, and summarizing management objectives. The State Forest Stewardship Advisory Committee, established under Chapter 195-F, HRS, reviews all proposals and recommends to the Division, those that it determines are eligible, according to the law and administrative rules, and consistent with Program objectives and current priorities. If a proposal is recommended by the FS Advisory Committee, the landowner applicant is advised to develop a comprehensive, long-term, multi-resource management plan, with the assistance of a qualified resource management consultant, unless so qualified him or herself. The FS Advisory Committee then reviews all management plans to assess the technical appropriateness and economic or environmental viability of the management practices that are prescribed, and to assure that landowner objectives will produce real public and private benefits. Landowner applicants are commonly asked to revise their plans according to FS Advisory Committee recommendations before incorporating them into formal contract agreements for submittal to the Board of Land and Natural Resources. FS Program funding assistance is then provided to participating landowners through approved contract agreements on a cost-share basis, as periodic reimbursements following the successful completion and on-site inspection of approved forest management practices.

Since 1991, the FS Program has assisted more than forty landowners with a variety of projects throughout Hawaii, involving approximately 7,000 acres. Ongoing projects range in size from five to 3,500 acres, and landowner objectives vary from extensive, landscape scale watershed protection and forest health improvement to intensive high-value timber production and native forest restoration projects on relatively small properties. All of these projects are contributing in some way to the stewardship, enhancement and expansion of Hawaii's unique forest resource base.

Annual project reimbursement payments to this and all Forest Stewardship projects are subject to the continued availability of funds and made only after successful completion of the approved management practices has been confirmed through receipt of a written report with cost documentation, a site visit, and landowner interview. As with all applicants who are attempting profitable timber production, the Russo and Green FS contract agreement contains a provision whereby a certain percentage of funding received through the FS program will be paid back to the state with each commercial timber harvest. In addition, this contract also contains a provision whereby a full refund of cost-share assistance will be imposed if the landowner sells or transfers the property before the newly established timber plantation is harvested.

The Forest Stewardship Advisory Committee and the Division recommend approval of the Green and Russo Forest Stewardship project because it is agreed the landowner's objectives are consistent with, and will further the objectives of Program and because the potential public and private benefits far outweigh the requested total FS Program cost-share contribution of \$34,549.00 to be provided to Lou Russo and Bari Green in several reimbursement payments during a six-year period.

Forest Stewardship applicants must prepare Environmental Assessments if their proposed management actions are not exempt, as declared by the Division of Forestry and Wildlife, Department of Land and Natural Resources, from requirements to prepare an environmental assessment, pursuant to Section 11-200-8(a). There is no exemption for tree plantings for which harvesting is planned or is reasonable foreseeable, or for fences that include areas greater than 10 acres. These are the most common triggers for Forest Stewardship project Environmental Assessments.

PROJECT SUMMARY

The primary management objective of this project is to establish stands of non-invasive, high value hardwood trees for sustainable timber production. Approximately 6,360 trees will be planted at an initial spacing of 8ft by 10ft on 13.4 acres of the 16.51-acre property, with the remaining 3.11 acres to be left for a homestead. Species to be planted include: *E. deglupta*, *E. microcorys*, *Khaya senegalensis*, *Pterocarpus indicus*, *Senna siamea*, *Swietenia macrophylla*, and *Tectona grandis* (Figure 4). The anticipated start date for the project is January 2002. Every 6 months the project will submit progress reports and cost documentation to the DLNR-DOFAW Administration for a period of 10 years. The approved Forest Stewardship Management Plan, including a detailed description of this project is attached as Exhibit A.

The project is not located in or near the following sensitive areas: flood plains, tsunami zones, beaches, rivers, ocean, estuaries, anchialine ponds, fresh or coastal waters, erosion-prone areas or geologically hazardous land. However, the property and project borders State of Hawaii land surrounding Kapehu Gulch. An existing road on the property runs adjacent to Kapehu Gulch, and will not be disturbed during site preparation. Additionally, trees which will not be harvested will be planted between the road and State of Hawaii land, resulting in a buffer of at least 25 feet between the edge of the gulch and any soil disturbance or future harvesting.

Current flora at the project site consists of exotic pasture grasses, remnant sugar cane and weedy invasive species including: *Clidemia hirta* (koster's curse), *Crotalaria spp.* (Rattle pod), *Cynodon dactylon* (bermuda grass), *Cyperus rotundus* (purple nutsedge), *Mimosa pudica* (sensitive plant), *Oplismenus spp.* (honohono grass), *Panicum maximum* (guinea grass), *Pennisetum clandestinum* (kikuyu grass), *Psidium cattleianum* (strawberry guava), and *Saccharum officinarum* (sugar cane). Existing fauna consists of mongoose, rats, mice, feral pigs and birds. There are no known historical, archaeological or cultural sites at the project site. Given the former intensive uses of this property (sugar cane production and cattle grazing) it is unlikely that there will be cultural or social impacts from the project.

A Forest Stewardship Management Plan has been prepared with the assistance of the DLNR-DOFAW and has been reviewed by the Forest Stewardship Advisory Committee (see Exhibit A). Funding for the project is being provided by the applicant/owners of the property, as well as an anticipated \$34,549.00 in state funds over a period of ten years from the DLNR-DOFAW Forest Stewardship Program.

The positive impacts of this forestry project include: i) wildlife habitat enhancement for birds, insects, and other native and non-native fauna due to increased vertical spatial complexity; ii) noxious weed suppression due to shading from closed forest canopy and groundcover establishment; iii) soil stabilization from increased root mass; iv) enhanced site aesthetics due to diverse forest replacing degraded cane field/pasture; and, v) harvest related economic diversification and employment opportunities for the community .

Forestry is an expanding land use in Hawaii, currently dominated by low value hardwood production for chips. This management plan proposes to diversify the local forest industry by planting non-invasive, high value hardwoods that would meet local and state wide needs for high value lumber used in construction, timber framing, cabinetry, furniture, flooring, and interior finishing. This supply of hardwoods would provide employment opportunities for the community, including but not limited to assistance with site preparation, seedling propagation, planting, harvesting, milling, and finishing.

The potential negative impacts of the project include: i) soil disturbance and erosion during site preparation; and, ii) harvest of trees.

The project will consult the DOFAW Best Management Practices for Maintaining Water Quality in Hawaii for planned activities. Soil disturbance and erosion will be minimized at site preparation by having soil-moving equipment follow elevation contours. Soil moving equipment will not be used immediately adjacent to Kapehu Gulch as discussed previously, but will remain at least 25 feet from the edge of State of Hawaii land. Most importantly site prep will be staggered to minimize soil erosion. The site is broken up into 3 blocks. Each block will be disked, planted and stabilized before the following block is worked. Also the use of heavy machinery will be timed carefully with appropriate levels of soil moisture to prevent damage to soil structure.

Thinning of trees and harvesting trees in units of approximately 0.25 to 1 acre will occur periodically during the project as needed, which is proposed to continue beyond 35 years. Timber harvesting will consult the DOFAW Best Management Practices for Maintaining Water Quality in Hawaii. Harvested blocks will be immediately replanted to re-establish tree cover. Because all units are 1 acre or less, with most about 0.5 acre,

skidding distances will be short. Trees will be felled in the direction of existing roads to minimize skidding distances. As currently planned, 11 of 17 units are bordered by existing roads. All of the remaining 6 units can be harvested together with an adjacent unit that borders the road.

There is a strong possibility that the establishment of a healthy, productive forest on a degraded pasture will draw native and non-native wildlife to the site. Even, however, if small areas of this newly established wildlife habitat are disturbed during harvesting and replanting activities, the net effect of this project on wildlife will be indisputably and significantly positive. Because harvesting units are so small, the proposed harvesting practices will actually have a minimal impact on wildlife habitat. In fact, small incremental harvests, like the ones planned here, are more likely to benefit wildlife by creating gaps and eventually, a multi-aged forest stand that exhibits more vertical and spatial biological diversity. In addition, the applicants are among many landowners that the U.S. Fish and Wildlife Service is working with to develop a blanket Safe Harbor Agreement for cases such as this, where forests are being established on land that has repeatedly and recently been cleared for agriculture.

The upper property boundary borders Hamakua Hardwoods, Inc. This land is already planted in long term, multi-specied, high value hardwoods. There are no anticipated negative impacts on these lands. The lower property boundary borders 2 different parcels. One, owned by Allen and Ina Fox is a Macadamia Nut orchard and residence. The other, owned by James and Elizabeth Shouse is pasture and residence. During site preparation, some soil may erode onto these adjacent properties. Aside from very minor movement of soil, there are no anticipated negative impacts. There are no anticipated negative impacts on lands bordering to the south and north.

Because planting blocks would be vulnerable to cattle that sometimes wonder in from adjacent lower properties, perimeter fencing will be installed to completely surround project property. The property is already surrounded on two sides by linear fencing installed by neighbors. Approximately 2,100 linear feet of hog wire fence will be constructed to close off property.

Alternatives Considered

This property is ideally suited to the proposed reforestation land-use. The area is relatively flat and was cleared for sugar production, and most recently pasture, some time ago. The property is not currently being put to any economically viable or traditional use.

Alternative site preparation, planting and weed control practices considered included clearing/plowing the entire site, the use of herbicides to control weeds, and the use of alternative timber species. All these alternatives were determined to have detrimental environmental impacts as compared to the methods chosen and all were more expensive on a per acre basis.

Alternative tree species were considered, but not chosen either because of their invasive properties or their less desirable wood qualities and local marketing potential.

SUMMARY OF CULTURAL IMPACTS

The actions proposed by Bari Green and Lou Russo, in their Forest Stewardship Management Plan will result in no adverse significant cultural impacts. The management activities that are proposed will not affect any cultural landscapes, standing structures that are used by people other than the applicants, archeological sites - or in any way limit any local traditional land uses.

Cultural Landscapes: There are no natural physical features on the property that can be interpreted to have any cultural significance or use. The natural topography, having been altered by decades of repeated cultivation for agriculture, is not unique in any way, but is typical of this area of Hamakua, where the relatively slightly sloping land is transected by minor draws and gullies that head downhill. The vegetation consists entirely of introduced, non-native pasture grasses, legumes and other low herbaceous shrubs listed in paragraph 1 of page 5. Two deep gullies adjacent to the property contain some remnant native vegetation, but these resources lie outside of the property boundaries and access to these areas will not be affected by the proposed land use. There are no major gullies located within the project property.

In addition, there are no observable features, such as large rock outcrops, or man-made structures near the property that are unique and which thus might serve as a means by which to navigate on land or by sea. The property immediately above the subject property has been prepared and planted in a similar manner and with the same species proposed by the applicants. The other properties bordering the subject property are a macadamia nut orchard and a cattle pasture.

Standing Structures: The only standing structure on the property is the recently built private residence of the applicants.

Archeological Sites: After numerous extensive surveys of the property, the applicants have found nothing, including iwi, that can be interpreted as having archeological significance. In addition, as confirmed by a letter from Patrick C. McCoy, the Hawaii Island Archeologist of the Hawaii Historic Preservation Division (HHPD), decades of repeated cultivation and rather extensive soil disturbance make the survival of any previously significant archeological resources highly unlikely. However, the applicants will continue to inspect the property while preparing the site for planting. If they observe anything that could possibly be of archeological significance, the object and site will not be disturbed until an informed determination can be made by the HHPD and appropriate mitigation measures can be established.

Traditional Use Sites: The applicants (who reside on the property), neighboring landowners, lessees, pig hunters, prawn gatherers, and others who have traditionally used land for various purposes in the area have confirmed that the subject property itself has remained almost entirely unused for the past six years, with the exception of some incidental, unmanaged cattle grazing. The property, which is currently bordered on two sides by a fence, contains no plants, animals, or topography that are of any cultural or religious significance to any neighboring family or group. Pigs confine themselves to the nearby gulches, existing forest areas and some adjacent cultivated areas.

Current general non-use of this property has been confirmed by consultations with adjacent neighbors, and conversations with some long-time local area residents including two former Laupahoehoe Sugar Company employees and a man known as "Mr. Kim" who has run his cattle on a nearby property for more than forty years. There are no points of access to any cultural land uses in the area, or any trails or passages on the subject property that will be affected by the proposed forestry land use.

This information has also been verified by telephone conversations with the following individuals: Roy Sotto, Hamakua Civic Club; Ulu Lanai, Hilo OHA office; and Ms. Claire Bowman of Hawaiian Herbals, who is of Hawaiian ancestry and is familiar with current and historic land uses in the project area. In addition, Walter Victor of the Laupahoehoe Civic Club has agreed to prepare a written statement confirming no conflict with area cultural land uses.

Intended long-term positive cultural impacts include the limited provision of local employment, economic diversification, a supply of high-quality wood to local artisans, woodworkers and value-added processing facilities. It remains a priority of the Forest Stewardship Program, to encourage projects like this that attempt to demonstrate the economic viability of high-value timber production, especially when harvest cycles are longer than more familiar short-term agricultural crops and the inherent risk associated with the relatively large up-front investment discourages many landowners from pursuing forestry as a potentially lucrative land-use. In areas like Hamakua and Puna, where holdings are being subdivided into relatively small parcels, smaller scale reforestation for high-value timber production may represent one of the best options for reclaiming some of Hawaii's best prime forestland and preventing it from being developed into uses that would have a far greater and reaching impact on traditional cultural land uses

This project will complement two other nearby small-scale timber operations currently receiving Forest Stewardship Program assistance. Hamakua Hardwoods, Inc. and landowner Shane Fox have planted similar hardwood species on their properties with the intent of supplying local markets and value-added processing outlets. It is likely that these landowners will form the basis for a local timber producer cooperative sometime in the near future.

Based on the information provided here, on the expertise of our staff, and on consultations with the aforementioned agencies and individuals, the Department of Land and Natural Resources, Division of Forestry and Wildlife has concluded that this project will result in no significant impact, primarily because: i) no historical sites are present on the property; ii) no native species have been observed on the property; iii) sugar cane was cultivated on this land for 40+ years - a practice that involved biannual plowing, burning and fertilization of most of the site and eliminated most native species from site; iv) a 25' buffer is in place between proposed forestry activities and State of Hawaii lands (Kapehu Gulch) on the north property boundary, a gulch that is dominated almost entirely by exotic species including *Psidium cattleianum* (strawberry guava), *Clidemia hirta* (Koster's curse), *Trema orientalis* (gunpowder tree) and *Spathodea campanulata* (African tulip tree); and, v) proposed activities are restorative in that forest cover will be returned to the site, degraded and compacted soils will be improved through tillage, fertilization, organic matter and nutrient inputs from nitrogen fixing and non-nitrogen fixing trees.

EXHIBIT A:

APPROVED
FOREST STEWARDSHIP
MANAGEMENT PLAN

FOREST STEWARDSHIP MANAGEMENT PLAN

Applicants

Bari Green and Lou Russo
P.O. Box 32
Papa'aloa, HI 96780
Phone: (808) 962-6525

Property Location

Tax Map Key Number 3-3-5-01-69
Papa'aloa Homesteads, Hamakua Coast, Hawai'i Island

Consulting Forester

John Edson
Hawai'i Reforestation LLC
5023 Moa Road, Kapa'a, HI 96746
Phone/Fax: (808) 821-8829
E-mail: jedson@gte.net

Date of Completion

September 18, 2001

II. Forest Stewardship Plan Signature Page

Professional Resource Consultant Certification: I have prepared this Forest Stewardship Plan. Resource Professionals have been consulted and/or provided input as appropriate during the preparation of this plan.

Prepared by:

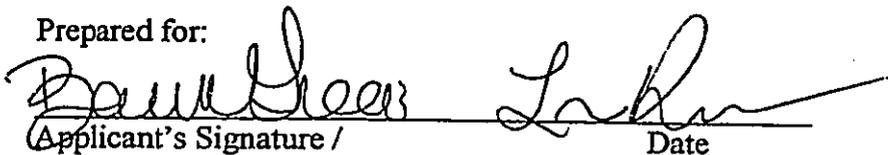
 9/18/01
Professional Resource Consultant's Signature / Date

John L. Edson

Professional Resource Consultant's Name

Applicant Certification: I have reviewed this Forest Stewardship Plan and hereby certify that I concur with the recommendations contained within. I agree that resource management activities implemented on the lands described shall be done so in a manner consistent with the practices recommended herein.

Prepared for:


Applicant's Signature / Date

PAUL GREEN + LOU RUSSO Sept 22 01
Applicant's Name

State Forester's Approval: This plan meets the criteria established for Forest Stewardship Plans by Hawaii's Forest Stewardship Advisory Committee. The practices recommended in the plan are eligible for funding under the appropriate Stewardship Incentives or Forest Stewardship program.

Approved by:

 10/15/01
State Forester's Signature / Date

MICHAEL G. BUCK
for State Forester's Name

III. Forest Stewardship Plan Preface

This stewardship plan describes the existing vegetation, soils, and wildlife/fish on the property and addresses the opportunities for the protection and enhancement of all natural resources while assisting the applicant meet his objectives for the management of the property. It provides guidelines for a sound strategy that reflects the applicant's commitment to a land stewardship ethic that focuses on integration of all resources to manage the property as a valuable legacy for future generations.

In addition to the vegetation, soil, and wildlife/fish resources, this plan addresses the enhancement of additional resource topics checked below. The plan may need to be revisited as the applicant's objectives, conditions, and/or opportunities change.

Applicable Resource Areas Covered

Those checked are targeted by applicant management objectives and are considered in this stewardship plan.

- | | |
|--|---|
| <input type="checkbox"/> Water Quality | <input type="checkbox"/> Threatened/Endangered Species |
| <input type="checkbox"/> Agroforestry | <input type="checkbox"/> Forest Health |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Archeological - Cultural Resources |
-
-
-

No threatened or endangered species, cultural or historic resource, floodplain or wetland has been identified or is known to exist on this property.

This plan provides a strategy and action plan for sound integrated resource management of the property, and reflects the desires of the applicant to protect or enhance all resources in the management of the property for at least 10 years.

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IV. Introduction

General Description of the Property

Property size and location

The Green-Russo property of 16.51 acres lies on the Hamakua Coast of the Island of Hawai'i about 25 miles northwest of Hilo (Figure 1). The parcel lies within agricultural lands known as Papa'aloa Homesteads about midway between the Hilo Forest Reserve and that part of the Hawaii Belt Road joining the communities of Weloka and Papa'aloa. The tract is roughly trapezoidal in shape (with bases of the trapezoid trending northwest to southeast along the contour) and bounded by two streams; Kapehu on the west, Paeohe to the east (Figure 2).

Vehicular access

The property is reached by turning mauka off Highway 19 (Hawaii Belt Road) at 0.15 miles north of mile marker 23 onto Kapehu Road. Pavement extends 1.1 miles upslope until intersecting with Uweki Road. A gravel road crosses the slope 0.2 miles to a second intersection. Entry to the project is gained at the first gate after turning mauka at the latter intersection.

Property tax map key number

TMK# 3-3-5-01-69

Property zoning

Agricultural: AG-20

Topography, elevation, and climate

The tract is a north-east sloping bench that lies on the lower flank of Mauna Kea volcano. The area exhibits geologically young erosional features typical of the Hamakua Coast. Water flow has produced two gentle swales that partition the property into rough thirds. Although precipitous stream drainages lie immediately beyond east and west property boundaries (Figure 2), the swales do not drain directly into the gulches adjacent to this property. A contour map (Figure 3) shows that between swales the site slopes uniformly to the northeast at a rate of about a 50 feet fall in a horizontal distance of 500 feet or a gradient of 10%. Drainages fall at a slightly steeper gradient of 12% and so deepen somewhat as they approach the lower property boundary. Elevation rises from a minimum of 1100 feet above sea level at centers of drainages on the lower boundary to a maximum of 1190 feet above sea level between swales at the upper boundary.

Climate is typical of the windward coasts of the Hawaiian Islands. The site is exposed to prevailing northeasterly trade winds that blow upslope for much of the year. Air movement is generally light to moderate, but strong winds can occur from any direction with occasional velocities of up to 40 knots or more.

Figure 4 indicates that average annual precipitation is about 125 inches. However, rainfall can vary significantly from year to year, and the Hamakua Coast experiences prolonged severe droughts that may last for several months. Most rain falls in the winter months between October and April. Trade wind showers are generally light, but heavy rains can occur associated with frontal activity in the winter or during tropical storms at any time of year. The area has not experienced damaging winds of a severe cyclone in recent times. Current climatological models, developed from accumulating meteorologic and geologic evidence, suggest that global climate change may result in decreased future precipitation, but increased severe storm activity, in the Hawaiian Islands.

Land use history and present condition

Before 1994, sugar cane was grown on this property; cattle grazing then replaced sugar production (Figure 5). Cattle were removed in 1999 for about two years, but horses have recently been introduced to control vegetation. The ground presently supports a mix of naturalized exotic weedy grasses and herbs, scattered sugarcane and pasture grasses, and a few woody plants. A partial perimeter fence runs along the southwest and about one-half of the northeast boundaries. The ground surface is somewhat rough.

Management Objectives of Bari Green and Lou Russo

The applicants have the following two major objectives:

1. Establish and maintain 12 acres of high-value hardwoods for timber production
2. Establish and maintain 1.4 acres of multi-purpose windbreaks to both protect the hardwood planting and provide agroforestry values

V. Land and Resource Description

Existing vegetation

Existing vegetation includes: *Clidemia hirta* (Koster's curse), *Crotalaria spp.* (rattle pod), *Cyperus rotundus* (purple nutsedge), *Cynodon dactylon* (Bermuda grass), *Mimosa pudica* (sensitive plant), *Oplismenus spp.* (honohono grass), *Panicum maximum* (Guinea grass), *Paspalum conjugatum Berg.* (Hilo grass), *Panicum repens* (torpedo grass), *Pennisetum clandestinum* (Kikuyu grass), *Psidium cattleianum* (strawberry guava), *Rhus sandwicensis* (neneleau), *Saccharum officinarum* (sugar cane)

Existing forest health and fire threat

Because there is no existing forest on this tract, there is little flammable litter on the ground. Cattle grazing and high rainfall lower fire threat from grasses and herbs.

Soils

The deep (3 to 6 feet) silty clay loam is classified as an andisol soil (Figure 6). Tests indicate moderate acidity (pH = 5.5) and that the rootknot nematode (*Meloidogyne spp.*) population is low. Hardpans, likely associated with long-term sugarcane cultivation, underlie patches of heavy, less well-drained ground; otherwise drainage is adequate. Mineral nutrient levels are generally very low; only 58 and 40-ppm calcium and magnesium, respectively, were detected (Figure 7). Productivity on sites within the "Woodland Group" of this area is estimated to be up to 1,000 board feet per acre per year.

Land capability class and subclass:

1. Honokaa silty clay loam, low elevation, 10 to 20 percent slopes (HsD)
Capability Class IV and Capability Subclass *e*
2. Honokaa silty clay loam, low elevation, 20 to 35 percent slopes (HsE)
Capability Class VI and Capability Subclass *e*
Woodland Group 7

Soil loss tolerance:

HsD erosion factors T = 5 tons/acre/year, K = 0.05, Kf = 0.05,
HsE erosion factors T = 5 tons/acre/year, K = 0.05, Kf = 0.05

Slope and aspect:

Slopes on the property range from 10 to 35 percent, with a northeasterly aspect.

Water resources

None

Timber resources

None

Wetland resources

No existing wetland

Historic and cultural resources

No known historic or cultural resources

Existing wildlife

Mongoose, feral pig, mice, and rats

Threatened and endangered species

No known threatened and endangered species

Existing recreational and aesthetic values

The only recent recreational value has been pig hunting. No present aesthetic value and no educational activities.

VI. Recommended Treatments and Practices

SIP-1 Forest Stewardship Management Plan

A specific management plan has been developed for high-value hardwood timber production on the Green Russo property. The plan describes two practices; SIP 2 Reforestation and Afforestation and SIP 4 Windbreak/Hedgerow Establishment and Maintenance to be undertaken on a total of 13.4 acres.

SIP-2 Reforestation and Afforestation

This practice will allow sustainable timber production of high-value hardwoods on a total of 12 acres. Because applicants do not plan to use chemical weed control methods, and since they want to be sure to have sufficient time to control weeds about the young seedlings, they have decided to prepare and plant up the site over a 20-month period. Hardwood plantings will be staggered in three blocks (Figure 8) in October 2002, March 2003, and October 2003 respectively.

Site preparation:

Because herbicides will not be used, each block of ground will be prepared for planting using conventional mechanical tillage methods and groundcover establishment. The use of heavy machinery, however, will be timed carefully with appropriate levels of soil moisture; equipment operators will avoid working the soil in wet conditions to prevent damage to soil structure.

Livestock will be excluded by fencing. After shredding/mowing all windbreak lines and Block 1, cane stubble and other vegetation will be disked under. Low levels of calcium and magnesium will be raised by spreading granular Ag 10 dolomite at a rate of 2600 lb/acre) and disking a second time. Double disking has been necessary in the past on other nearby sites to adequately incorporate cane stubble, break up clods, and smooth the ground surface sufficiently for safe mowing with a small farm tractor. Planting rows will be marked out 10 feet apart (for ease of mowing) parallel to the contour. Since trees grow best in aerated soils that drain well, a single-shank ripper will be used to shatter compacted ground below the planting rows to a depth of 18 inches. Ripping will lift the soil into slight ridges across the slopes to form a series of mini-terraces that direct potentially damaging runoff, from heavy rains, safely downward into the subsoil; increased storage of soil moisture at depth will buffer trees against stress from droughts periodically experienced on the Hamakua Coast. The anticipated improved soil aeration and drainage should also encourage optimal growth of tree seedlings and give them a head start from weed competition.

A mixture of groundcover seed will be spread with hand-operated spreader equipment. The mix will consist of white clover (*Trifolium repens*) and perennial rye grass (*Lolium perenne*) sown at rates of 25 and 50 lb, respectively per acre, for a total of 75 lb seed mix per acre. These heavy sowing rates should rapidly produce a thick vegetative cover that will suppress weed growth without herbicides. Many organic growers in Hawaii double

conventional recommended sowing rates of groundcover species to accomplish effective weed control. The perennial rye initially grows rapidly to protect the ground, but over time becomes dominated and replaced by the nitrogen-fixing legume.

Seedling choice, acquisition, and placement:

The hardwoods chosen for this project have tolerance for high-rainfall, moderately heavy soil, strong tradewinds, and periodic extended dry periods. Species least resistant to stem-bending and branch wrap-around, caused by prevailing wind, will be planted closest to protective windbreaks. Species were also selected on economic value and ease of maintenance; all tree types (except pheasantwood) tend to self prune their lower-canopy branches.

Seedlings of the following high-value hardwood species will be ordered from private nurseries from 4 to 6 months before planting. Species provenance (seed sources) should be matched with the oceanic environment of the Hamakua before ordering seedlings.

Khaya senegalensis (Senegal mahogany) A true mahogany of West Africa used for high-quality woodworking, fine furniture and cabinetry. Grows well in plantations. Drought tolerant and wind resistant.

Pterocarpus indicus (narra) A particularly hard dense wood used for fine cabinetry, finishing and woodworking. This tree contributes to soil fertility as it fixes atmospheric nitrogen in the soil. A valuable commercial tree in the Philippines. Very tolerant of drought and has high resistance to wind.

Swietenia macrophylla (big-leaf Honduras mahogany) A true mahogany of the American tropics; one of the best known and easiest to work woods for quality woodworking, furniture, and cabinetry. Grows very well in plantations in Hawaii. Tolerant of heavy soil and periodic drought.

Senna siamea (pheasantwood) A dark, ebony-like wood, often with a feathered appearance, currently in high demand by Hawaii woodworkers. Grows exceptionally well in moist locations, but needs some wind protection. Trees generally retain lower branches and will require pruning. Some direct seeding will be attempted in Block 1.

Tectona grandis (teak) The most widely planted, high-value hardwood. Used in shipbuilding, out-door furniture, flooring, trim, and high-grade cabinetry.

Seedlings of two commodity-grade hardwoods will also be purchased.

Eucalyptus microcorys (tallow wood) Wood is resistant to the Formosan subterranean termite. Used for fencing, floors, and construction.

Eucalyptus deglupta (rainbow bark) A handsome, brown-red wood that grows fast in a plantation setting. Used for decorative veneer.

The least wind-resistant species will be sited downwind and next to windbreaks and more wind-tolerant trees will grow progressively distant from them (Figure 9).

Planting seedlings: Seedlings will be planted 8 feet apart along the rip lines (spacing between rows-10 feet) to produce a stocking density of about 530 trees per acre. Ideally, weather conditions will be cloudy and cool during planting; soil moisture will be

adequate, but not excessive. Any remnant weedy vegetation will be removed from at least an 18" radius around planting locations. Planting holes will be opened without glazing the sides of the opening; planting shovels or bars should be used to open and close holes. A dibble stick is a less preferable tool and should never be used in wet soil. To avoid fertilizer burn, soil additives can be mixed into the bottom of the hole and covered with a thin layer of soil so the root plug is not in direct contact with the fertilizer; rather new roots grow toward the fertilizer without damage. The depth of the hole should be such that J-rooting is avoided and the root collar of the seedling should be just below the soil surface. Best planting practice is to place soil around the lower half of the plug, pack it down gently with one hand holding the seedling erect with the other, cover the top half of the plug, and pack down as before. Avoid unnecessary compaction by trampling soil around the seedling. Closing the hole with shovel or bar will eliminate air pockets.

Fertilization and soil amendments:

Ag10 dolomite, a carbonate rich in both magnesium and calcium, will both lower soil acidity and provide a slow-release source of calcium and magnesium nutrients that the ground presently lacks. Soil additives will include 4 oz each of 7-7-7 NPK, rock phosphate (0-3-0 NPK), and kelp meal (0-0.1-1 NPK) as a source of potassium and micronutrients; and 2 oz each of calcium sulfate (gypsum), and magnesium sulfate. Because rapid leaching of soluble nutrients occurs at this high-rainfall site, periodic fertilization will be necessary to maintain adequate levels of nitrogen and potassium, and to a lesser extent calcium and magnesium. Plants will be side dressed every 4 months for the first two years with 4 oz triple 7 NPK per tree; the rate will be 8 oz every 6 months during the 3rd and 4th years. Additionally, 2 oz each of gypsum and magnesium sulfate will be applied once per year for the first 4 years to both improve soil structure and help maintain adequate levels of available calcium and magnesium. Nutrient status of both soil and foliage will be checked after Year 1, or before if seedling crowns appear abnormal in color or size, and any nutrient imbalance will be remedied.

Weed and moisture control:

Since there will be no chemical herbicide applications on any of the three blocks, it will be crucial that the white clover ground cover establishes itself sufficiently to suppress growth of aggressive grasses, herbs, and vines. Owners will use a weed eater, tractor-drawn mower, and hand-weeding tools for control of vegetation.

Tree establishment protection:

Because the planting blocks would be vulnerable to damage from cattle grazing on the property, and pigs commonly cross the area between the gulches, perimeter fencing will be installed to protect seedlings from feral and domestic animals. Approximately 2,100 linear feet of 47" high, 11 gauge "hog wire" fence with 6" by 6" openings will be used to exclude grazers from the northwest, southwest, and northeast (1/2 length) boundaries.

Thinnings:

To optimize timber yield, the stands will be thinned when canopies close. Because of varying growth rates of the different species, timing will vary.

Final harvest plan:

Eucalypt species will likely be harvested in years 10-15. The applicants will begin to selectively harvest suitable high-value hardwoods after Year 20 of the project. Actual timing of harvests will depend on the maturity of the various species and market conditions. The applicants agree to develop and implement a harvesting plan conforming to current State of Hawaii Department of Lands & Natural Resources approved Best Management Plans and in consultation with DLNR-DOFAW Branch staff.

Marketing and Economics

Trees harvested from this property could be sold to local timber brokers, facilitated by a local timber owners' cooperative. A strong long-term global market has existed for finished products made of high-value hardwoods. Although current supply of hardwoods is small in Hawaii, a competitive local market already exists for buyers and sellers of quality timber. Established firms such as Martin and MacArthur and Potter, C. Barton, Co. on Oahu purchase raw material for milling. A number of small mills operate on Hawaii Island and woodworkers purchase quality wood grown locally when they can find it. As the supply of high-value hardwoods (grown in Hawaii) expands in coming decades, local manufacturers will increasingly be able to produce more furniture, cabinetry, and other fancy high-end wood products for local consumption and export. Because global prices of many tropical hardwoods have been rising faster than prices overall in recent decades, prospects for marketing quality trees from Hawaiian plantations appear very good for the long term.

The simplest way for a landowner to sell trees is as so-called "stumpage". A potential buyer, such as an independent logger or mill representative, will pay for trees as they "stand on their stumps" and will cut and haul them to the mill. The forest farmer normally negotiates a price with the buyer and monitors harvests. A recently formed (June 2001) Hardwood Growers Association will facilitate relationships between growers and buyers, strengthen the growers' bargaining position, and add stability to the emerging market. The tree owner could enter other more complicated arrangements to increase price of his product. For instance, a partnership could be formed with a buyer so that the timber is sold as rough lumber or finished product. The landowner could also command prices higher than stumpage by felling trees himself and stacking the timber for loading onto a log truck or hauling the logs to the mill himself. Processing logs on the site with a portable mill and wholesaling the rough lumber to woodworkers or larger stationary mills could generate even greater revenue. Finally, small lots of particularly high-quality wood in great demand could possibly be retailed directly, by advertising in various media including the internet, at a price many times higher than stumpage.

Revenue estimates of a future tree crop are conservatively based on stumpage and growth performance of the species based on site productivity. Given a 20-30 year rotation period, and expecting varying growth and yield from different species in this plantation, we will assume an "average" hardwood produces a millable bole of from 20 to 40 feet with a

diameter-breast-height (dbh) of 24 inches and moderate taper. The merchantable volume of one top grade 16-foot log could approach 200 board feet (bf) (Scribner decimal C log rule table), but defects such as bent stem, rot etc. lower value. A two-log tree would increase yield further. If the site performs to its annual potential productivity of 1,000 bf/year, yield from an acre of 100 mature trees could reach 20,000 bf after 20 years of growth. Assuming the value of good quality standing mahogany, teak, and narra at harvest is \$1 per board foot, stumpage from 1 acre would be about \$20,000 in today's dollars. Revenue can vary with wood quality and market conditions; stumpage of big-leaf mahogany in South America in 2001 has recently risen to as high as \$2/bf.

To estimate profitability of a forestry project, present and future costs are balanced against future revenues to produce a number called Net Present Value (NPV). We can think of NPV as the return on the landowner's investment in today's dollars. Because the applicants could make alternative investments with their money intended for this forestry project, the time value of the forestry investment should be accounted for in computing the NPV of the enterprise. NPV is then the difference between expected future returns and present plus future costs all discounted to the present at an appropriate interest rate called the discount rate. A sensitivity analysis can show how different discount rates and stumpage prices can influence net present value and therefore profitability. Besides cost of establishing and maintaining the plantation, landowners may also wish to take into account land payments, borrowing, and taxes.

Given the costs in the Practice Implementation Schedule, net present values of this project at 25 years could range from less than \$1,000/acre to over \$12,000/acre at discount rates of 5% and 3% respectively, and stumpage at \$1,000/mbf to \$2,000/mbf respectively (Figure 10). If harvest were delayed to 30 years or longer, continuing exponential rise in yield could result in net present values approaching \$20,000/acre under favorable discount rate and stumpage (Figure 10). Landowners should also consult with their accountants regarding the possible impact their forestry investment might have on lowering their federal taxes. During the mid to later life of the plantation, applicants could possibly augment their income by sales of hardwood seed to wholesalers and by planting agroforestry crops in the understory.

SIP-4 Windbreak and Hedgerow Establishment, and Maintenance

A series of windbreaks will be established on 1.4 acres to protect the three blocks (12 acres) of high-value hardwoods from damaging winds. These windbreaks will include agroforestry species for food. The remaining 3.0 acres of the 16.5-acre Green-Russo property abuts the Stewardship Project and will contain a fruit orchard, diversified row crops, and a house site.

Wind can potentially harm hardwood plantations in several ways. Strong storm winds can blow from any direction and exert sufficient force to snap mature stems at any point of the bole. Even if the stem remains intact, branches broken or torn entirely from the trunk reduce the canopy, increase potential for entry of disease, slow growth, and likely impact wood quality. Heavy rains that often accompany high winds may saturate the soil to increase risk of stem movement in the topsoil, root breakage from the rocking motion, and blow down. Even moderately strong and steady tradewinds can severely degrade a tree plantation. Wind blowing from one direction for up to weeks at a time can permanently bend growing tips of main stems, and may wrap canopies of some species downwind around the trunk to worsen the bending. Trees stressed and permanently deformed by wind fail to achieve their growth potential, produce undesirable reaction wood, and will eventually have to be removed from the plantation. Windbreak species should tolerate moderate-to-strong wind without undue breakage, stem bending, branch wraparound and foliar damage; trees should grow rapidly or moderately fast, retain their lower branches, and have multiple uses. To adequately protect young seedlings on an exposed site, windbreaks should be established well before planting.

Many older windbreaks in Hawaii consist of a single row, but multiple-row windbreaks are generally more effective in reducing wind velocities and turbulence than single-row plantings. A planting of a shorter species on the outside windward row with progressively taller trees inward and adjacent rows staggered should extend the zone of reduced wind speed. Spacing between trees and rows of trees will be such that some slowed air will filter through the windbreak to produce smoother less-turbulent airflow than a solid hedge planting. Below is a planting pattern for a three-row windbreak of species A, B, & C.

Outer Row	A	10'	A	10'	A	10'	A	short
15'								
2 nd Row		B	15'	B	15'	B	tall	
15'								
3 rd Row	C	15'	C	15'	C	tall		

Although the existing ironwood windbreak on the northern boundary of the applicants' property now partially protects the lower acreage from northeasterly tradewinds, the site remains exposed from other directions and most importantly to strong, persistent trades from both east and southeast quadrants. To avoid wind damage to the young trees, the owners will establish a primary multiple-row windbreak along the eastern boundary,

together with a series of roughly parallel interior windbreaks spaced at appropriate distances toward the western boundary of the property. Although the southern boundary is presently unprotected, a recently established hardwood plantation on the adjacent upslope tract will shortly provide adequate wind protection from that direction.

Site preparation:

Windbreak areas will be flagged out according to tree spacing in the above diagram. All planting strips will be mowed, disked, and ripped to a depth of 18" in conjunction with site preparation of Block 1 hardwoods. A three-row primary windbreak will be planted along the eastern fenced boundary. To the west in the interior of the timber tract, double-row windbreaks will be established about 300 feet apart, more or less parallel to the primary windbreak, and sited on ridges where possible. Single-row interior windbreaks of a tall species will join double-row windbreaks (Figure 9). Trees will be spaced 10 feet apart in windward (outer) rows; spacing in inner row(s) will be 15 feet within and between rows. Approximate number of seedlings required is 415.

Species selection:

Windbreak species are listed below. Cook pine and Brisbane brush box are particularly sturdy in strong tradewinds; they rarely lean and branches resist wrap-around deformity.

Species	Growth Rate	20-Yr Height	Comment
Primary triple-row windbreak			
ti <i>Cordyline terminalis</i>	Rapid	10'	Windward row
dracaena <i>Dracaena fragrans</i>	Moderate	15'	Windward row
Cook pine <i>Araucaria columnaris</i>	Moderate	90'	Valued for woodwork
Brisbane box <i>Lophostemon confertus</i>	Rapid	60'	"Chocolate wood" popular
Double- and single-row windbreaks			
Banana <i>Musa spp.</i>	Rapid	20'	Food crop
cinnamon <i>Cinnamomum verum</i>	Moderate	20'	Spice from bark
inga <i>Inga dulce</i>	Rapid	60'	Nitrogen-fixing tree
jakfruit <i>Artocarpus heterophyllus</i>	Moderate	60'	Edible fruit, valuable timber
loquat <i>Eriobotrya japonica</i>	Moderate	30'	Edible fruit
milo <i>Thespesia populnea</i>	Moderate	30'	High-value hardwood
naio <i>Myoporum sandwicense</i>	Moderate	15'	Small, shrubby native tree
tamarind <i>Tamarindus indicus</i>	Moderate	40'	Edible fruit
ulu <i>Artocarpus communis</i>	Slow	40'	Breadfruit production

Planting seedlings:

Planting will occur in March through April 2002, 6 months before planting block 1. Seedlings will be planted similarly as described in SIP -2.

Fertilization and soil amendments:

The same fertilizer regime as described in SIP-2 will be applied to planting locations of the windbreak trees; 4 oz each of NPK (7-7-7) fertilizer, rock phosphate, and 2 oz each of gypsum and magnesium sulfate will be incorporated into the soil at each tree location during planting. Applications after establishment will also follow the SIP-2 schedule.

Weed and moisture control:

White clover will provide a control of weeds and retain soil moisture in the windbreaks.

Agroforestry Component

Besides the timber value of some of the windbreak species, a number of windbreak species also produce edible fruits. These plantings can complement the adjacent farm operation and augment income from the timber crop. As canopies expand and shade develops, the applicants may wish to plant agroforestry crops in the understory such as vanilla vine, cocoa, and shade coffee.

YEAR 4 - 2005					
<u>Practice component & SIP number</u>	<u>Units to be accomplished</u>	<u>Cost per unit</u>	<u>Total practice cost</u>	<u>Landowner share</u>	<u>State share</u>
Fertilization/soil amend (SIP-2)	12 acres	\$216	\$2,600	\$1,300	\$1,300
Fertilization/soil amend (SIP-2)	8 acres	\$222	\$1,780	\$890	\$890
Weed/Moisture control (SIP-2)	12 acres	\$250	\$3,000	\$1,500	\$1,500
Fertilization/soil amend (SIP-4)	1.4 acres	\$200	\$280	\$140	\$140
Weed/Moisture control (SIP-4)	1.4 acres	\$250	\$350	\$175	\$175
TOTALS FOR YEAR 4			\$8,010	\$4,005	\$4,005

YEAR 5 - 2006					
<u>Practice component & SIP number</u>	<u>Units to be accomplished</u>	<u>Cost per unit</u>	<u>Total practice cost</u>	<u>Landowner share</u>	<u>State share</u>
Fertilization/soil amend (SIP-2)	12 acres	\$420	\$3,000	\$1,500	\$1,500
Weed/Moisture control (SIP-2)	12 acres	\$200	\$2,400	\$1,200	\$1,200
Weed/Moisture control (SIP-4)	1.4 acres	\$200	\$280	\$140	\$140
TOTALS FOR YEAR 5			\$5,680	\$2,840	\$2,840

YEAR 6 - 2007					
<u>Practice component & SIP number</u>	<u>Units to be accomplished</u>	<u>Cost per unit</u>	<u>Total practice cost</u>	<u>Landowner share</u>	<u>State share</u>
Fertilization/soil amend (SIP-2)	8 acres	\$276	\$2,208	\$1,104	\$1,104
Weed/Moisture control (SIP-2)	8 acres	\$200	\$1,600	\$800	\$800
Weed/Moisture control (SIP-2)	4 acres	\$200	\$800	\$800	\$0
Weed/Moisture control (SIP-4)	1.4 acres	\$200	\$280	\$280	\$0
TOTALS FOR YEAR 6			\$4,888	\$2,984	\$1,904

YEARS 7-10 2008-11					
<u>Practice component & SIP number</u>	<u>Units to be accomplished</u>	<u>Cost per unit</u>	<u>Total practice cost</u>	<u>Landowner share</u>	<u>State share</u>
Weed/Moisture control (SIP-2)	12 acres	\$200	\$2,400	\$2,400	\$0
Weed/Moisture control (SIP-4)	1.4 acres	\$200	\$280	\$280	\$0
TOTALS FOR YEARS 7-10			\$2,680	\$2,680	\$0

VII. Practice Implementation Schedule

YEAR 1 - 2002					
Practice component & SIP number	Units to be accomplished	Cost per unit	Total practice cost	Landowner share	State share
Site preparation (SIP-2)	4 acres	\$717	\$2,868	\$1,434	\$1,434
Seedling acquisition (SIP-2)	2,280 seedlings	\$2	\$4,560	\$2,280	\$2,280
Planting (SIP-2)	4 acres	\$230	\$920	\$460	\$460
Fertilization/soil amendment (SIP-2)	4 acres	\$165	\$660	\$330	\$330
Weed/moisture control (SIP-2)	4 acres	\$346	\$1,384	\$784	\$600
Tree establishment/protection (SIP-2)	13.4 acres	\$149	\$1,996	\$998	\$998
Site preparation (SIP-4)	1.4 acres	\$716	\$1,002	\$501	\$501
Seedling acquisition (SIP-4)	415 seedlings	\$3	\$1,500	\$750	\$750
Planting (SIP-4)	1.4 acres	\$230	\$322	\$161	\$161
Fertilization/soil amendment (SIP-4)	1.4 acres	\$430	\$602	\$301	\$301
Weed/moisture control (SIP-4)	1.4 acres	\$333	\$466	\$256	\$210
TOTALS FOR YEAR 1			\$16,280	\$8,255	\$8,025

YEAR 2 - 2003					
Practice component & SIP number	Units to be accomplished	Cost per unit	Total practice cost	Landowner share	State share
Site preparation (SIP-2)	8 acres	\$731	\$5,850	\$2,925	\$2,925
Seedling acquisition (SIP-2)	4,560 seedlings	\$2	\$9,120	\$4,560	\$4,560
Planting (SIP-2)	8 acres	\$240	\$1,920	\$960	\$960
Fertilization/soil amend (SIP-2)	12 acres	\$355	\$4,270	\$2,135	\$2,135
Weed/Moisture control (SIP-2)	12 acres	\$300	\$3,600	\$1,800	\$1,800
Fertilization/soil amend (SIP-4)	1.4 acres	\$395	\$554	\$277	\$277
Weed/Moisture control (SIP-4)	1.4 acres	\$300	\$420	\$210	\$210
TOTALS FOR YEAR 2			\$25,734	\$12,687	\$12,687

YEAR 3 - 2004					
Practice component & SIP number	Units to be accomplished	Cost per unit	Total practice cost	Landowner share	State share
Fertilization/soil amend (SIP-2)	12 acres	\$432	\$5,180	\$2,590	\$2,590
Weed/Moisture control (SIP-2)	12 acres	\$300	\$3,600	\$1,800	\$1,800
Fertilization/soil amend (SIP-4))	1.4 acres	\$440	\$616	\$308	\$308
Weed/Moisture control (SIP-4)	1.4 acres	\$300	\$420	\$220	\$220
TOTALS FOR YEAR 3			\$9,816	\$4,908	\$4,908

September Windbreaks: Fertilize with NPK & rock phosphate
Block 1 & 2: Fertilize with NPK, kelp meal & gypsum/Mg
Block 3: Fertilize with NPK & gypsum/Mg

Year 5 (January-December 2006)

Jan-Dec Windbreaks, Block 1, 2 & 3: Control weeds and general
maintenance @ 3 days/month
March Windbreaks: Fertilize with NPK & kelp meal
Blocks 1 & 2: Fertilize with NPK & gypsum/Mg
Blocks 3: Fertilize with NPK & rock phosphate
September Blocks 1 & 2: Fertilize with NPK & rock phosphate
Blocks 3: Fertilize with NPK, kelp meal, & gypsum/Mg

Year 6 (January-December 2007)

Jan-Dec All Blocks: Weed control and general maintenance @ 2 days/month
March Block 2: Fertilize with NPK & kelp meal
Block 3: Fertilize with NPK & gypsum/Mg
September Block 3: Fertilize with NPK & kelp meal

Years 7-10 (January 2008-December 2011)

General weed control and maintenance @ 1 day a month
Thinning of pole-size stands

Timetable of Management Practices

Year 1 (January-December 2002)

January	Windbreaks: Order seedlings/seeds
February	Windbreaks & Block 1: Prepare site, apply lime, and sow ground cover; fence open portion of perimeter and install gate
March	Windbreaks: Plant seedlings; apply NPK, rock phosphate & gypsum Block 1: Order seedlings for fall planting of hardwoods
April-June	Windbreaks & Block 1: Maintain ground cover @ 2 days/month
July-Dec	Windbreaks & Block 1: Weed control/pruning (Blk 1) @ 3 days/month
July	Windbreaks: Fertilize with triple 7 NPK & kelp meal
November	Block 1: Plant & fertilize - triple 7 NPK, rock phosphate, gypsum/Mg Windbreaks: Fertilize with triple 7 NPK & gypsum/Mg
December	Block 2: Order hardwood seedlings

Year 2 (January-December 2003)

January	Windbreaks & Block 1: Weed control @ 3 days/month
February	Block 2: Prepare site, apply lime and sow ground cover Windbreaks & Block 1: Fertilize with triple 7 NPK & rock phosphate Windbreaks & Block 1: Weed control @ 3 days/month
March	Block 2: Plant & fertilize with triple 7 NPK, rock phosphate & gypsum Windbreaks & Block 1: Weed control @ 3 days
April	Block 3: Order seedlings for fall planting
April-June	Block 2: Maintain ground cover @ 2 days a month Windbreaks & Block 1: Weed control @ 3 days
July	Windbreaks, Block 1 & 2: Fertilize with triple 7 NPK & kelp meal
July-Nov.	Windbreaks, Blocks 1 & 2: Weed control/pruning @ 4 days/month
September	Block 3: Prepare site, apply lime, and sow ground cover
November	Block 3: Plant & fertilize with triple 7 NPK, rock phosphate & gypsum Windbreaks & Blocks 1 & 2: Fertilize with triple 7 NPK & gypsum/Mg
December	All Windbreaks & Blocks: Weed control @ 6 days a month Block 3: Ground cover maintenance @ 2 days a month

Year 3 (January-December 2004)

Jan-Feb	Block 3: Maintain groundcover @ 2 days a month
Jan-Dec	Windbreaks, Block 1, 2 & 3: Control weeds/pruning @ 5 days/month
March	Windbreaks, Block 1, 2 & 3: Fertilize with NPK & rock phosphate
July	Block 1,2 & 3: Fertilize with NPK & kelp meal
September	Windbreaks: Fertilize with NPK & kelp meal Block 1: Fertilize with NPK & gypsum/Mg
November	Block 2 & 3: Fertilize with NPK & gypsum/Mg

Year 4 (January-December 2005)

Jan-Dec	Windbreaks, Block 1, 2 & 3: Control weeds/pruning @ 4 days/month
March	Windbreaks: Fertilize with NPK & gypsum/Mg Block 1, 2 & 3: Fertilize with NPK & rock phosphate
July	Block 3: Fertilize with NPK & kelp meal

IX. Attachments

VIII. Budget Summary

Year	Budget	Landowner Share	State Share
2002	\$16,280	\$8,255	\$8,025
2003	\$25,734	\$12,867	\$12,867
2004	\$9,816	\$4,908	\$4,908
2005	\$8,010	\$4,005	\$4,005
2006	\$5,680	\$2,840	\$2,840
2007	\$4,888	\$2,984	\$1,904
2008	\$670	\$670	\$0
2009	\$670	\$670	\$0
2010	\$670	\$670	\$0
2011	\$670	\$670	\$0
Totals	\$73,088	\$38,539	\$34,549

Figure 2. Arrow shows the site on agricultural land below the Hilo Forest Reserve. Note access from the Belt Road and gulches bounding the property. (USGS 1980)

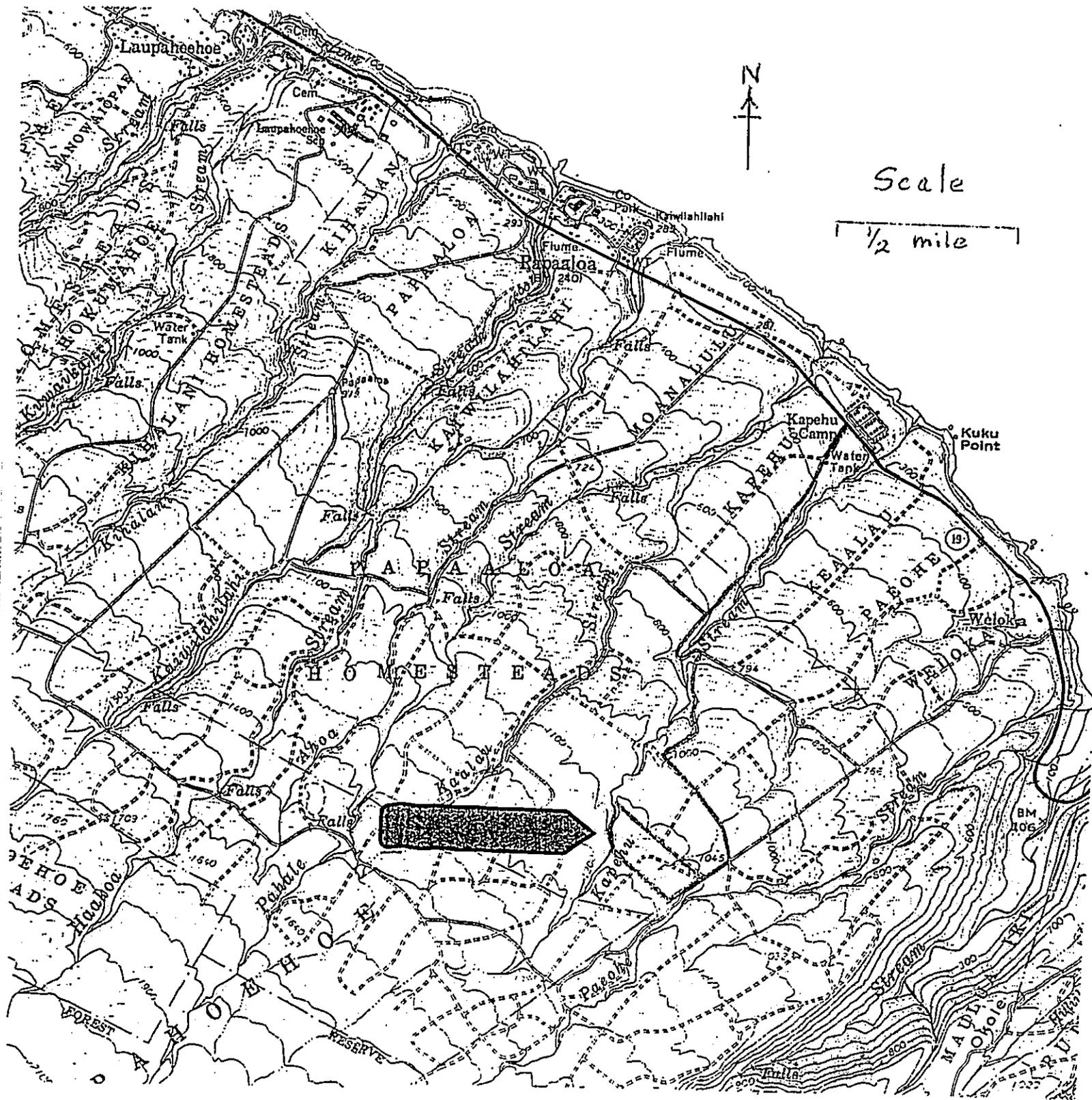


Figure 1. The red arrow indicates the general location of the Green/Russo property on the central Hamakua Coast, Hawai'i Island.

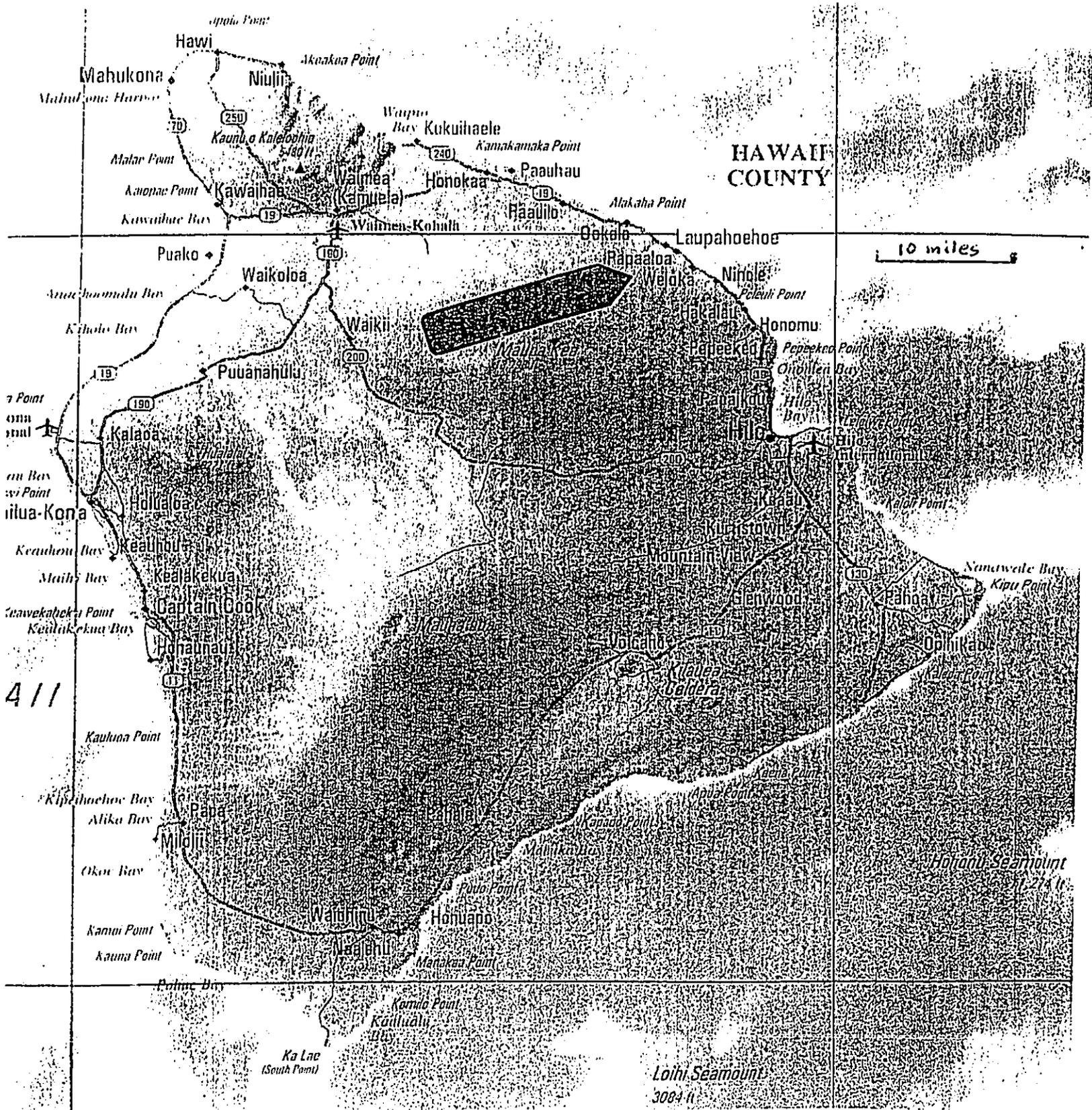


Figure 3. Map of site showing topographic detail at a 20 foot contour interval. Note vehicular access (in orange) crossing the property. Scale 1"=500'.

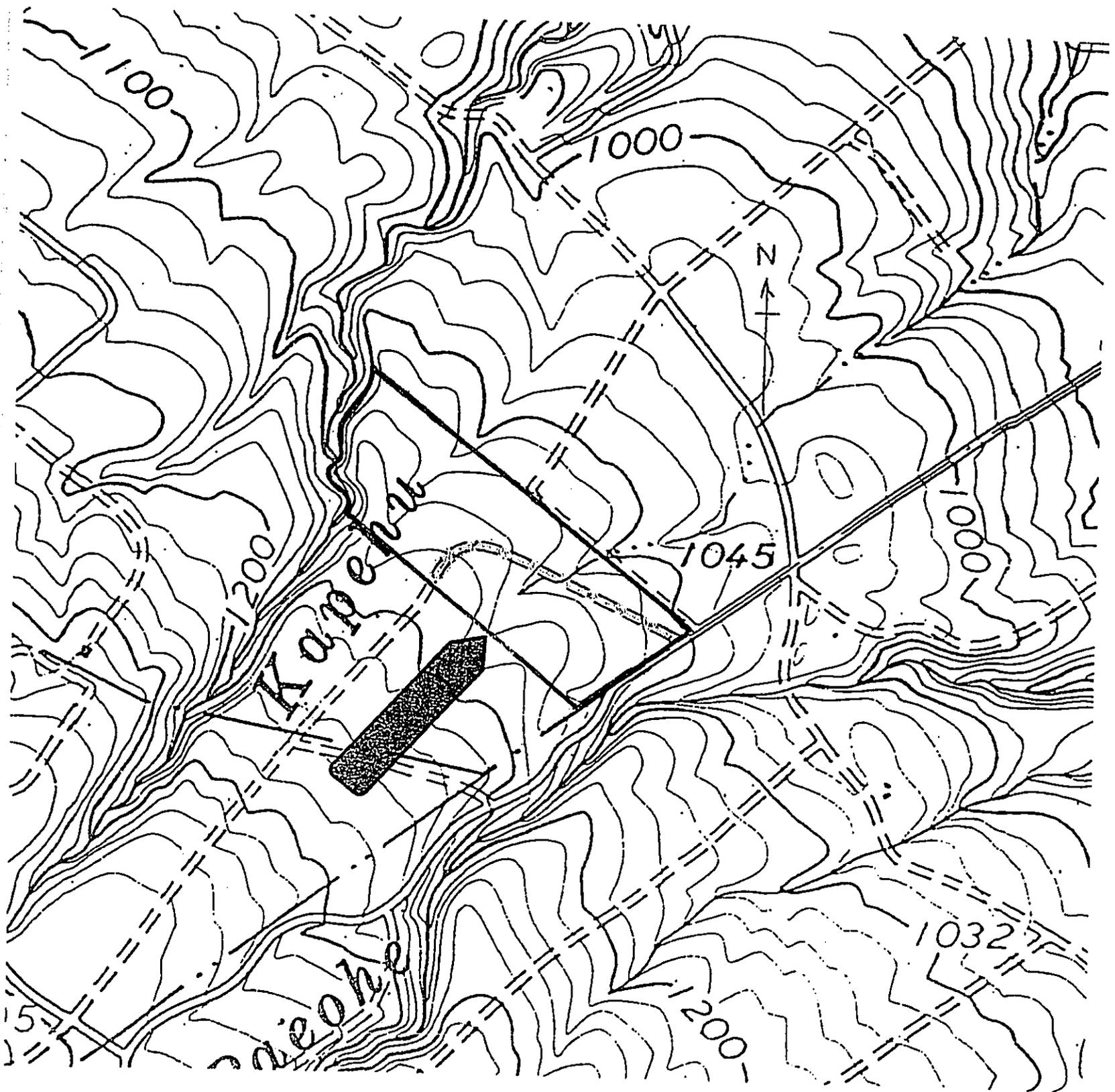


Figure 4. Map showing mean annual precipitation for Hawaii Island. Rainfall at the site averages between 100 and 150 inches per year.

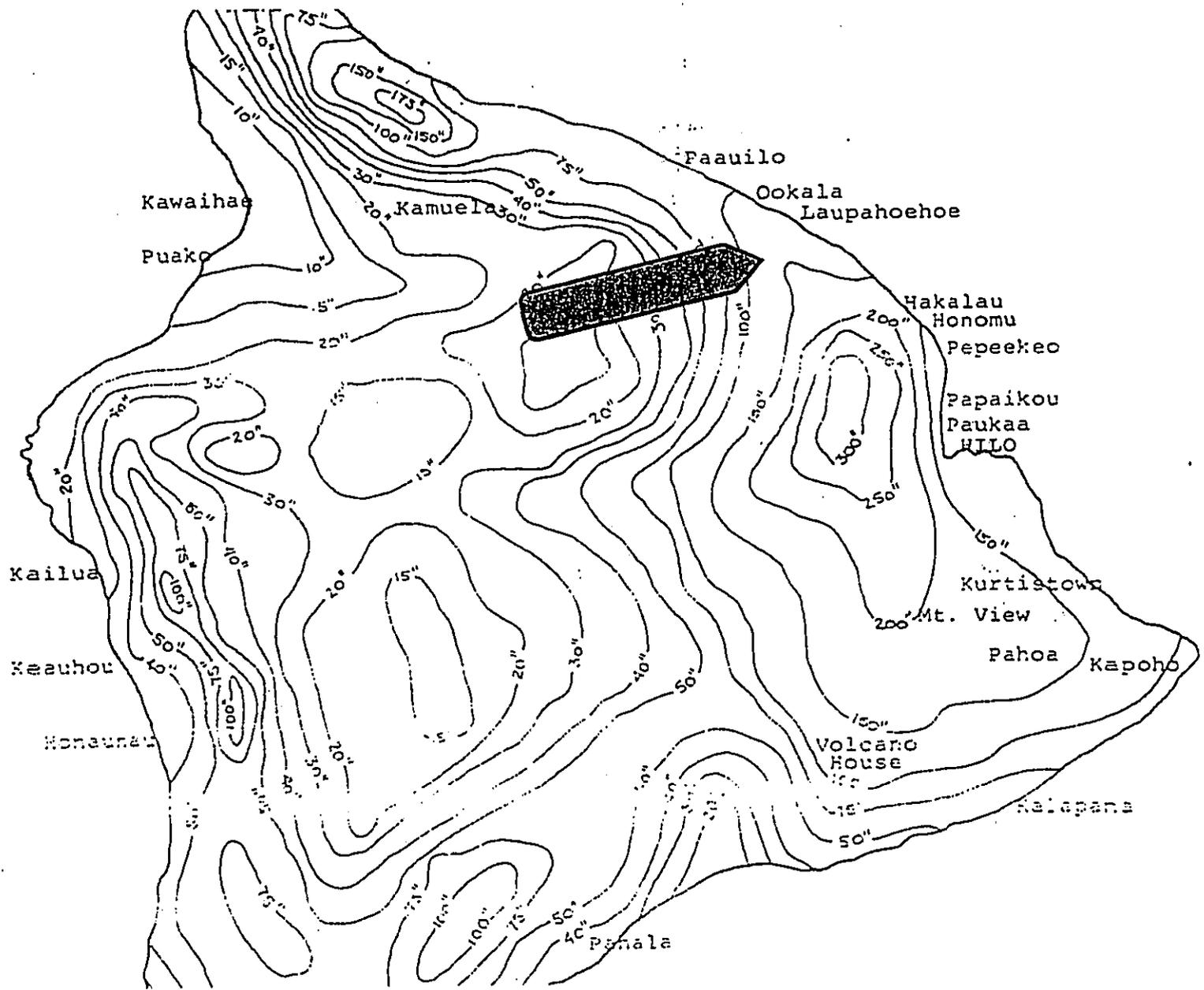


Figure 6. The site is located within a large area with soil derived from volcanic ash (andisol).

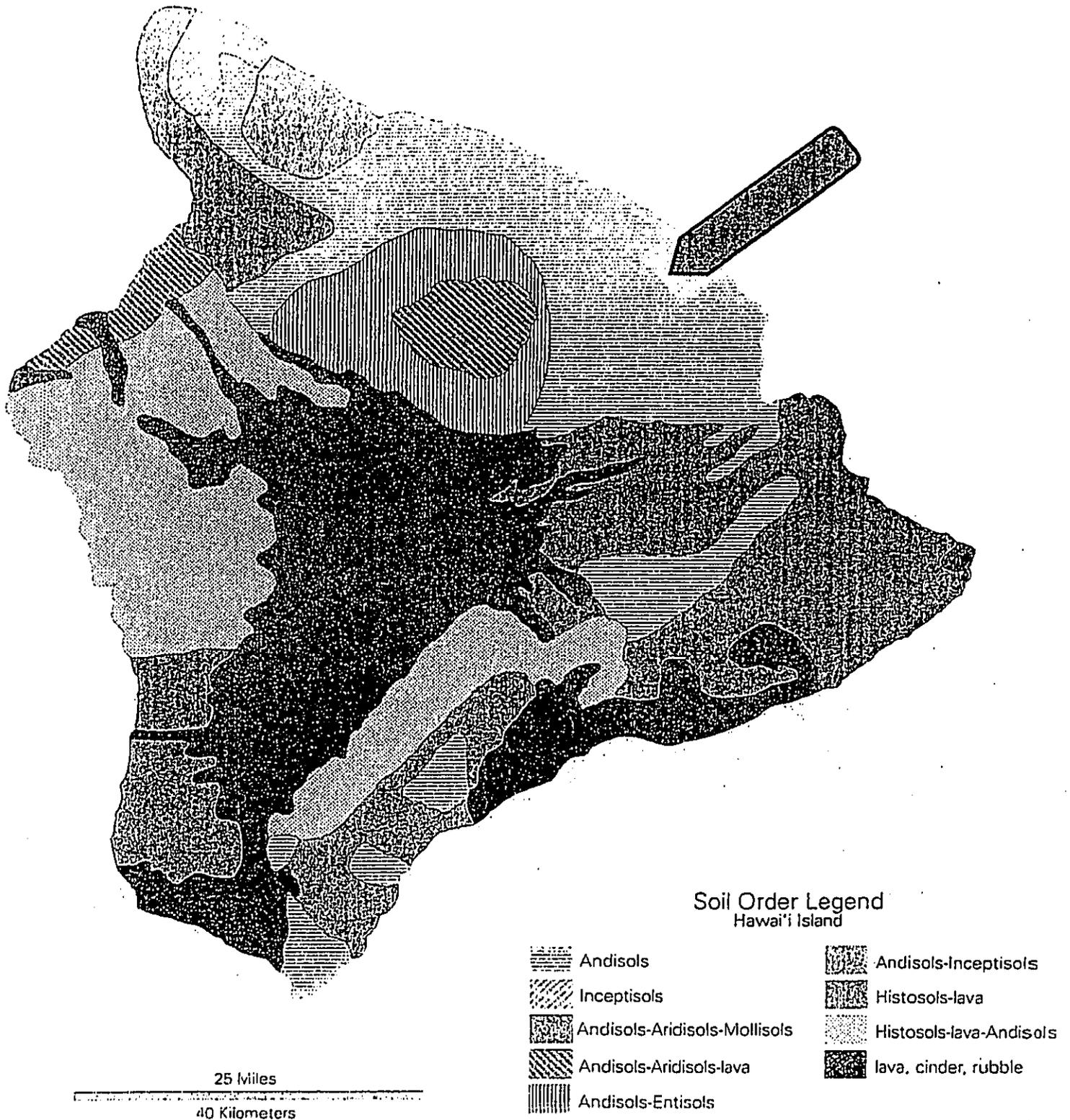


Figure 5. Upper photograph: grazing on the site in April, 2000. Lower: a view toward the northeast showing existing ironwood on the northern boundary.

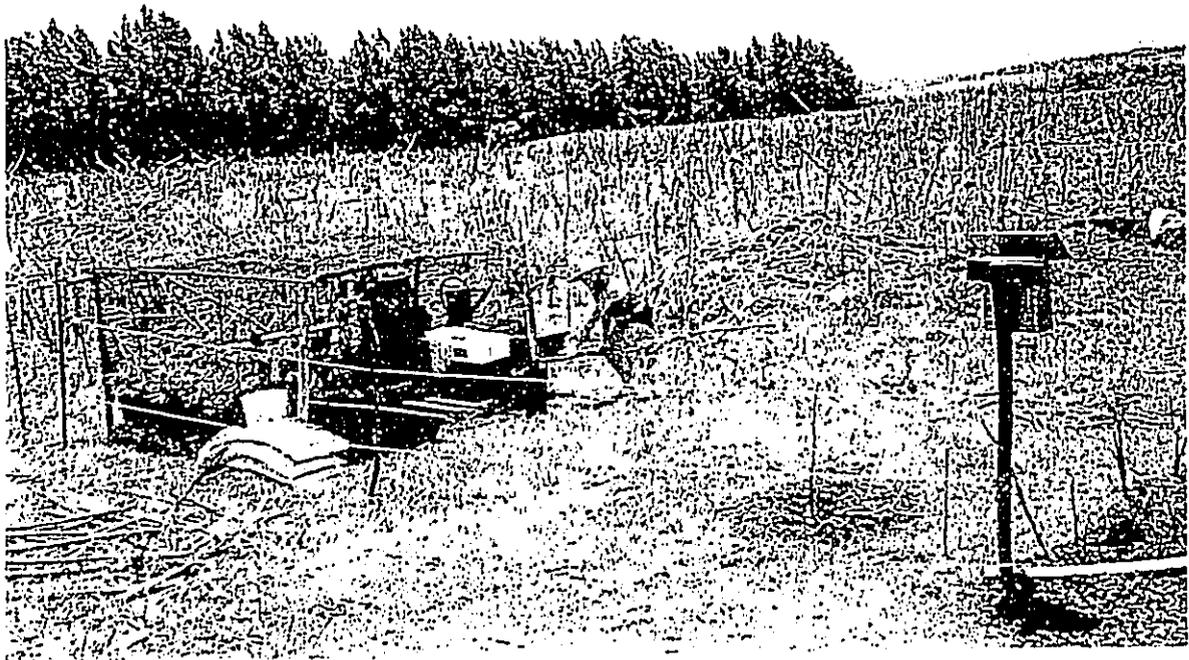
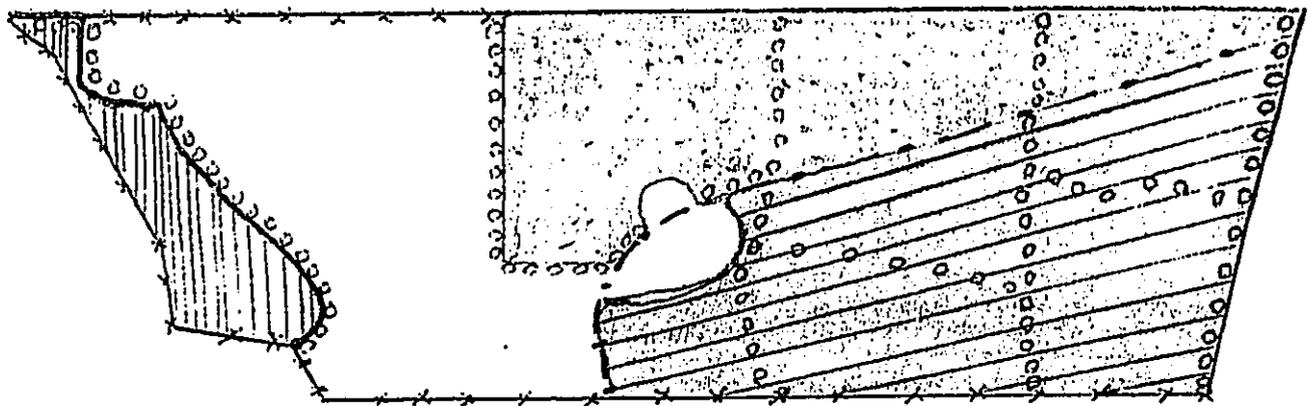


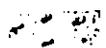
Figure 8. Site map shows SIP-2 hardwood blocks, SIP-4 windbreak plantings, and location of SIP-2 tree-protection fence. Block 1 will be planted in October 2002, Blocks 2 & 3 in the spring and fall of 2003 respectively.



Key:

acreage

SIP-2 Plantings



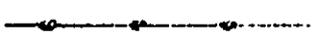
Block 1 4



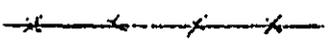
Block 2 6



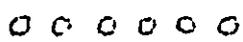
Block 3 2



Access road



SIP-2 Fencing



SIP-4 Windbreaks



Scale in feet

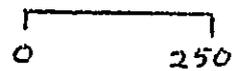


Figure 10. Estimates of variation in profitability of timber production expressed as Net Present Value per acre at discount rates of 3 and 5%, stumpage prices of 1,000, 1,500 and \$2,000 per 1,000 board feet, and based on projected costs of this project. Note that this economic model projects the optimal time to harvest as 30 years after plantation establishment.

Stumpage	\$1,000	\$1,000	\$1,500	\$1,500	\$2,000	\$2,000
Discount	3.0%	5.0%	3.0%	5.0%	3.0%	5.0%
NET PRESENT VALUE IN \$ PER ACRE						
YEAR						
20	(211)	(1,240)	2,004	267	4,218	1,775
25	3,652	864	7,951	3,522	12,249	6,180
30	7,152	2,337	13,332	5,808	19,512	9,278
35	7,005	1,621	13,224	4,793	19,443	7,966
40	6,020	579	11,845	3,278	17,669	5,977

Figure 11. Listing of typical costs underlying summary figures in the Practice and Implementation Schedule.

	Units to be Completed	Cost Per Unit	Total Cost
Site Preparation SIP-2			
A. Mowing Blk 1	4 acres		
B. Disking	"	\$75.00	\$300.00
C. 2nd Disking	"	\$75.00	\$300.00
D. Disk haul charge (\$75)	"	\$75.00	\$300.00
E. Ripping	"	\$14.00	\$56.00
F. Ripper haul charge	"	\$75.00	\$300.00
G. Harrow Block 1	"	\$14.00	\$56.00
H. Harrow haul charge	"	\$75.00	\$300.00
I. Seed Application Block 1	"	\$14.00	\$56.00
J. Ag10 dolomite 2610 lb/ac	"	\$30.00	\$120.00
K. Lime Application	"	\$240.00	\$960.00
		\$30.00	\$120.00
Site preparation total	4 acres		\$2,868.00
Seedling acquisition : SIP-2			
4 acres @ 570 seedlings /ac	2280 sdlg	\$2.00	\$4,560.00
Seedling planting:			
Blk 1 labor \$10/h, 24 sdlg/h	4 acres	\$240.00	\$920.00
Fert/soil amend: SIP-2			
NPK 7-7-7 4oz/sdlg @ plant	4 acres	\$50.00	\$200.00
Rock Phosphate 4oz/sdlg	"	\$40.00	\$160.00
Gypsum 4oz/sdlg	"	\$35.00	\$140.00
Applicatn labor \$10/h h/ac	"	\$40.00	\$160.00
Fert/amend @ plant total	4 acres		\$660.00
Weed/moisture control: SIP-2			
A. Ground cover seeds 75lbs/acre @ \$1.25 per lb	4 acres	\$93.75	\$375.00
B. Ground cover maint. (\$10/hr)~4hrs/acre/yr	"	\$40.00	\$160.00
C. Maintenance Tools @ \$50	"		\$50.00
D. Weed cntrl \$10/h 16h/ac/y	"	\$200.00	\$800.00
Weed/moisture control total	4 acres		\$1,385.00
Establishment protectn SIP-2			
.11 gage mesh fence~2121 ft	13.4 acres	\$64.00	\$857.60
.Hvy galv posts 6' T 60 @ \$5	"	\$22.39	\$300.00
Corner posts 20 5"rd @ \$10	"	\$14.93	\$200.06
Gate 12ft panel at \$80	"	\$5.97	\$80.00
Equip: post driver hole digger witch, cutters, fencing tool	"	\$12.00	\$160.80
Fence labor (\$10/h) 3 h/ac	"	\$30.00	\$402.00
Tree establishment protection total	13.4	\$149.29	\$2,000.46

EXHIBIT B:
CORRESPONDENCE

Bari Green & Lou Russo
P.O. Box 32
Papa'aloa, Hawaii
96780

Jim & Liz Shouse
P.O. Box 1364
Honokaa, Hawaii
96727

October 29, 2001

Dear Jim and Liz,

We would like to let you know of our plans to establish a stand of non invasive, high value hardwood trees for sustainable timber production on our 16.51 acre property (tax map key#3-3-5-01-69), which is adjacent to your property (tax map key#3-3-5-01-73).

A Forest Stewardship Management Plan for our proposed project has been prepared with the assistance of the Department of Land and Natural Resources Division of Forestry and Wildlife (DNLR-DOFAW) at 1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813, and has been reviewed by the Forest Stewardship Committee. This project will consult the DOFAW Best Management Practices for Maintaining Water Quality in Hawaii for planned activities.

The property landscape will be improved aesthetically by replacing pasture and remnant sugar cane with a sustainable plantation forest. Approximately 6,360 trees will be planted on 13.4 acres of the 16.51 acre property, with the remaining 3.11 acres to be left for a homestead. Species to be planted include: *E. deglupta*, *E. microcorys*, *Khaya senegalensis*, *Pterocarpus indicus*, *Senna Simea*, *Swietenia macrophylla*, and *Tectona grandis*. Because the property was previously in pasture and sugar cane, we do not anticipate negative impacts as a result of converting the property to timber production.

The anticipated start date for the project is January 2002. Please contact us at the above address or at 962-6525 if you have any questions or concerns.

Thank you,



Bari Green
Lou Russo

Bari Green & Lou Russo
P.O. Box 32
Papa'aloa, Hawaii
96780

Allen & Ina Fox
P.O. Box 367
Laupahoehoe, Hawaii
96764

October 29, 2001

Dear Allen and Ina,

We would like to let you know of our plans to establish a stand of non invasive, high value hardwood trees for sustainable timber production on our 16.51 acre property (tax map key#3-3-5-01-69), which is adjacent to your property (tax map key#3-3-5-01-72).

A Forest Stewardship Management Plan for our proposed project has been prepared with the assistance of the Department of Land and Natural Resources Division of Forestry and Wildlife (DNLR-DOFAW) at 1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813, and has been reviewed by the Forest Stewardship Committee. This project will consult the DOFAW Best Management Practices for Maintaining Water Quality in Hawaii for planned activities.

The property landscape will be improved aesthetically by replacing pasture and remnant sugar cane with a sustainable plantation forest. Approximately 6,360 trees will be planted on 13.4 acres of the 16.51 acre property, with the remaining 3.11 acres to be left for a homestead. Species to be planted include: *E. deglupta*, *E. microcorys*, *Khaya senegalensis*, *Pterocarpus indicus*, *Senna Simea*, *Swietenia macrophylla*, and *Tectona grandis*. Because the property was previously in pasture and sugar cane, we do not anticipate negative impacts as a result of converting the property to timber production.

The anticipated start date for the project is January 2002. Please contact us at the above address or at 962-6525 if you have any questions or concerns.

Thank you,



Bari Green
Lou Russo

Bari Green & Lou Russo
P.O. Box 32
Papa'aloa, Hawaii
96780

Hamakua Hardwoods, Inc.
1456 Wailuku Drive
Hilo, Hawaii
96720

October 29, 2001

Dear Hamakua Hardwoods, Inc.,

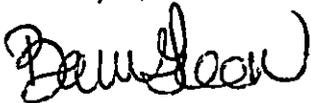
We would like to let you know of our plans to establish a stand of non invasive, high value hardwood trees for sustainable timber production on our 16.51 acre property (tax map key#3-3-5-01-69), which is adjacent to your property (tax map key#3-3-5-01-75).

A Forest Stewardship Management Plan for our proposed project has been prepared with the assistance of the Department of Land and Natural Resources Division of Forestry and Wildlife (DNLN-DOFAW) at 1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813, and has been reviewed by the Forest Stewardship Committee. This project will consult the DOFAW Best Management Practices for Maintaining Water Quality in Hawaii for planned activities.

The property landscape will be improved aesthetically by replacing pasture and remnant sugar cane with a sustainable plantation forest. Approximately 6,360 trees will be planted on 13.4 acres of the 16.51 acre property, with the remaining 3.11 acres to be left for a homestead. Species to be planted include: *E. deglupta*, *E. microcorys*, *Khaya senegalensis*, *Pterocarpus indicus*, *Senna Simea*, *Swietenia macrophylla*, and *Tectona grandis*. Because the property was previously in pasture and sugar cane, we do not anticipate negative impacts as a result of converting the property to timber production.

The anticipated start date for the project is January 2002. Please contact us at the above address or at 962-6525 if you have any questions or concerns.

Thank you,



Bari Green
Lou Russo

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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

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WATER RESOURCES MANAGEMENT

November 7, 2001

Librarian
Laupahoehoe Public & School Library
P.O. Box 249
Laupahoehoe, HI 96764

Dear Librarian:

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please make this draft environmental assessment available to the public at your library during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

A handwritten signature in black ink, appearing to read "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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November 6, 2001

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

Expected Finding of No Significant Impact (FONSI) for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Papaalooa Homesteads, Hamakua District, Hawaii, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination.

(1) **The project involves no irrevocable commitment to loss or destruction of any natural or cultural resources:** The primary objective of this project establish a small-scale high-value hardwood timber plantation, on land that has been cultivated for sugar production and most recently, used as a pasture area. There are no significant natural or cultural resources on the project site.

(2) **The project will in no way curtail the beneficial uses of the environment:** The project will, in-fact put this land to a more valued use, both environmentally and economically.

(3) **The project is clearly consistent with the State's long-term environmental policies, goals and guidelines as expressed in Chapter 344, HRS - and any revisions thereof and amendments thereto, court decisions or executive orders.**

(4) **The project will not substantially affect the economic or social welfare of the community or state:** The project will only serve to benefit the economic and social welfare of the Hamakua community and the state by contributing to economic

diversification, providing limited employment, and contributing to the development of timber supply markets to Hawaii's growing forest industry.

(5) **The project will not substantially affect public health:** The management practices proposed will not significantly impact public health. The applicants intend to use ground covers and mowing as opposed to chemical herbicides to control weeds. The applicants do intend to apply relatively small amounts of inorganic fertilizer. However applications will be made by hand to individual tree seedlings and the site is a good distance from any adjacent property dwellings and potentially affected areas. All applications will adhere to state BMPs and all federal and state guidelines and regulations.

(6) **The project does not involve any substantial secondary impacts, such as population changes or effects on public facilities.**

(7) **The project does not involve any degradation of environmental quality.** This project can in fact only serve to enhance the aesthetic environmental quality of the Hamakua area.

(8) **The project does not involve a commitment for larger actions or a considerable cumulative affect on the environment:** Most actions will take place during the establishment stage of the project. After year four, practices involve only routine maintenance and periodic thinning. Then after several years, periodic, relatively small timber harvests will give way to the establishment of a new rotation of timber and a similar, cycle. The cumulative affect on the environment will be positive as the site will support more biodiversity and the soils will improve over time.

(9) **The project will not substantially affect a rare, threatened or endangered species or its habitat:** There are currently no rare, threatened or endangered species on the property. Should the planted forest attract any such species, the landowners will take precautions to assure that they are not adversely impacted.

(10) **Project activities will not affect air or water quality or ambient noise levels.** The project is likely to eventually improve water quality, reducing runoff and increasing infiltration. All proposed chemical herbicide and fertilizer applications are small scale and well within allowable ranges.

(11) **The project is not likely to affect or suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, geographically hazardous land, estuary, and freshwater or coastal waters overland flow.**

(12) **The project will not affect scenic vistas and view planes identified in county or state plans or studies.**

(13) **The project will not require substantial energy consumption.**

Please publish notice of availability of this project in the November 23 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, and four copies of the draft EA. A project summary has been sent to your office by electronic mail. Please call me at 587-4174 if you have any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Karl R. Dalla Rosa', written in a cursive style.

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
236 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4186
FACSIMILE (808) 586-4186

November 28, 2001

Karl Dalla Rossa
Department of Land and Natural Resources
Division of Forestry & Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Dalla Rossa:

Subject: Draft Environmental Assessment (EA) for Green & Russo Forest Stewardship Project, Hamakua

We have the following comments:

Distribution of draft EA: In the final EA be sure to include the list of draft EA recipients. An expanded distribution list was faxed to you on November 19th, 2001.

Harvest impacts: Harvesting may bring about deleterious impacts to other species, such as local wildlife and plants. Include a full description of such impacts and any measures you propose to minimize or eliminate them.

Cultural impacts assessment:

Act 50 was passed by the Legislature in April of 2000. This mandates an assessment of impacts to local cultural practices by the proposed project. In the final EA include such an assessment.

Even though the subject area is small, cultural impacts must still be assessed. Certain landmarks and physical features are used by Hawaiian navigators for sailing, and the lines of sight from landmarks to the coast by fisherman to locate certain fishing spots. Blocking these features may constitute an adverse cultural impact.

For assistance in the preparation refer to our *Guidelines for Assessing Cultural Impacts*. Contact our office for a paper copy or go to our homepage at <http://www.state.hi.us/health/oeqc/guidance/index.html>. You will also find the text of Act 50 linked to this section of our homepage.

If you have any questions, call Nancy Heinrich at 586-4185.

Sincerely,


GENEVIEVE SALMONSON
Director

c: Bari Green & Lou Russo

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



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

January 10, 2002

GILBERT S. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

Finding of No Significant Impact (FONSI) for Bari Green and Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, Hawaii, HI

Thank you for your thoughtful review of the draft Environmental Assessment for the subject project.

The Department of Land and Natural Resources, Division of Forestry and Wildlife, has reviewed the comments received during the 30-day public comment period that began on November 23, 2001. The agency has determined that this project will not have significant environmental or cultural effects and has issued a FONSI. Please publish this notice in the January 23, 2002 OEQC Environmental Notice.

We hope that you will find that we have, in preparing the enclosed final Environmental Assessment, adequately addressed your concerns relating to harvesting and cultural impacts. You will note that we also distributed the draft Environmental Assessment to a number of additional agencies according to your request.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. You should already have a copy of the project summary on disk, which we submitted with the original draft EA. Please call me at 587-4174 if you have any questions, or if you require an additional copy of the project summary.

In addition to this Environmental Assessment, we are also preparing a Forest Stewardship Contract Agreement for review and approval of the Board of Land and Natural Resources.

Sincerely,

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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November 21, 2001

The Office of Planning
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

To Whom it May Concern:

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

A handwritten signature in black ink that reads "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA, Ph.D.
DIRECTOR
SHARON S. NARIMATSU
DEPUTY DIRECTOR
DAVID W. BLANE
DIRECTOR, OFFICE OF PLANNING

OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-9294

November 30, 2001

To: Karl R. Dalla Rosa, Forester
Division of Forestry and Wildlife
Department of Land and Natural Resources

From: David W. Blane
Director, Office of Planning

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, Papa'aloa Homesteads, Hamakua, Island of Hawaii, TMK: 3-3-5-01-69

The Office of Planning has reviewed the Draft Environmental Assessment (DEA) submitted by Bari Green and Lou Russo in order to participate in a State forestry program that will help finance the planting of hardwood trees on 13.4 acres of a 16.51 acre parcel.

The reasons for triggering the DEA should be stated. They include the investment of State funds and the amount of fencing on the property. The issues of financing and fencing were not clearly articulated. The fact that the State will be paying almost half of the budget for the tree planting was only determined by one budget sheet far into the report. There was also no reference to how the State might recover some of its costs when the trees are harvested about twenty years into the future.

There was one sentence describing an existing partial perimeter fence and one attachment indicating where the fencing stands. The DEA should indicate whether the existing fencing would remain or be increased.

The Office of Planning has no other comments to offer. Thank you for the opportunity to review the DEA. Should you have any questions, please call Heidi Meeker at 587-2802.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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

January 10, 2002

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WATER RESOURCES MANAGEMENT

Mr. David Blane
Office of Planning
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

Dear Mr. Blane:

Subject: Final Environmental Assessment and Finding of No Significant Impact (FONSI) for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed and responded to the comments received during the 30-day public comment period for the subject project and we conclude that the actions proposed will produce no significant or cultural impacts.

We thank you for your thoughtful review of the draft Environmental Assessment for the proposed action. You will note in the enclosed final Environmental Assessment that we have included an introduction that briefly describes of our Hawaii Forest Stewardship Program, including funding distribution and recovery mechanisms. The EA triggers are also clearly explained.

In the body of the final EA, we have more clearly explained that the proposed fence will augment an existing fence that surrounds most of two sides of the subject property.

Please call me at 587-4174 - or write if you have any additional questions or concerns.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

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

November 21, 2001

TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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DEPUTY

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WATER RESOURCES MANAGEMENT

The Office of Hawaiian Affairs
Administrative Offices
711 Kapiolani, Blvd., Ste 500
Honolulu, HI 96813

To Whom it May Concern:

**Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest
Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

A handwritten signature in black ink that reads "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester

PHONE (808) 594-1888

FAX (808) 594-1865



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

HRD01-385

December 20, 2001

Karl R. Dalla Rosa
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, HI 96813

Subject: Draft Environmental Assessment for Bari Green & Lou Russo
Forest Stewardship Project
Hamakua District, HI
TMK 3-3-5-01-69

Dear Mr. Dalla Rosa:

Thank you for the opportunity to comment on the above referenced project. The Office of Hawaiian Affairs requests that the final EA adequately assess cultural resources in the project area.

The draft environmental assessment does not adequately evaluate the impact of the project on cultural resources. A letter from DOFAW to OEQC states that there are no significant cultural resources on the project site and the Forest Stewardship Management Plan mentions this as well. However, there is no evidence to support these conclusions.

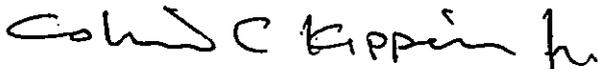
The document should include ethnographic, historical, anthropological and other culturally-related documentary research on the site. The document should also discuss any previous archeological inventory surveys done of the area and based upon those findings, assess the need for further study. The document should examine if the project would interfere with any known traditional trails or access ways.

Procedures for handling inadvertent discoveries of human burials and cultural artifacts should also be included. Iwi have been discovered in lands that were in sugar cultivation so provisions should be made for this possibility.

You must also prepare a cultural impact statement, as required by Act 50, Session Laws of 2000. The cultural impact statement must identify and describe the cultural practices located within the potentially affected area; assess the impact on these practices; examine alternatives to the proposed action; and propose mitigation measures. The preparer of the cultural impact statement should consult with Native Hawaiian individuals and organizations to determine the impact of the proposed structures and activities on cultural practices. The final EA should include a discussion of the methods used to identify and select persons with knowledge of cultural practices and the results of consultation with them. At a minimum, the draft EA should identify individuals and organizations with expertise on cultural practices with whom consultation has occurred.

If you have questions, please contact Sharla Manley, policy analyst at 594-1944 or email her at sharlam@oha.org.

Sincerely,



Colin C. Kippen, Jr.
Deputy Administrator

CK: sam

cc: Board of Trustees
Clyde W. Namu'o, Administrator
Hilo CAC

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



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

January 10, 2002

GILBERT S. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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Mr. Colin C. Kippen, Jr.
Deputy Administrator
Office of Hawaiian Affairs
711 Kapiolani, Blvd., Ste 500
Honolulu, HI 96813

Dear Mr. Kippen:

Subject: Final Environmental Assessment and negative declaration determination for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

Thank you for your thoughtful review of the draft Environmental Assessment for the Bari Green and Lou Russo Forest Stewardship Project.

Because of the nature and scale of the project, and the current condition of the proposed project site, we had not expected that the draft EA would produce any concerns about possible cultural impacts.

However, in response to the concerns you raise in your letter of December 20, 2001, we have explored all possible cultural impact possibilities that could result from the proposed actions. Please refer to the Cultural Impact Summary that we have included in the enclosed final Environmental Assessment.

In sum, we have concluded that there are no cultural resources on the property, or any local traditional or current land uses that will be adversely affected by the proposed actions. On the contrary, the proposed action aims to produce additional resources for local use, including valuable wood for local woodworkers and artisans. If successful, it will also serve to diversify the local economy and help produce limited local employment opportunities. In consultation with our Division of Historic Preservation, we have also determined that there are no archaeologically significant resources remaining on the subject property.

We hope that you will agree with our conclusion and support our view that forestry is an attractive land-use alternative, especially in areas like Hamakua, where decades of sugar cultivation and cattle grazing have left the much of the landscape physically altered, covered with exotic non-native weeds, and for all intents and purposes, relatively unproductive.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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WATER RESOURCES MANAGEMENT

COPY

November 7, 2001

Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

To Whom it May Concern:

**Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest
Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

Harry Kim
Mayor



Christopher J. Yuen
Director

Roy R. Takemoto
Deputy Director

County of Hawaii

PLANNING DEPARTMENT

25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-8742

November 29, 2001

Mr. Karl R. Dalla Rosa
Cooperative Resource Management Forester
State of Hawaii
Department of Land & Natural Resources
Division of Forestry & Wildlife
1151 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Dalla Rosa:

**Request for Comments to Draft Environmental Assessment (DEA)
Bari Green & Lou Russo Forest Stewardship Project
Papaaloa Hmstds., Kapehu 2d, N. Hilo
TMK: 3-5-01: 69, Lot 14 (16.51 acs.)**

Thank you for requesting our review and comments on the above DEA. The following information is supplied pursuant to Haw. Admin. Rule 11-200-9(a)(1) as the county agency responsible for implementing the County General Plan. Our comments pertain to the land use or zoning criteria under the Planning Department's jurisdiction that apply to parcel 69.

Project Description. This project proposes to diversify the local forest industry with stands of non-invasive high value hardwood trees, an alternative to low value hardwood chip production. The plantings will have a reforestation benefit; however, the primary goal is a sustainable timber production under a Forest Stewardship Management Plan done in cooperation with the State DLNR-DOFAW. Approximately 6,360 trees will be planted on 13.4 acres of the parcel's 16.51 acres with 3.11 acres for homestead use.

SMA Status: NA. The project site, a mauka lot, is not in the County's Special Management Area (SMA); therefore, compliance with SMA review criteria is not required.

Mr. Karl R. Dalla Rosa
Cooperative Resource Management Forester
State of Hawaii
Department of Land & Natural Resources
Division of Forestry & Wildlife
Page 2
November 29, 2001

Land Use Classifications. Parcel 69 is zoned or designated according to the following land use information. A discussion follows reviewing the consistency of the proposal to the land use zoning. Generally, the land use information listed in the DEA at 2 is correct.

County Zoning: Agriculture (A-20a)

State Land Use: Agricultural

HI County General Plan (GP) Land Use Designation: The general location of parcel 69 on the LUPAG (Land Use Pattern Allocation Guide) Map (November 14, 1989) indicates that it has a dual GP land use designation for Intensive & Extensive Agriculture. Intensive Agriculture designates land use for diversified agriculture, orchard, & floriculture activities; an Extensive Agriculture designation is for pasturage & range land use. GP Support Document at 80.

Zoning State & County; General Plan (GP) Land Use. The proposed forestry project is a permitted land use of timber cultivation in the State agricultural district and crop production in the County agricultural district. Haw. Rev. Stat. sec. 205-4.5(a)(1) and County Zoning Code sec. 25-5-72(a)(8) & 1-5(b)(32). Furthermore, pursuant to secs. 205-4.5(a)(10) and 25-5-72(e), accessory uses to the tree farm are permitted as well. Farm dwellings for the homestead area of the site are also a permitted use in the State and County agricultural district.

The intensive and extensive agricultural GP land use of parcel 69 is a category of the County GP's important agricultural land (IAL) use concept. GP Support Document at 82. IA lands are suitable for two types of agricultural land uses: sustained high agricultural yields managed according to farm industry standards and revenue generating commodity production. The proposed sustainable timber production and approved stewardship management plan are therefore consistent with the GP's IA land use goals for managed sustained high agricultural yields and commodity production. The project is also consistent with several of the GP's land use and agriculture goals and policies. GP at 14, 15.

Mr. Karl R. Dalla Rosa
Cooperative Resource Management Forester
State of Hawaii
Department of Land & Natural Resources
Division of Forestry & Wildlife
Page 3
November 29, 2001

Thank you for the opportunity to make these comments. If there are any questions,
please call Earl Lucero of this office at (808) 961-8288.

Sincerely,



CHRISTOPHER J. YUEN
Planning Director

EML:pak

Pwpwin:60\CH343\2001\DEA01-16 Green-Russo

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
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WATER RESOURCES MANAGEMENT

November 21, 2001

State of Hawaii - DLNR
Historic Preservation Division
601 Kamokila Blvd., Ste. 555
Kapolei, HI 96707

To Whom it May Concern:

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LINNEL NISHIOKA

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

AQUATIC RESOURCES
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LAND
STATE PARKS

December 31, 2001

HAWAII HISTORIC PRESERVATION
DIVISION REVIEW

LOG NO.: 28883
DOC NO.: 0112PM09

Agency/Applicant: Division of Forestry and Wildlife
Address: 1151 Punchbowl Street, Room 325
Honolulu, HI 96813

Project: Bari Green and Lou Russo Forest Stewardship Project
Location: Papaaloa Homesteads, North Hilo, Hawaii Island
TMK: 3/3-5-01:69

1. We believe there are no historic properties present because:

- a. intensive cultivation has altered the land
- b. residential development/urbanization has altered the land
- c. previous grubbing/grading has altered the land
- d. an acceptable archaeological assessment or inventory survey found no historic properties
- e. other:

2. This project has already gone through the historic preservation review process, and mitigation has been completed. ___

Thus, we believe that "no historic properties will be affected" by this undertaking.

Signed Patrick C. McCoy Date 12/31/01
Patrick C. McCoy
Hawaii Island Archaeologist

PM:amk

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
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WATER RESOURCES MANAGEMENT

November 21, 2001

Land Use Commission
235 South Beretania Street, 4th Floor
Honolulu, HI 96813

To Whom it May Concern:

**Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest
Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

A handwritten signature in cursive script that reads "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR



ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION

P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

December 5, 2001

Mr. Karl R. Dalla Rosa
Cooperative Resource Management Forester
Division of Forestry and Wildlife
Department of Land and Natural Resources
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Mr. Dalla Rosa:

Subject: Draft Environmental Assessment (DEA) for Bari Green & Lou Russo
Forest Stewardship Project, TMK No: 3-5-01:69, Hamakua District,
Hawaii

We have reviewed the DEA forwarded by your letter dated November 21, 2001, and confirm that the project site, as represented on the various maps, is located within the boundary of the State Land Use Agricultural District.

Given the location, scope, and nature of the proposed activity, the State Land Use Commission defers to the Board of Land and Natural Resources in this matter. We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject DEA.

Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Anthony J.H. Ching".

ANTHONY J. H. CHING
Executive Officer

c: Office of Environmental Quality Control

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

COPY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
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WATER RESOURCES MANAGEMENT

November 21, 2001

Ms. Andrea Gill
The Hawaii Forest Industry Association
P.O. Box 10216
Hilo, HI 96721

Dear Ms. Gill: *Andrea*

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period that will end on December 24, 2001. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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STATE OF HAWAII
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November 21, 2001

The Environmental Center
UH-Manoa, Krauss Annex 19
2500 Dole Street
Honolulu, HI 96822

To Whom it May Concern:

**Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest
Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

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Sincerely

A handwritten signature in cursive script that reads "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE

1151 PUNCHBOWL STREET
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TIMOTHY E. JOHNS
CHAIRPERSON
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WATER RESOURCES MANAGEMENT

November 21, 2001

Mr. Michael Robinson, Director
The Hawaii Forestry and Communities Initiative
P.O. Box 4849
Hilo, HI 96720

Dear Mr. ^{Mike} Robinson:

Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed draft environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 23, 2001 OEQC Environmental Notice.

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Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
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November 21, 2001

Hawaii County Arborist Committee
c/o Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

To Whom it May Concern:

**Subject: Draft Environmental Assessment for Bari Green & Lou Russo Forest
Stewardship Project, TMK 3-3-5-01-69, Hamakua District, HI**

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Sincerely,

Karl R. Dalla Rosa
Cooperative Resource Management Forester