2000-12-08-HI-FEA- Hualalai Forest Stewardship Project

Final Environmental Assessment

for

The State of Hawai'i Forest Stewardship Program -
Acacia Koa Plantation and Native Forest Restoration

Kaloko Mauka, North Kona, Hawai'i County
TMK 3-7-3-025-001

Approving Agency: Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

Applicant: Hualalai Lodge and Farms
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I. Summary

1. Applicant
Hualalai Lodge and Farms (HLF), William Lucas, Manager, 1001 Bishop Street, Pacific Tower, Suite 2600, Honolulu, Hawai`i 96813, (808) 521-2349.

2. Approving Agency
State Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), Karl Dalla Rosa, Forest Stewardship Program Coordinator, 1151 Punchbowl Street, Room 325, Honolulu, Hawai`i 96813, (808) 587-4174.

3. Anticipated Determination
Hualalai Lodge and Farms in conjunction with DOFAW is proposing to implement a Forest Stewardship Program in Kaloko Mauka, North Kona, Hawai`i County. The purpose of this environmental assessment is to comply with the requirements of Chapter 343, Hawai`i Revised Statutes which are triggered by the use of state funds for the proposed project. The proposed koa plantation is expected to have no significant impact, and a finding of no significant impact (FONSI) is anticipated.

4. Individuals, Community Groups and Agencies Consulted

A. A public meeting was held on December 19, 1999. Approximately, 50 people attended the meeting. The main purpose of the meeting was to address the variance needed to construct a 12 room lodge on the property. Copies of the forest stewardship management plan (see attached) were distributed and details of the forestry operation were discussed. No objections were made at this meeting regarding the forestry project. **Please note, the landowner has decided not to construct a lodge, nor will have any kind of overnight tourism activities on the property. The property will mainly be used for farming, forestry and as the landowner's retirement residence. It will, however, still be made available to the public and other interested groups to tour and/or conduct research on.**

B. The following individuals, agencies and materials were consulted regarding the project:

- Agricultural Diagnostic Service Center, CTAHR, Univ. of Hawai`i.
- Amundson, Sherry, Maptech, Inc., Hilo, Hawai`i.
- Bezona, Norman, Kaloko Cloud Rest Forest Sanctuary, Kona, Hawai`i.
- Brauner, Hal, Brauner Molding Woodworks, Hilo, Hawai`i.
- Carlquist, Sherwin. *Hawai`i: A Natural History*, Pacific Tropical Botanical Garden, Lawai, Hawai`i, 1992.
- Division of Forestry and Wildlife, *An Analysis of Native Forest Management in Hawai`i With Emphasis on Koa Forests*, Dept. of Land and Natural Resources-Div. of Forestry and Wildlife, December 1984.
- Dudley, Nick, Hawai`i Agriculture Research Center, Aiea, Hawai`i.
- Friday, JB, Extension Forester, CTAHR, Univ. of Hawai`i, Hilo, Hawai`i.

- Hawai`i Audubon Society, *Hawai`i's Birds*, Hawai`i Audubon Society, Honolulu, Hawai`i, 1989.
- Hawai`i Ecosystems at Risk, *Plant Pests of Hawaiian Native Ecosystems*, H.E.A.R., Honolulu, Hawai`i, 1999.
- Imoto, Roger, Service Forester, DOFAW, Hilo, Hawai`i.
- Loudat, Thomas and Rebecca Kanter, *The Economics of Commercial Koa Culture in Hawai`i*, County of Hawai`i, Dept. of Research and Development, March 1996.
- Murrill, Courtney, Forest Planner, C.A.M. Resource Management, LLC., Hilo, Hawai`i.
- Nakashima, Earl, E. Nakashima Greenhouses (nursery seedlings), Honoka`a, Hawai`i.
- Natural Resource and Conservation Service, *Soil Survey: Hawai`i County*, USDA - NRCS, Wash. D.C., 1973.
- Perry, Lyman, Botanist, DOFAW, Hilo, Hawai`i.
- Skipper, Steve, et. al., District Conservationist, USDA-NRCS, Kona, Hawai`i.
- Skolmen, Roger, et. al, *Common Forest Trees of Hawai`i*, USDA-Forest Service, Wash. D.C., May 1989.
- Skolmen, Roger, *Where Koa Can Be Grown*, Dept. of Land and Natural Resource - US Dept. of Agriculture, Hilo, Hawai`i, 1986.
- UH Botany Dept., *Hawaiian Native Plants*, Univ. of Hawai`i Botany Dept., Honolulu, Hawai`i, June 1999.
- Winkler, Ed, Winkler Wood Products, Hilo, Hawai`i.

II. Project Background

1. Property Description

The property is about 21 acres and is located in Kaloko Mauka, approximately 8 miles northeast of Kailua-Kona on the Big Island of Hawai`i in the district of Kona. The property is roughly rectangular with its longest axis running northwest (makai) to southeast (mauka).

The tax map key is 3-7-3-025-001. The state land use designation for the parcel and surrounding area is agricultural, and county zoning is listed as agricultural (AG 20), with emphasis on pasture, orchard and forest. The property was acquired by Li Juen Melton, owner of Hualalai Lodge and Farms in June, 1999.

Historically the property was native ohi`a lehua (*Metrosideros polymorpha*) forest, and about twelve years ago, roughly 13 acres were cleared for residential and Christmas tree production, which has since been abandoned.

2. Management Objectives

The property will be managed for ten years under specific guidelines established by the state Forest Stewardship Program. A copy of the forest stewardship management plan is attached and was approved by the Forest Stewardship Advisory Committee on December 14, 1999. The objectives of this project are to establish and maintain 10 acres of koa

(*Acacia koa*) for limited timber production through selective harvesting; maintain and enhance 8.5 acres of existing native forest for the purpose of improving forest health, and wildlife habitat; and develop recreational and educational trails which could be used by interested community groups, schools, members of the public, visitors and guests. **At this time there are no plans to quantify or scientifically measure forest health or native bird habitat. The main objective for the existing forest area is to eliminate weed species and outplant native species that have historically grown in the area. However, any research entities such as the University of Hawai'i or DOFAW are welcome to perform such activities on the property.**

All areas will be managed to eliminate noxious weed species such as banana polka, tibouchina, etc., and native species **that have historically grown in the area** will be outplanted to the native forest. **All competing weed species will be removed from the native forest area prior to outplanting, and will be controlled and monitored, depending on the rate of re-introduction, at least semi-annually. Large trees, such as silk oak, will be carefully felled by a professional logger, and those of no value will be chipped on site and used as mulch. Smaller plants and vines will be removed by hand and/or spot sprayed with Roundup or Garlon. Pigs will be monitored at least semi-annually, and, if needed, controlled through hunting and other natural methods, such as constructing trails or areas that would attract pigs away from protected areas. Pig control methods will be implemented at the first sign of damage to outplanted species or existing native species.**

Trails will be constructed for visitors and guests and will provide access **to land managers, the public and other interested parties** to a variety of native species found throughout the forest. **Trails will also be utilized to remove and control undesirable species, and to annually monitor the health of the forest and to record any signs of native bird activity. Trails will meander throughout the forest area, and will only be constructed where there will be no significant impact on native plant species. It is difficult at this time to determine exactly how many feet of trail will be constructed, however, for budgeting purposes, 3,000 feet have been allocated for. Trails will be, at a minimum, semi-annually maintained for weeds, branches, debris, etc. found on or eight feet above the trail.** The remaining acres **on the property** will be set aside for a **house site** and other agricultural activities.

Koa seeds will be collected from healthy, disease free trees that show desirable commercial timber characteristics and are growing in a similar locale and environment. The Hawai'i Agriculture Research Center will provide their expertise in locating and obtaining superior koa seed. These will be propagated and grown at a private tree nursery. In addition, native seedlings **that have historically grown in the area** will be acquired from a variety of nurseries.

Koa seedlings will be planted on the abandoned farm site which has been regularly kept clear of weed species and has no known hard pan, therefore no significant site preparation is needed. **Koa and other native seedlings that have historically grown in the area will be outplanted in the native forest area.** Seedlings will be transplanted when they

reach dibble tube size (ca. 8 inches in height) and planted along contour in the commercial koa area and in ideal locations within the **native** forest area. Seedlings exhibiting poor health or that are root bound will not be transplanted. Holes 8 to 12 inches in diameter will be dug 8 feet apart within and between the rows in some portions of the commercial area. The remaining commercial area will be planted 4 feet apart in clusters. These two spacings will be used in order to compare the growth characteristics of planting in clusters or 8 feet apart in rows. Both spacings should minimize weed competition, encourage erect growth and reduce evaporation.

All koa seedlings will be planted the first year and will be irrigated as needed, utilizing the existing irrigation system in order to obtain optimal growth. It is estimated that 680 seedlings per acre will be planted in the commercial koa area, and 100 native seedlings per acre will be planted over the next 5 years (1.70 acres/year) within the existing forest area. **Seedlings planted in the commercial and existing forest areas** will be monitored in months 6, 12 and 18, and those showing poor performance, that are sick or dead will be replaced. It is expected that ten percent of the koa trees will need to be replaced in years two and three.

Based on a UH soil analysis taken in April 1999, trees will be fertilized with 4 ounces each of 15-15-15 granular fertilizer to ensure maximum growth and health. Fertilizer applications will take place in the commercial area at planting and every six months thereafter for the first 2 years; appropriate levels will depend on annual soil and foliage test results and recommendations. Outplantings in the **native** forest area will be fertilized at planting and 1 year later.

Herbicide shall be applied by hand with a backpack sprayer during periods of minimal wind every 3 - 6 months, depending on weed growth, until crown closure (ca. 3-4 years). Fusilade and/or Roundup will be used to reduce competition from both grass and broadleaf species. Roundup will be applied around individual trees taking care not to come into direct contact with seedlings. In addition, vines and crawling weed species like banana polka will need to be prevented from damaging the koa stand over the entire ten year management period.

The koa stand will be thinned of sickly, damaged and slow growing trees 1 - 2 years following crown closure (ca. 5-6 years) and again in year 10 to improve the quality of the most promising koa trees. A final spacing of 24' x 24', or 76 trees per acre is expected to be achieved.

Koa trees will be selectively harvested starting in year 30. It is expected that the trees will have a diameter breast height of 16 - 21 inches, have a height of 16 feet to the first fork, and be at least 50 feet tall at that time. Given these assumptions, the total potential koa harvest will be 13,072 - 23,522 board feet per acre.

3. Projected Budget and State Funding

Year	*Total Budget*	*Applicant Share*	*State Share*
1	$28,238	$13,869	$14,369
2	14,518	7,634	6,884
3	11,230	5,990	5,240
4	10,505	5,627	4,878
5	3,540	1,770	1,770
6	978	489	489
7	0	0	0
8	0	0	0
9	0	0	0
10	1,500	750	750
Total	$70,509	$36,129	$34,380

III. Affected Environment

Figures 1, 2, 3, 4 and 5 in the attached forest stewardship management plan give the location and show the characteristics of the property. The koa plantation site is about 11 acres and is currently bare, with the exception of a few remnant pine seedlings and other plantings. Approximately 8.5 acres of the property is ohi`a lehua and hapu`u-i`i (*Cibotium chamissoi*) forest with an understory of ie`ie (*Freycinetia arborea*), a`ali`i (*Dodonaea viscosa*), kopiko (*Psychotria hawaiiensis*), sword/pamoho fern (*Nephrolepis exalta*) and a few planted koa. Significant alien weed species present in the native forest include: banana polka (*Passiflora mollissima*), tibouchina (*Tibouchina spp.*), ginger (*Hedychium coronarium*), Philippine fig (*Ficus pseudopalma*), trumpet tree (*Cecropia obtusifolia*), and a few silk oak (*Grevillea robusta*). The remaining portion of the property has been cleared for a **house** site, intensive agriculture, ponds and access roads.

The native forest is in fairly good health, however it is under pressure from invasive weed species within and outside the property. The ohi`a canopy closure appears to be about 40 to 60%, with estimated heights of 50 to 85 feet. The probability of fire is low since a large portion of the area has no significant fuel load and the forest is green and wet, however there are several rotting logs and debris on the forest floor which could increase the risk of fire in the existing and surrounding forest, particularly during a long dry period.

The soils on the property have been classified by the Natural Resource Conservation Service (NRCS) as Kiloa series rKXD. This series consists of well-drained, thin, extremely stony muck soils about ten inches thick and is over fragmented a`a lava. The aspect of the property is northwest with slopes ranging from ten to twenty percent.

There are no streams or significant stream courses on the property. Currently, there is a limited amount (600 gallons/day) of Hawai`i County water available at the site, several water lines and an irrigation system in place.

There are no significant timber, wetland, historic, or cultural resources present on the property. There have been a variety of introduced and native birds sighted on the property. Introduced species include: wild turkey (*Meleagris gallopavo*), Kalij pheasant (*Lophura leucomelanos*), saffron finch (*Sicalis flaveola*), northern/red cardinal (*Cardinalis cardinalis*), spotted dove (Streptopelia chinensis) and others. Native birds sighted include: `io/Hawaiian hawk (Buteo solitarius), Hawai`i creeper (*Oreomystis mana*), apapane (*Himatione sanguinea*), and an occasional pueo/short-eared owl (*Asio flammeus sandwichensis*) has been spotted flying over the property. Pigs have also been known to frequent the Kaloko area, but no pigs nor significant pig damage has been seen on the property. There has been no evidence of threatened and endangered plant or animal species **nesting or roosting** on the property. **The landowner is conscious of and willing to protect threatened and endangered species if they are later spotted nesting or roosting on the property.**

IV. Environmental and Community Impact

The forest practices included in this plan will not have any significant cultural, environmental or community impact. It is anticipated that the koa plantation and native forest enhancement will provide a positive impact to the property and community. Native forests have been reduced significantly, and remaining koa forests are disappearing much faster than natural regeneration and current plantings can replace them. Koa has been central to Hawai`i's culture from the time of early Hawaiians to present day. The koa plantation will provide a source of high value wood to local wood workers and mills for furniture, cabinetry and other wood crafts. The project shall provide wildlife habitat as well as recreational opportunities to the public.

All site preparation, planting and harvesting layouts will be reviewed by the USDA Natural Resource Conservation Service (NRCS) to ensure that there are no negative impacts to the soil or water. HLF is an accepted Kona Soil and Water District cooperator under NRCS and a conservation plan will be developed which will meet all federal, state and county laws and ordinances. The koa farming operation will involve the application of fertilizer and herbicide. All chemical applications will be in accordance with label restrictions, as required by federal and state laws. Trees will be selectively harvested when they reach a diameter at breast height (DBH) of 25 inches or greater. **All harvest activities will be made according to currently approved DOFAW Best Management Practices and in consultation with DOFAW forestry and wildlife personnel.** In addition, one or more superior trees will not be harvested and retained as a seed source for future plantings within and outside the property.

Access to the property is provided by a county paved road, Kaloko Drive. Vehicle access is provided by a sixteen foot paved road and there are several 6 - 8 foot access roads that run throughout the property. The operation of this project will not add significantly to the traffic on Kaloko Drive, nor negatively impact interior roads.

Water, electricity and telephone service is available at the property. These will not be impacted by the forestry operation. In addition, county fire and police services are located

about four miles from the property. The project is not likely to increase the work load of these providers.

V. Alternative Methods

This project site is well suited for the growing of koa and has already been cleared. Alternative methods of weed control, chemical applications and harvesting are possible, however, may not prove to be economical. A lot of consideration was given to the environment and community prior to arriving at this method of reforestation, and it is believed that the least detrimental methods have been chosen.

VI. Expected Determination

Based on the information presented, it is determined that the proposed koa plantation in conjunction with the state Forest Stewardship Program will not have a significant impact, therefore, a finding of no significant impact (FONSI) is appropriate.

The nature and scale of this project is such that no significant environmental effects are anticipated. Potential impacts, if any, can be easily mitigated through careful planning and compliance with all governmental requirements including those of the state Department of Agriculture, NRCS, and the County of Public Works.

VII
Attachments

Forest Stewardship Plan

for

Hualalai Lodge and Farms
William Lucas, Manager
1001 Bishop Street, Pacific Tower, Suite 2600
Honolulu, Hawai`i 96813
(808)521-2349

Located in

Kaloko Mauka, Kona, Hawai`i County
TMK 3-7-3-025-001
21 acres

Prepared by

C.A.M. Resource Management, LLC.
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260 Kamehameha Ave., Suite 209
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(808)981-0253

November 15, 1999

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II. Forest Stewardship Plan Signature Page

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

Prepared by:

11/15/99

Professional Resource Consultant's Signature/Date

Courtney A. Murrill, Managing Member C.A.M. Resource Management, LLC

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:

William B Lucas 11/12/99

Applicant's Signature/Date

William Lucas, Manager, Hualalai Lodge and Farms

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:

Nelson L. Ayers 6/20/00

State Forester's Signature/Date

for

Michael G. Buck

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/her objectives for the management of the property. It provides guidelines for a sound strategy which 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 vegetative, 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.

[ ]	Water Quality	[ ]	Threatened/Endangered Species
[x]	Agroforestry	[x]	Forest Health
[x]	Recreation	[ ]	Archaeological - Cultural Resources

[x] No threatened or endangered species, cultural or historic resource, flood plain 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.

IV. Introduction

1. Property Description

This property is about 21 acres and is located in Kaloko Mauka, approximately 8 miles northeast of Kailua-Kona on the Big Island of Hawai`i in the district of Kona (see Figure 1). The property is roughly rectangular with its longest axis running northwest (makai) to southeast (mauka).

Access to the property is provided by Kaloko Drive, off Mamalahoa Highway (Hwy 190). Main vehicle access on the site is provided by a 16 foot private access road that runs along the south-eastern border to the middle portion of the property. There are also several 6 - 8 foot access roads that run along the property boundary and about every 150 feet throughout the cleared, abandoned areas (see Figure 2).

The tax map key is 3-7-3-025-001. The State land use designation for the parcel and surrounding area is agricultural, and county zoning is listed as agricultural (AG 20), with emphasis on pasture, orchard and forest. The property was acquired by Li Juen Melton, owner of Hualalai Lodge and Farms in June, 1999.

The location map outlines the key elevations of the property which run from 2,920 to 3,000 feet above sea level (see Figure 1). The mean annual rain fall is about 60 inches per year, and there is a prominent cloud cover that develops almost every afternoon.

Historically the property was native ohi`a lehua (*Metrosideros polymorpha*) forest, and about twelve years ago, roughly 13 acres were cleared for residential and Christmas tree production, which has since been abandoned.

2. Applicant's Management Objectives

The applicant has established the following stewardship objectives:

- Develop a Forest Stewardship Plan and enter into the State's Forest Stewardship Program (SIP-1).
- Establish and maintain 10 acres of koa (*Acacia koa*) for commercial timber production (SIP-2, SIP-3).
- Maintain and enhance 8.5 acres of existing native forest for the purpose of improving forest health, wildlife habitat and overall appearance of the area (SIP-2, SIP-3).
- Maintain and improve soil productivity through mulching and prevent soil erosion and runoff (SIP-5).
- Develop recreational and educational trails which could be used by interested community groups, schools, members of the public, visitors and guests (SIP-9).

V. Land and Resource Description

The Christmas tree farm site is about 11 acres and is currently bare, with the exception of a few remnant pine seedlings and other plantings. Approximately 8.5 acres of the property is ohi`a lehua and hapu`u-i`i (*Cibotium chamissoi*) forest with an understory of ie`ie (*Freycinetia arborea*), a`ali`i (*Dodonaea viscosa*), kopiko (*Psychotria hawaiiensis*), sword/pamoho fern (*Nephrolepis exalta*) and a few planted koa. Significant alien weed species present in the native forest include: banana polka (*Passiflora mollissima*), tibouchina (*Tibouchina spp.*), ginger (*Hedychium coronarium*), Philippine fig (*Ficus pseudopalma*), trumpet tree (*Cecropia obtusifolia*), and a few silk oak (*Grevillea robusta*). The remaining portion of the property has been cleared for a lodge site, intensive agriculture, ponds and access roads.

The native forest is in fairly good health, however it is under pressure from invasive weed species within and outside the property. The ohi`a canopy closure appears to be about 40 to 60%, with estimated heights of 50 to 85 feet. The probability of fire is low since a large portion of the area has no significant fuel load and the forest is green and wet, however there are several rotting logs and debris on the forest floor which could increase the risk of fire in the existing and surrounding forest, particularly during a long dry period.

The soils on the property have been classified by the Natural Resource Conservation Service (NRCS) as Kiloa series rKXD. This series consists of well-drained, thin, extremely stony muck soils about ten inches thick and is over fragmented a`a lava. Permeability is rapid, runoff is very slow and the erosion hazard is slight. The average rate of soil erosion that can occur without affecting crop productivity is 3 tons/acre/year. In addition, a soil analysis was conducted last April by the College of Tropical Agriculture and Human Resources which showed a soil pH of 6.0 and deficiencies in phosphorus and potassium. The aspect of the property is northwest with slopes ranging from ten to twenty percent.

There are no streams or significant stream courses on the property. Currently, there is a limited amount (600 gallons/day) of Hawai`i County water available at the site, several water lines and an irrigation system in place. There are plans to put in two 15,000 gallon ponds above the proposed koa area, and a Johkasou water purification system which will recycle waste water from the lodge and be used for irrigation in the proposed koa area.

There are no significant timber, wetland, historic, or cultural resources present on the property. There have been a variety of introduced and native birds sighted on the property. Introduced species include: wild turkey (*Meleagris gallopavo*), Kalij pheasant (*Lophura leucomelanos*), saffron finch (*Sicalis flaveola*), northern/red cardinal (*Cardinalis cardinalis*), spotted dove (Streptopelia chinensis) and others. Native birds sighted include: `io/Hawaiian hawk (Buteo solitarius), Hawai`i creeper (*Oreomystis mana*), apapane (*Himatione sanguinea*), and an occasional pueo/short-eared owl (*Asio flammeus sandwichensis*) has been spotted flying over the property. Pigs have also been known to frequent the Kaloko area, but no pigs nor significant pig damage has been seen on the property. There has been no evidence of threatened and endangered plant or animal species on the property.

There are plans to incorporate recreational and educational activities such as hiking and interpretive tours, however, no such activities exist at this time. The site offers panoramic mountain views of Hualalai, is set in the middle of the ohi`a-hapu`u forest, welcomes a variety native birds, and will be complemented with the splendor of a koa forest, specialty agriculture, gardens and overnight facilities.

VI. Recommended Treatments and Practices

Approximately 18.5 acres will be managed under Forest Stewardship guidelines. Koa will be planted on about 10 acres, and the existing ohi`a forest (ca. 8.5 acres) will be preserved and enhanced. All areas will be managed to eliminate noxious weed species such as banana polka, tibouchina, etc., and native species will be outplanted to the native forest. Trails will be constructed for visitors and guests and will provide access to a variety of native species found throughout the forest. The remaining acres will be set aside for a lodge and other agricultural activities. A detailed implementation plan by SIP code follows:

SIP-1 - Forest Stewardship Management Plan

landowner, including site visits to the property. Information was exchanged and gathered regarding the owner's goals and objectives; past, current and planned activities; and the owner's financial commitment. In addition, the property was mapped (see Figure 1), several experts were consulted with and information was researched and gathered (see page 14) regarding the project. Steward Incentive Program (SIP) practices 1, 2, 3, 5, 8 and 9 have been identified as applicable to this management plan. This plan shall be reviewed and evaluated by the landowner and resource planner annually for the first five years and every three years thereafter.

SIP-2 - Reforestation and Afforestation

The main objective under this practice is to establish 10 acres of koa for commercial timber production. Generally, the most impressive stands of koa have been found at elevations above 2,000 feet and in areas receiving over 75 inches of rainfall per year. An intensive management program will be practiced in this area to ensure a high growth rate of high quality, commercial size trees as quickly as possible. In addition, in order to improve the diversity of the existing ohi`a forest, a variety of native species will be planted in the native forest.

Koa seeds will be collected from healthy, disease free trees that show desirable commercial timber characteristics and are growing in a similar locale and environment. *The Hawai`i Agriculture Research Center will provide their expertise in locating and obtaining superior koa seed.* These will be propagated and grown at a private tree nursery. In addition, native seedlings well-suited for the existing native forest will be acquired from a variety of nurseries.

Koa seedlings will be planted on the abandoned farm site which has been regularly kept clear of weed species and has no known hard pan, therefore no significant site preparation is needed. Seedlings will be transplanted when they reach dibble tube size (ca. 8 inches in height) and planted along contour in the commercial koa area and in ideal locations within the forest area. Seedlings exhibiting poor health or that are root bound will not be transplanted. Holes 8 to 12 inches in diameter will be dug 8 feet apart within and between the rows *in some portions* of the commercial area. *The remaining commercial area will be planted 4 feet apart in clusters. These two spacings will be used in order to compare the growth characteristics of planting in clusters or 8 feet apart in rows.* Both spacings should minimize weed competition, encourage erect growth and reduce evaporation. All koa seedlings will be planted the first year and will be irrigated as needed, utilizing the existing irrigation system in order to obtain optimal growth. It is estimated that 680 seedlings per acre will be planted in the commercial koa area, and 100 native seedlings per acre will be planted over the next 5 years (1.70 acres/year) within the forest area. All transplanted seedlings will be monitored in months 6, 12 and 18, and those showing poor performance, that are sick or dead will be replaced. It is expected that ten percent of the koa trees will need to be replaced in years two and three.

Based on a UH soil analysis taken in April 1999 (6.0 pH, low levels of phosphorus and potassium), trees will be fertilized with 4 ounces each of 15-15-15 granular fertilizer to ensure maximum growth and health. Fertilizer applications will take place in the commercial area at planting and every six months thereafter for the first 2 years; appropriate levels will depend on annual soil and foliage test results and recommendations. Outplantings in the forest area will be fertilized at planting and 1 year later. It is estimated that it will cost $50 per acre to apply fertilizer in this manner and $50 per acre for supplies for each fertilizer application.

Herbicide shall be applied in the commercial koa area to control competition from weeds every 3 to 6 months, depending on weed growth, until crown closure (ca. 3-4 years). Fusilade and/or Roundup will be used to reduce competition from both grass and broadleaf species. Roundup will be applied around individual trees taking care not to come into direct contact with seedlings. It is estimated that it will take eight hours to complete each treatment. In addition, vines and crawling weed species like banana polka will need to be prevented from damaging the koa stand over the entire ten year management period. It is estimated that it will cost $30 per acre to apply herbicide in this manner and $20 per acre for supplies for each herbicide application.

In addition, the koa stand will be thinned of sickly, damaged and slow growing trees 1 - 2 years following crown closure (ca. 5-6 years) and again in year 10 to improve the quality of the most promising koa trees. A final spacing of 24' x 24', or 76 trees per acre is expected to be achieved.

SIP-3 - Forest and Agroforest Improvement

The primary objective under this practice is to improve the health of the existing ohi'a forest as well as attract and improve the habitat of native forest birds. All competing weed species will be removed from the forest area and controlled. Large trees, such as silk oak, will be carefully felled by a professional logger. Smaller plants and vines will be removed by hand and/or spot sprayed with Roundup or Garlon. All logs of merchantable value shall be given to the logger in exchange for services, and those of no value and left over pieces will be chipped on site and used as mulch. *In addition, pigs will be monitored, and, if needed, controlled through hunting and other natural methods in the native forest as well as the commercial koa area.*

SIP-5 - Soil and Water Protection and Improvement

The objective under this practice is to maintain and improve soil productivity of the koa stand through mulching. Materials from controlling undesirable species and non-commercial thinnings will be chipped and spread underneath the koa trees. This will improve the nutrient composition of the soil, increase water retention and inhibit weed growth, thereby improving the health of the koa trees. In addition, suitable companion agricultural crops will be planted amongst the koa in order to prevent soil run off, reduce herbicide applications and generate additional revenue.

SIP-9 - Forest Recreation Enhancement

The objective under this practice is to construct recreational and educational trails for visitors and guests. It is estimated that 3,000 feet of 3 foot wide trails will be constructed and meander throughout the entire forest area. Signage may be placed under significant forest species and a simple tour guide could be produced and distributed. Visitors and guests utilizing these trails will be able to see and identify a variety of native forest plants and birds. Trails will also be utilized to remove and control undesirable species. Hazards, such as rocks, branches, stumps, etc. will be removed from and eight feet above the trail. Trails will be constructed over a 3 year period; it is estimated that it will take 2.5 hours to construct 10 feet of trail.

Projected Costs and Income Flows

It is expected that trees will be harvested starting in year 30, have a diameter breast height of 16 - 21 inches, have a height of 16 feet to the first fork, and be at least 50 feet tall at that time. Given these assumptions, the total potential koa harvest will be 13,072 - 23,522 board feet per acre. Current stumpage values for koa range from $2 to $6 per board foot based on the characteristics of the wood. Using a stumpage value of $2

per board foot, sales per acre would be $26,144 - $47,044. Total costs over the life of the koa plantation are estimated to be $5,961 per acre (see Table 1), giving a net profit before taxes of $20,183 - 41,083 per acre.

Table 1 - Other Costs

Expense Item	*Total Cost*	*Per Acre Cost*
General & Administrative (5% Operating)	$1,803	$139
Irrigation	1,000	77
Insurance	18,000	1,385
Property Tax	2,036	157
Miscellaneous Expenses (2% Operating)	721	55
Koa Operating Costs per Stewardship Plan	36,050	2,773
Total Cost	$59,609	$5,961

Economic analyses accounting for the time value of money suggests a net present value (NPV) of $20,219 and an internal rate of return (IRR-the rate at which NPV is 0) of 7.57%, given a discount rate of 6% and an average board foot of 18,297 per acre. Further analysis suggests that a stumpage fee of *$1.30* per board foot would need to be collected, and *11,892* board feet would need to be sold at $2 per board foot in order to break-even. Deducting monies received from the stewardship program would allow the landowner to realize a NPV of $36,074 and an IRR of 9.58%. This analysis stresses the need to follow a management program that keeps high quality and high growth rates in mind when growing koa for commercial production. It is also reasonable to conclude that stumpage fees, quality and/or volumes could be higher given the intensive management of the stand, and the potential for demand of koa to increase on account of its uniqueness, quality and Hawaiian origin.

VII. Practice Implementation Schedule

Year 1 - 2000

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Forest Stewardship Management Plan (SIP-1)			*2,500*	*625*	*1,875*
Seedling Aquisition - Koa (SIP-2)	6,800 seedlings	1.50	10,200	5,100	5,100
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Koa (SIP-2)	10 acres	200	2,000	1,000	1,000
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Koa - 2 Treatments (SIP-2)	20 acres	100	2,000	1,000	1,000
Fertilizer - Native Forest -1 Treatments (SIP-2)	1.7 acres	150	255	128	128
Weed/Moisture Control-4 Treatments (SIP-2)	40 acres	50	2,000	1,000	1,000
Control Undesirable Plant Species (SIP-3)	8.5 acres	350	2,975	1,488	1,488
Mulching - Koa (SIP-5)	10 acres	175	1,750	875	875
Trail Construction (SIP-9)	1,000 feet	3.75	3,750	2,250	1,500
Total for Year 1 SIP Activities			*$28,238*	*$13,869*	*$14,369*

CORRECTION

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

per board foot, sales per acre would be $26,144 - $47,044. Total costs over the life of the koa plantation are estimated to be $5,961 per acre (see Table 1), giving a net profit before taxes of $20,183 - 41,083 per acre.

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VII. Practice Implementation Schedule

Year 1 - 2000

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Forest Stewardship Management Plan (SIP-1)			*2,500*	*625*	*1,875*
Seedling Aquisition - Koa (SIP-2)	6,800 seedlings	1.50	10,200	5,100	5,100
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Koa (SIP-2)	10 acres	200	2,000	1,000	1,000
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Koa - 2 Treatments (SIP-2)	20 acres	100	2,000	1,000	1,000
Fertilizer - Native Forest -1 Treatments (SIP-2)	1.7 acres	150	255	128	128
Weed/Moisture Control-4 Treatments (SIP-2)	40 acres	50	2,000	1,000	1,000
Control Undesirable Plant Species (SIP-3)	8.5 acres	350	2,975	1,488	1,488
Mulching - Koa (SIP-5)	10 acres	175	1,750	875	875
Trail Construction (SIP-9)	1,000 feet	3.75	3,750	2,250	1,500
Total for Year 1 SIP Activities			*$28,238*	*$13,869*	*$14,369*

Year 2 - 2001

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Seedling Aquisition - Koa (SIP-2)	350 seedlings	1.50	525	263	263
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Koa (SIP-2)	1 acres	200	200	100	100
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Koa - 2 Treatments (SIP-2)	20 acres	100	2,000	1,000	1,000
Fertilizer - Native Forest - 2 Treatments (SIP-2)	3.4 acres	150	510	255	255
Weed/Moisture Control-4 Treatments (SIP-2)	40 acres	50	2,000	1,000	1,000
Control Undesirable Plant Species (SIP-3)	8.5 acres	350	2,975	1,488	1,488
Mulching (SIP-5)	10 acres	175	1,750	875	875
Trail Construction (SIP-9)	1,000 feet	3.75	3,750	2,250	1,500
Total for Year 2 SIP Activities			$14,518	$7,634	$6,884

Year 3 - 2002

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Seedling Aquisition - Koa (SIP-2)	350 seedlings	1.50	525	263	263
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Koa (SIP-2)	1 acres	200	200	100	100
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Koa - 2 Treatments (SIP-2)	2 acres	100	200	100	100
Fertilizer - Native Forest - 2 Treatments (SIP-2)	3.4 acres	150	510	255	255
Weed/Moisture Control-4 Treatments (SIP-2)	40 acres	50	2,000	1,000	1,000
Control Undesirable Plant Species (SIP-3)	8.5 acres	175	1,488	744	744
Mulching (SIP-5)	10 acres	175	1,750	875	875
Trail Construction (SIP-9)	1,000 feet	3.75	3,750	2,250	1,500
Total for Year 3 SIP Activities			$11,230	$5,990	$5,240

Year 4 - 2003

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Koa - 2 Treatments (SIP-2)	2 acres	100	200	100	100
Fertilizer - Native Forest - 2 Treatments (SIP-2)	3.4 acres	150	510	255	255
Weed/Moisture Control-4 Treatments (SIP-2)	40 acres	50	2,000	1,000	1,000
Control Undesirable Plant Species (SIP-3)	8.5 acres	175	1,488	744	744
Mulching (SIP-5)	10 acres	175	1,750	875	875
Trail Construction (SIP-9)	1,000 feet	3.75	3,750	2,250	1,500
Total for Year 4 SIP Activities			$10,505	$5,628	$4,878

Year 5 - 2004

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Seedling Aquisition - Native Forest (SIP-2)	170 seedlings	2.50	425	213	213
Planting - Native Forest (SIP-2)	1.7 acres	225	383	191	191
Fertilizer - Native Forest - 2 Treatments (SIP-2)	3.4 acres	150	510	255	255
Non-Commercial Thinning (SIP-2)	10 acres	150	1,500	750	750
Control Undesirable Plant Species (SIP-3)	8.5 acres	85	723	361	361
Total for Year 5 SIP Activities			$3,540	$1,770	$1,770

Year 6 - 2005

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Fertilizer - Native Forest - 1 Treatment (SIP-2)	1.7 acres	150	255	128	128
Control Undesirable Plant Species (SIP-3)	8.5 acres	85	723	361	361
Total for Year 6 SIP Activities			$978	$489	$489

Year 10 - 2009

Practice Component and SIP Number	*Units to be Accomplished*	*Cost per Unit*	*Total Cost*	*Applicant Share*	*State Share*
Non-Commercial Thinning (SIP-2)	10 acres	150	1,500	750	750
Total for Year 10 SIP Activities			$1,500	$750	$750

VIII. Budget Summary

Year	*Total Budget*	*Applicant Share*	*State Share*
1	*$28,238*	*$13,869*	*$14,369*
2	14,518	7,634	6,884
3	11,230	5,990	5,240
4	10,505	5,627	4,878
5	3,540	1,770	1,770
6	978	489	489
7	0	0	0
8	0	0	0
9	0	0	0
10	1,500	750	750
Total	*$70,509*	*$36,129*	*$34,380*

IX
Attachments

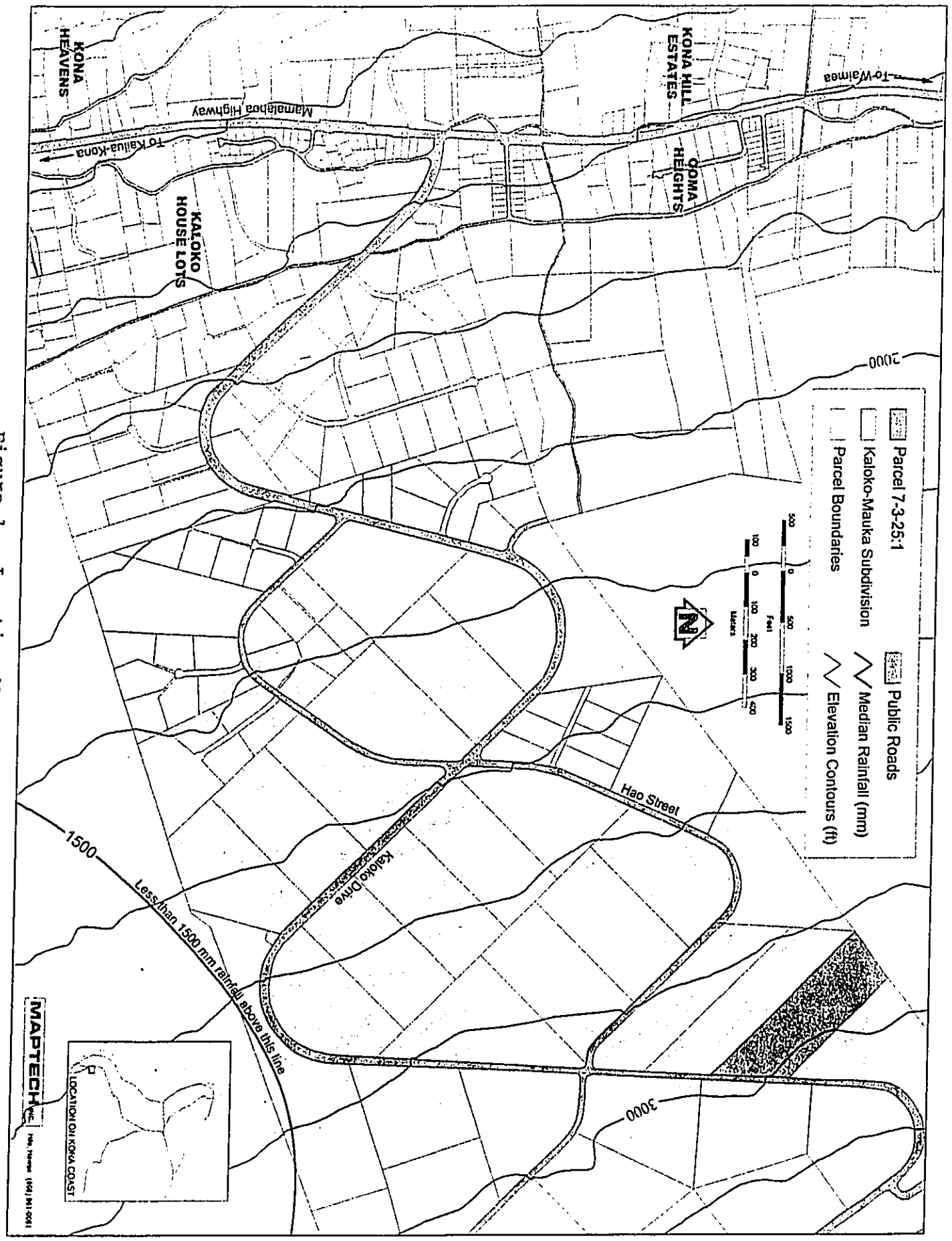


Figure 1 - Location Map

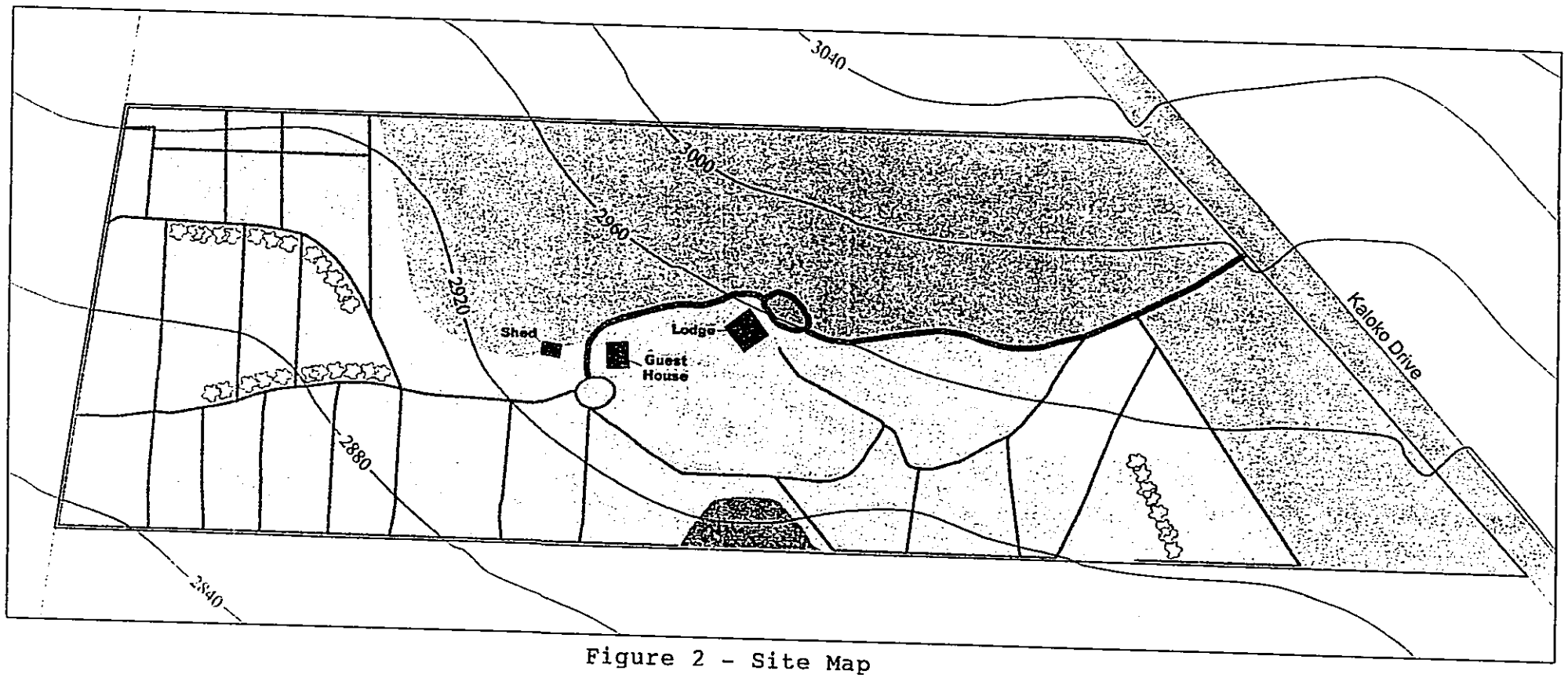


Figure 2 - Site Map

Hualalai Lodge and Farms
November 15, 1999

- Existing Forest - 8.6 acres
- Proposed Koa - 10.1 acres
- Proposed Agriculture - 0.7 acres
- Lodge Area - 1.4 acres
- Pond - < 0.1 acres
- Proposed Pond - <0.1 acres
- Gulch - 0.2 acres
- Elevation Contour (ft)
- 8 Foot Road
- 16 Foot Road
- Public Road
- Hedge

200 0 200 400
Feet

50 0 50 100
Meiers

MAPTECH INC. Hilo, Hawaii (808) 961-0051

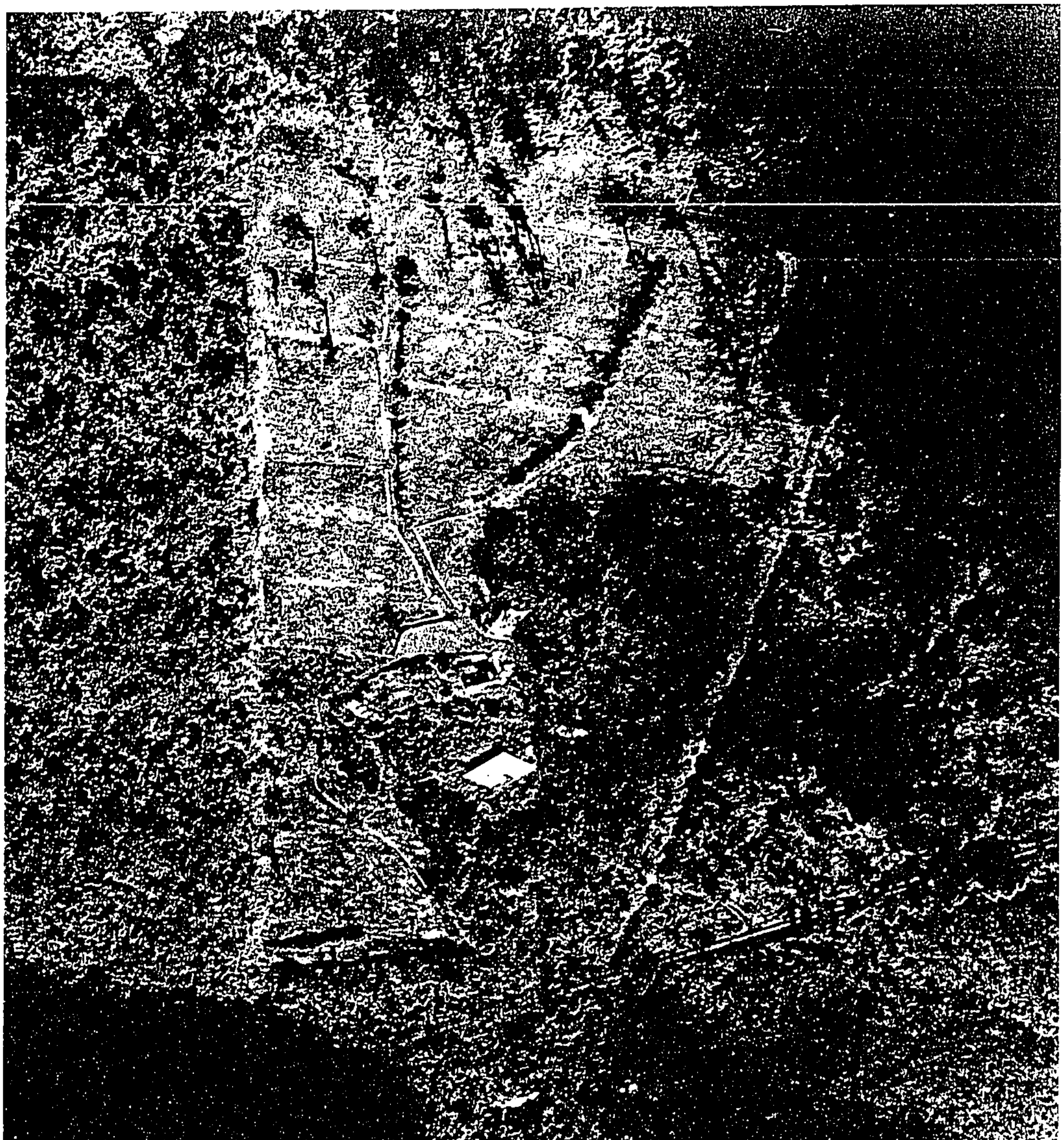
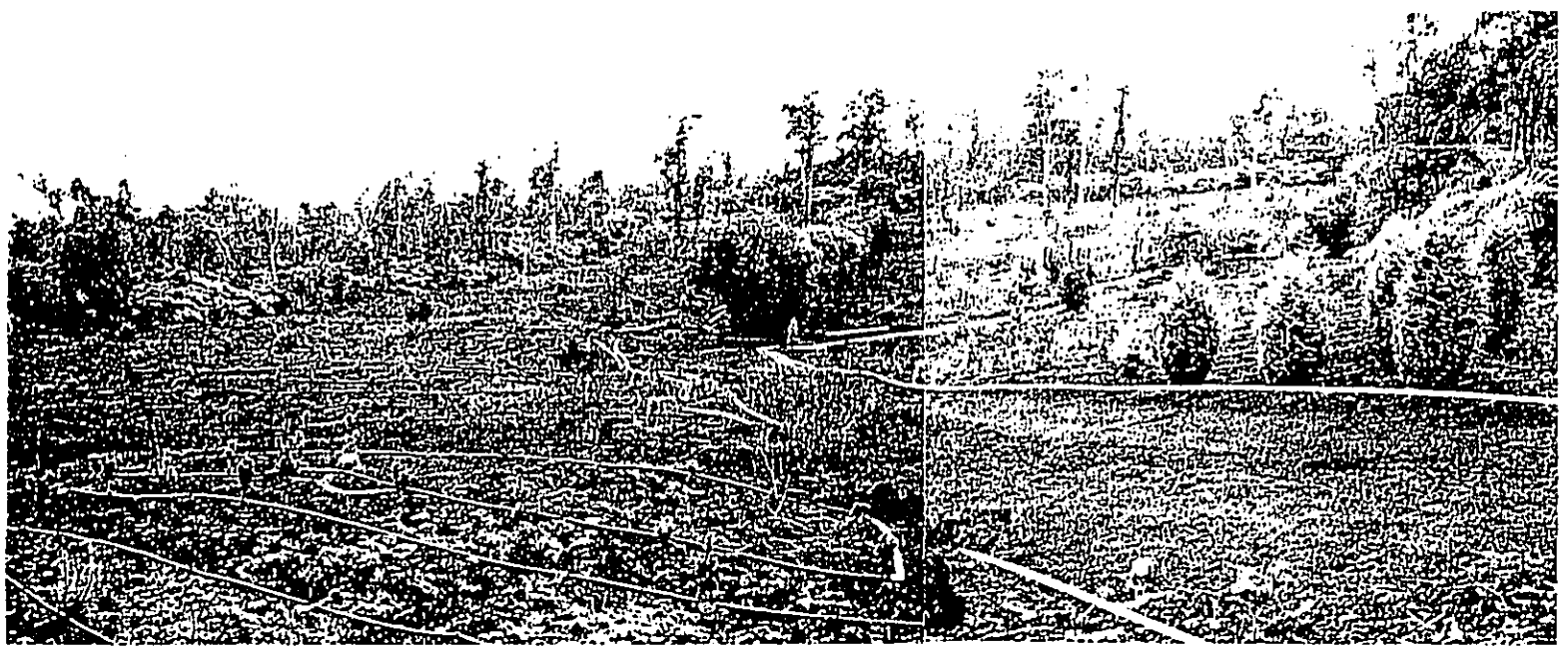


Figure 2 - Aerial photograph of property taken August 1997



(lower northwest portion of property)

(upper southeast portion of property)

Figure 4 - Photographs of proposed koa area

(northeast boundary of forest edge)

(southwest boundary of forest edge)

Figure 5 - Photographs of existing native forest

Sources of Assistance and Information

Agricultural Diagnostic Service Center, Personal Comm., CTAHR, Univ. of Hawai`i, April 1999.

Amundson, Sherry, Personal Comm., Maptech, Inc., Hilo, Hawai`i, 1999.

Bezona, Norman, Personal Comm., Kaloko Cloud Rest Forest Sanctuary, Kona, Hawai`i, 1999.

Brauner, Hal, Personal Comm., Brauner Molding Woodworks, Hilo, Hawai`i, 1999.

Carlquist, Sherwin. *Hawai`i: A Natural History*, Pacific Tropical Botanical Garden, Lawai, Hawai`i, 1992.

Division of Forestry and Wildlife, *An Analysis of Native Forest Management in Hawai`i With Emphasis on Koa Forests*, Dept. of Land and Natural Resources-Div. of Forestry and Wildlife, December 1984.

Friday, JB, Extension Forester, Personal Comm., CTAHR, Univ. of Hawai`i, Hilo, Hawai`i, 1999.

Hawai`i Audubon Society, *Hawai`i's Birds*, Hawai`i Audubon Society, Honolulu, Hawai`i, 1989.

Hawai`i Ecosystems at Risk, *Plant Pests of Hawaiian Native Ecosystems*, H.E.A.R., Honolulu, Hawai`i, 1999.

Imoto, Roger, Service Forester, Personal Comm., DLNR - Div. of Forestry and Wildlife, Hilo, Hawai`i, 1999.

Loudat, Thomas and Rebecca Kanter, *The Economics of Commercial Koa Culture in Hawai`i*, County of Hawai`i, Dept. of Research and Development, March 1996.

Murrill, Courtney, Forest Planner, Personal Comm., C.A.M. Resource Management, LLC., Hilo, Hawai`i, 1999.

Nakashima, Earl, Personal Comm., E. Nakashima Greenhouses (nursery seedlings), Honoka`a, Hawai`i, 1999.

Natural Resource and Conservation Service, *Soil Survey: Hawai`i County*, USDA - NRCS, Wash. D.C., 1973.

Perry, Lyman, Botanist, Personal Comm., DLNR - Div. of Forestry and Wildlife, Hilo, Hawai`i, 1999.

Skipper, Steve, et. al., District Conservationist, Personal Comm., USDA-NRCS, Kona, Hawai`i, 1999.

Skolmen, Roger, et. al, *Common Forest Trees of Hawai`i*, USDA-Forest Service, Wash. D.C., May 1989.

Skolmen, Roger, *Where Koa Can Be Grown*, Dept. of Land and Natural Resource - US Dept. of Agriculture, Hilo, Hawai`i, 1986.

UH Botany Dept., *Hawaiian Native Plants*, Univ. of Hawai`i Botany Dept., Honolulu, Hawai`i, June 1999.

Winkler, Ed, Personal Comm., Winkler Wood Products, Hilo, Hawai`i, 1999.

Table 2 - Breakdown of Economic Analysis

yr	Operating	Other	total	Cost Only	Op w/ sip$	Other	total
1	-17950	-1020	**-18970**	18970	-8975	-1020	**-9995**
2	-6475	-1020	**-7495**	7495	-3237.5	-1020	**-4257.5**
3	-4675	-1020	**-5695**	5695	-2337.5	-1020	**-3357.5**
4	-3950	-1020	**-4970**	4970	-1975	-1020	**-2995**
5	-1500	-1020	**-2520**	2520	-750	-1020	**-1770**
6	0	-1020	**-1020**	1020	0	-1020	**-1020**
7	0	-1020	**-1020**	1020	0	-1020	**-1020**
8	0	-1020	**-1020**	1020	0	-1020	**-1020**
9	0	-1020	**-1020**	1020	0	-1020	**-1020**
10	-1500	-1020	**-2520**	2520	-750	-1020	**-1770**
11	0	-668	**-668**	668	0	-668	**-668**
12	0	-668	**-668**	668	0	-668	**-668**
13	0	-668	**-668**	668	0	-668	**-668**
14	0	-668	**-668**	668	0	-668	**-668**
15	0	-668	**-668**	668	0	-668	**-668**
16	0	-668	**-668**	668	0	-668	**-668**
17	0	-668	**-668**	668	0	-668	**-668**
18	0	-668	**-668**	668	0	-668	**-668**
19	0	-668	**-668**	668	0	-668	**-668**
20	0	-668	**-668**	668	0	-668	**-668**
21	0	-668	**-668**	668	0	-668	**-668**
22	0	-668	**-668**	668	0	-668	**-668**
23	0	-668	**-668**	668	0	-668	**-668**
24	0	-668	**-668**	668	0	-668	**-668**
25	0	-668	**-668**	668	0	-668	**-668**
26	0	-668	**-668**	668	0	-668	**-668**
27	0	-668	**-668**	668	0	-668	**-668**
28	0	-668	**-668**	668	0	-668	**-668**
29	0	-668	**-668**	668	0	-668	**-668**
30	365940	-668	**365272**	668	365940	-668	**365272**
		NPV (6%)	**20,219.04**			NPV (6%)	36,073.62
		IRR	**7.57%**			IRR	9.58%
	NPV of cost only		43,922.53				
		brkev prod	11,899	bf/ac needed to breakeven @ $2/bf			
	Breakeven Stumpage		1.30				

Scribner Rule .8 x (d-1)2 - d/2 for each 16' log

dbh	b.f./tree	# trees/ac	total b.f./ac	Val@$2/bf	#ac	tot b.f/prop
16	172	76	13,072	26,144	10	130,720
21	309.5	76	23,522	47,044	10	235,220
		average	**18,297**	**36,594**		**182,970**

ATTACHMENT B

Relevant Correspondence

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

TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

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

June 20, 2000

Librarian
Kailua-Kona Public Library
75-138 Hualalai Road
Kailua-Kona, Hawaii 96740

Dear Librarian:

***Subject:* Draft Environmental Assessment for Hualalai Forest Stewardship Project, TMK 3-7-3-025-001, Kaloko Mauka, North Kona, Hawaii, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed 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 July 8, 2000 OEQC Environmental Notice.

Please make available to the public in your holdings, the enclosed draft EA for the subject project for the required 30-day public comment period: July 8 to August 7, 2000. Thank you for your assistance.

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
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HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

June 20, 2000

Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

To Whom it May Concern:

Subject: Draft Environmental Assessment for Hualalai Forest Stewardship Project, *TMK 3-7-3-025-001*, Kaloko Mauka, North Kona, Hawaii, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed 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 July 8, 2000 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period: July 8 to August 7, 2000. 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

Karl R. Dalla Rosa
Cooperative Resource Management Forester

Stephen K. Yamashiro
Mayor

Virginia Goldstein
Director

Russell Kokubun
Deputy Director

County of Hawaii

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

July 17, 2000

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

Dear Mr. Dalla Rosa:

SUBJECT: **Draft Environmental Assessment (DEA) for Hualalai Forest Stewardship Project Kaloko Mauka Subd., North Kona, Hawaii Island TMK: 7-3-25: 01 (21.203 acs.)**

Thank you for requesting our comments on the above proposal. The following information pertains to the County zoning and the State land use designation of the above parcel.

Land Use Designations. The parcel location is subject to the following land use laws.

County Zoning:	Agriculture (A-20a)
State Land Use (SLU):	Agricultural (A)
County General Plan (GP) Land Use Designation:	Orchards
Special Management Area (SMA):	N/A. This parcel is not in the SMA.

County Zoning. The proposed forest stewardship program to establish and maintain ten acres of Koa for limited timber production is a permitted use in the County agricultural district. Forestry is a permitted use pursuant to the County Zoning Code. In addition,

forest land is a use that is provided for and encompassed within the purpose and applicability code section of the agricultural district.

State Land Use. According to the State agricultural district rules, Haw. Rev. Stats. secs. 205-4.5(a)(1) and 205-2(d), the proposal is consistent with the permitted use to cultivate foliage, timber, and forestry.

GP Orchards Land Use Designation. *The proposal is consistent with the GP's* agriculture policy to assist other State agencies on programs that aid agriculture. It is also consistent with the policy to use agricultural land as one form of open space or as a green belt. In addition, an Orchard land use is a category of the GP's Important Agricultural Lands (IAL). The proposed Koa orchard is consistent with IAL criteria that require contribution to the County's economic base and the production of a commodity for export and local consumption. In this case the commodity is the exotic wood, Koa.

Permit Approvals. From 1988 through 1995, parcel 1 has received various permit approvals, building as well as land use permits. Approvals have been issued for several structures developed on the property; these include two dwellings: an efficiency dwelling unit and a two bedroom ohana dwelling, and an approximately 1,200 s.f agricultural building for office, retail sales, and warehouse.

Proposed Lodge Development: Special Permit Required. The DEA refers to a proposal to construct a 12-room lodge. The Forest Stewardship Plan refers to a portion of the parcel where it has been prepared for a lodge site. And on the submitted site plan (attachments, figure 2) it identifies a lodge structure.

- ✓ Please clarify, is the site plan referring to an existing lodge, the cleared lodge site or a future proposal? Or is the site plan's reference to a lodge a misdesignation of one of the two existing dwellings or the ag building? An accurate site plan is preferred that correctly identifies the efficiency dwelling, the second ohana dwelling, and the ag building.

- ✓ To establish a lodge in the State agricultural district requires a Special Permit. The application is made to the County Planning Commission and requires public notice and hearing requirements as well as appeal rights. A Special Permit is required according to State law, Haw. Rev. Stat. sec. 205-6, and it may allow the use of designated agricultural land for commercial purposes, such as a proposed lodge site.

A lodge is defined by the Zoning Code to mean a building or group of buildings, under single management; containing transient lodging accommodations without individual kitchen facilities; with no more than 40-guest rooms and generally located in agricultural, rural or other less populated areas. The code's definition of a lodge is also consistent with its definition of hotel, a building of six or more rooms providing transient lodging accommodations for compensation.

Thank you for this opportunity to submit comments on the DEA proposal. Any follow up on this matter can be made with staff planner, Earl Lucero at (808) 961-8288.

Sincerely,

VIRGINIA GOLDSTEIN
Planning Director

EML:pak
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c: SMA
West Hawaii Office

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

August 4, 2000

Mr. William Lucas, Manager
Hualalai Lodge and Farms
Pacific Tower, Suite 2600
1001 Bishop Street
Honolulu, Hawai'i 96813

Dear Mr. Lucas:

We have reviewed the draft environmental assessment for the Hualalai Forest Stewardship Project, District of North Kona, Island of Hawai'i, TMK (3) 7-3-025:001, and offer the following comments for your consideration and response.

1. **CONSULTATION WITH THE U.S. FISH AND WILDLIFE SERVICE.** Please consult with the U.S. Fish and Wildlife Service as to the presence of endangered or threatened species, or species of concern in the project region.
2. **LONG TERM EFFECT OF FOREST PROVIDING HABITAT FOR NATIVE FAUNA.** Please discuss in the environmental assessment the developing commercial forest as a habitat for native fauna (birds and bats in particular), as well as measures to mitigate damage to such fauna prior to pesticide spraying and/or harvest.
3. **LISTING OF PERMITS AND APPROVALS:** List all State, County and Federal permits/approvals required as well as the status of these permits/approvals.

If there are any questions, please call Leslie Segundo at 586-4185. Thank you for the opportunity to comment.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Courtney A. Murrill
260 Kamehameha Avenue, Suite 209
Hilo, Hawai'i 96720

Karl R. Dalla Rosa
Department of Land and Natural Resources - DOFAW
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

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

COPY

August 14, 2000

Mr. Paul Henson
Field Supervisor
U.S.D.I. Fish and Wildlife Service
Room 3-122, Box 50088
300 Ala Moana Blvd.
Honolulu, HI 96850

Dear Mr. Henson,

The Office of Environmental Quality Control (OEQC) has asked that we consult with your office regarding draft Environmental Assessment that we have prepared for one of our Forest Stewardship Program applicants. Mr. William Lucas intends to establish a small koa (Acacia koa) timber stand and restore an adjacent native forest area on the 21 acre property that he manages in the Kaloko Mauka subdivision in South Kona on the Big Island.

The OEQC has specifically asked that we consult with your office as to the presence of endangered or threatened species, or species of concern within the proposed project area.

Please review the enclosed draft EA at your earliest convenience as requested by the OEQC. A copy of OEQC's letter to us in this regard is enclosed for your information and clarification.

Mr. Lucas has informed us that he has not observed any threatened or endangered species within the proposed project site, and that when/if he does, he will make every effort to mitigate and damage to such fauna or its habitat.

We thank you for your assistance with this manner. Please call or write if you have any questions.

Sincerely,

Karl Dalla Rosa

Karl R. Dalla Rosa
Cooperative Resource Management Forester

cc: Courtney Murrill

01/07/01

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

September 7, 2000

Mr. Paul Henson
Field Supervisor
U.S.D.I. Fish and Wildlife Service
Room 3-122, Box 50088
300 Ala Moana Blvd.
Honolulu, HI 96850

Dear Mr. Henson,

A few weeks ago, I sent a letter to you requesting comment on a draft Environmental Assessment regarding one of our state Forest Stewardship Projects. As we have not yet heard from you, I thought that I had better write to check on the status of this request.

Yours is the only response/commentary that we are lacking for our final Environmental Assessment and we would very much appreciate hearing from you at your earliest convenience.

Sincerely,

Karl R. Dalla Rosa
Cooperative Resource Management Forester (587-4174)

cc: Courtney Murrill

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: GCS

SEP 22 2000

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

Re: Draft Environmental Assessment for the Hualalai Forest Stewardship Project, North Kona, Island of Hawaii

Dear Mr. Dalla Rosa:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (DEA) for the Hualalai Forest Stewardship Project, North Kona, Island of Hawaii. The proposed project involves planting 10 acres of koa forest in an existing cleared area, and performing forest maintenance and enhancement activities in 8.5 acres of existing 'ohi'a forest. Based on a review of the information provided to us, the Service offers the following comments.

Threatened and Endangered Species

The Service recommends that the final EA incorporate a discussion of the occurrence and potential positive and negative impacts to Threatened and Endangered (T&E) species at the project site. The DEA contains a conflicting account of the occurrence of T&E species at the project location. On page 5, paragraph 3, it is stated that the endangered 'Io (Hawaiian Hawk, *Buteo solitarus*), and the 'Alauahio (Hawaii Creeper, *Oreomystis mana*) occur on the property. The account also states that a Species of Concern, the Pueo (Hawaiian Short-Eared Owl, *Asio flammeus sandwichensis*) is occasionally seen flying over the property. The paragraph closes by stating that there is "no evidence of threatened or endangered plant or animal species on the property." We recommend that you correct this discrepancy regarding the occurrence of T&E species at the project site.

More generally, the Service recommends that the Final Environmental Assessment (FEA) discuss the impacts of this commercial forest development on native flora and fauna, including birds,

bats and invertebrates. The FEA should also discuss ways to avoid or minimize negative impacts to native species posed by commercial forest practices such as pesticide/herbicide application, thinning, and harvesting.

Native Forest Maintenance and Enhacement

The nature and intent of the "forest enhancement activities" planned for the 8.5 acres of existing native forest are vague and unclear. The accompanying attachment titled *Forest Stewardship Plans for Hualalai Lodge and Farms* describes that the goal of the forest improvement project is to "improve the health of the existing 'ohi'a forest as well as attract and improve the habitat of native forest birds." However, no means of quantitatively or qualitatively measuring forest health or forest bird habitat characteristics are presented. The plan describes removal of the few merchantable silk oak (*Grevillea robusta*) on a trade-for-services basis, but the frequency and duration of controlling other alien and invasive species is not described. Also, the plan states that "native species will be outplanted to the native forest." No supporting discussion of how species will be selected for outplanting is provided, nor is there a description of the timing and followup maintenance for the outplanting efforts.

The Forest Stewardship Plan states that feral pigs "will be monitored, and, if needed controlled through hunting or other natural methods in the native forest as well as the commercial koa area." There is no description of what level of feral pig activity would trigger pig control efforts, or a description of the type of monitoring methods used to assess pig damage. Also, the term "other natural methods" for pig control is unclear and should be explained. The Service agrees that feral ungulates are detrimental to native forest integrity and supports the permanent removal and exclusion (through fencing) of feral pigs in native forest restoration efforts.

Forest Recreation Enhancement

The narrative description of trail building in the plan indicates that 3000 linear feet of trail will be built over a three year period. However, the tables presented in Section VII, Practice Implementation Schedule, show 4000 linear feet (0.78 miles) of trail construction over a four year period. This length of trail is sufficient to traverse the entire property three times (parcel dimensions are approximately 1600 by 560 feet). The trail is projected to be 3 feet wide which would result in a total of 12,000 sq ft (0.28 acres) of forest cleared and permanently eliminated for trail construction. A justification for this length of trail and the negative impacts of trail construction (such as the inadvertent introduction of weed species) are not presented in the DEA. The total cost of 4000 feet of trail construction is projected to be $15,000, of which the State will contribute $6000. This is a substantial State expenditure considering that these funds result in no direct benefit to the forest resources at the site, and that the private landowner will presumably use the trails for commercial tourism associated with the proposed guest lodge. It is not clear how contributing limited Forest Stewardship Program funds to a non-forestry-related private commercial enterprise accomplishes the forestry and conservation goals of the stewardship

program. If public access for recreation in the restored forest on the property is a certainty, then a thorough description of public access opportunities should be included in the FEA. If no commitment for public access is presented by the cooperating landowner, then the Service suggests that the funds be directed to forest stewardship practices that benefit the forest resources directly, such as regularly scheduled control of invasive weeds and removal of feral pigs.

The Service believes that incorporation of these item into the FEA will assist in evaluation of project-related impacts to wildlife resources. We appreciate the opportunity to provide comments on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Gordon Smith at 808/541-3441.

Sincerely,

Paul Henson
Field Supervisor
Ecological Services

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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November 21, 2000

Mr. Paul Henson
Field Supervisor
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Room 3-122
Box 50088
Honolulu, HI 96850

Re: Final Environmental Assessment for the Hualalai Forest Stewardship Project, North Kona, Island of Hawaii

Dear Mr. Henson:

Thank you for your thoughtful review of, and comments on the Draft Environmental assessment for the subject project. We appreciate your concerns, especially with regards to impacts on threatened and endangered species and we feel that the landowner has adequately addressed these concerns in the enclosed final Environmental Assessment.

There is no question that the activities proposed in the Hualalai Forest Stewardship Project will have a net positive impact on native flora and fauna, including threatened or endangered species. The area that will be used for selective, small-scale commercial koa timber production is currently devoid of vegetation, with the exception of some remnant, unhealthy pine trees that were planted as part of an unsuccessful Christmas tree farm venture - and a scattering of common non-native "weeds". The landowner recognizes that conversion of this degraded area - to a productive native koa woodlot, will likely attract some native wildlife and has agree that all management and harvesting activities will be planned carried out so as to mitigate impacts on any native fauna, in compliance with currently approved Best Management Practices and in consultation with qualified Hawaii Branch forestry staff. Timber harvests will consist of small scale, selective cuts of scattered merchantable saw logs. The small harvest areas will be thoroughly surveyed for the presence of threatened or endangered wildlife species. Active nesting and roosting sites will not be disturbed.

In addition, the applicant proposes improve the health of the existing native ohia forest area on the property, by removing weeds and planting native forest species. These activities are similar to those routinely proposed by Forest Stewardship Program applicants, and while we require thorough planning for, and maintenance of all approved management activities, we also recognize that most landowners do not posses the time or the resources that would be required to

monitor and measure specific, relevant biological parameters to the degree that your suggest. As with all Forest Stewardship projects, final species selections and plantings will be carried out in consultation with our qualified forestry staff and the project site will be visited, and progress monitored twice yearly.

Please call me if you require further clarification, or have any additional questions. My phone number is (808) 587-4174.

Sincerely,

Karl R. Dalla Rosa
Cooperative Resource Management Forester

cc: Courtney Murrill