

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



*Hamakua Forest
Stewardship Project*

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

Mr. Gary Gill
Director
Office of Environmental Quality Control
235 South Beratania Street, Suite 702
Honolulu, Hawaii 96813

Subject: Negative Declaration Determination and Final Environmental Assessment for
H & G Koa Enterprises, Inc. Forest Stewardship Project, Paauilo, Hamakua,
Hawaii County, tax map key: 3-4-03-014-006.

Dear Mr. Gill,

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 February 8, 1998 for the subject project. We have determined that this project is not likely to have a significant impact on the environment. Please publish a notice of determination for this negative declaration in the April 23, 1998 issue of the Environmental Notice. ✓

We have enclosed a completed OEQC Bulletin Publication Form and four (4) copies of the Final EA for the project. Please contact Nelson Ayers of the Division of Forestry and Wildlife at 587-4175 if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Michael Buck".

Michael Buck
Administrator

Enclosures

cc: Nelson Ayers
Gwendolyn Hill

1998-04-23-HI-*FEA*-Hamakua Forest
Stewardship Project

APR 23 1998

FILE COPY

FINAL ENVIRONMENTAL ASSESSMENT

for

**The State of Hawaii Forest Stewardship Program -
Acacia Koa Farm**

**Paauilo, Hamakua, Hawaii County
TMK 3-4-03-014-006**

APPROVING AGENCY: Dept. of Land & Natural Resources
Division of Forestry & Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

APPLICANT: H & G Koa Enterprises
P.O. Box 182
Pahoa, HI 96778
(808) 966-4968

PREPARED BY: Forest Research & Support Services
310 E. Street
Keaau, Hawaii 96749
(808) 898-0989

MARCH 20, 1998

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1. INTRODUCTION

1.1 Purpose

H & G Koa Enterprises, Inc., in conjunction with the State Department of Land and Natural Resources, Division of Forestry and Wildlife and is proposing to implement a Forest Stewardship Program in Paauiilo, Hamakua, Hawaii. The purpose of this Environmental Assessment is to comply with the requirements of Chapter 343, Hawaii Revised Statutes (HRS) which are triggered by the use of State funds for the proposed project.

1.2 Identification of Applicant

Gwendolyn Hill is the Director of H & G Koa Enterprises, Inc. The mailing address for H & G Koa Enterprises is P.O. Box 182, Pahoa, Hawaii 96778.

1.3 Identification of Approving Agency

The State Department of Land and Natural Resource, Division of Forestry and Wildlife, located at 1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813.

1.4 Technical Description

The subject project site is situated on a 13.47 acre parcel located above the town of Paauiilo, approximately 36 miles northwest of Hilo on the Big Island of Hawaii in the district of Hamakua (see Figure 1 - Location Map). The outline of the proposed property's boundary (see Figure 2 - Topography Map or Figure 3 - Project Site Map) is roughly rectangular with its longest axis running northeast (makai) to southwest (mauka).

The tax map key is 3-4-03-014-006. The property was acquired by Steven and Deloris Guttman, in 1990. In 1997, H & G Koa Enterprises, a family owned corporation, entered a twenty five year lease with the Gutmans.

The subject project site will be managed for 10 years under specific guidelines established by the State Forest Stewardship Program. The main objective of this project and the Stewardship Program is to produce 10 acres of genetically superior koa for commercial timber.

Koa culture research is the leading edge in Hawaii's koa industry. Very little is known or documented at this point concerning koa silviculture, especially information on the age, class, successional stage, and productive capacity of a commercial koa plantation. One of H & G Koa Enterprises primary objectives is to document this type information for public use in the future. H & G Koa Enterprises in conjunction with the Hawaii Agriculture Research Center will closely monitor the plantation and keep detailed records for the life of this project.

H & G Koa Enterprises consulted with Hawaii's leading koa geneticist to individually select genetically superior seed stock to be used in addition to intensive management to ensure a high growth rate of high quality, commercial size trees for this project. This superior seed stock will also generate superior a seed source for future koa production.

Approximately 27,000 trees will be planted on the 10 acre project site and 30,000 seeds will be collected and propagated to ensure the highest number of healthy seedlings for

planting. Seedlings will be planted on the site during the wettest time of the year (December - April) and irrigated in times of drought for the first two years.

Soil disturbance will only occur during the site preparation stage, when planting rows will be ripped along the natural contours of the land to prevent erosion. This site preparation technique has been planned to minimize surface disturbance. Using dibble tube stock in previously prepared rows, it is estimated that 3 people planting 500 trees per person per day, will take a little over a month in total labor hours to plant all the trees.

Seedlings will be placed on a 3 ft. by 5 ft. single row spacing grid which, based on University of Hawaii research, will minimize weed competition, encourage erect growth and reduce evaporation. Following the canopy closure, and until the first thinning, there will not be an understory because of dense shading and substantial litter build up. This thick layer will enrich the soil (koa = nitrogen fixer) and also protect the soil from erosion.

Sickly, damaged, diseased and slow growth trees can be hand-culled once recognized. Stands will naturally thin as crowding occurs. However, hand thinning will not exceed 5 to 10 feet spacing, dependant on tree growth, by the end of the second year. Thinning has a positive impact on the growth of the remaining trees. The possibility of a shade tolerant understory cover crop could be introduced at this point, such as a clover or perennial peanut that could control weeds and continue to enrich the soil. Culling of sickly, damaged, and slow growing trees will also be conducted in year eight with the assistance from a State Forester to achieve an optimal final spacing of 24 ft. by 24 ft.

Insect and disease problems will be responded to as needed, with the assistance from State Foresters. Maintenance as needed is assigned a cost of zero because the State Forest Stewardship Program will not cost-share maintenance beyond year 4 after planting.

Organic fertilizers will be applied based on the results of actual soil and tree nutrient analysis tests. Minimal amounts of stable herbicides such as fusalaide and Roundup will be used only when necessary to give the koa saplings an advantage over weed competition. Herbicide application will only be necessary during the early stages of development of the koa trees. To help minimize herbicide usage organic mulches will be used when available. All recommended fertilizers and herbicides have been approved by the U.S. Department of Agriculture, Soil Conservation Service as being non toxic and a non pollutant to the surrounding area and water tables.

It is impossible, at this point, to provide detailed information with respect to harvesting and its possible impacts. This Environmental Assessment concerns H & G Koa Enterprises planting activities, due to the activities that H&G Koa Enterprises is receiving State assistance. Therefore, only general information concerning harvesting has been provided as required by an Environmental Assessment {Title 11, Chapter 200-10, Department of Health Administrative Rules}.

Trees will be harvested when they reach a diameter breast height (dbh) of 25 inches or greater and are assumed to have an average height of 50 feet at that time. It is estimated that 20 percent, or 760 trees will attain a dbh of 25 inches by year twenty, and the remaining trees will be harvested over a five year cycle.

To guarantee the right harvest, the State is setting up provisions, such as the Safe Harbor Agreement, that will guarantee landowners the right to harvest trees that were planted for the purpose of timber production. H & G Koa Enterprises intends to enter into such an agreement once this is possible.

Post harvest stumps will be cut close to the ground or removed. The H & G Koa Enterprises' lease of the project site will be expired at this point and the land will be returned to the Guttman family. The Guttmans plan to continue this koa reforestation effort by allowing the koa forest to regenerate itself and replant other native species to complement this forest. The leftover stumps will hold soil while the new trees establish themselves and rot to provide nutrients during the growth cycle of the subsequent planting.

The tops and trees unusable for lumber, what might be referred to as post harvest remains, will be chipped and used as mulch for the subsequent planting. This will allow significantly less soil preparation prior to replanting, therefore minimizing the erosion concern and promote faster initial growth.

1.5 Project Background

1.5.1 Need for the Project

Koa is Hawaii's best known tree being important economically, ecologically, and culturally. It is a dominant component of koa-ohia forest ecosystems providing wildlife habitat, watershed recharge areas and recreational opportunities. It has been central to culture in Hawaii from the time of the early Hawaiians the present day. Koa is a source of high value wood used for furniture, cabinetry, interior work and woodcrafts. Total income (direct and indirect) attributable to Hawaii's koa industry was estimated at \$28.9 million in 1991.

Native koa forests have been reduced to approximately 25 percent of their historical range. The remaining koa forests and trees are disappearing much faster than natural regeneration and current planting programs can replace them. This will result in a simultaneous environmental loss due to wildlife habitat, economic loss of a valuable commodity and possible species and/or species diversity loss due to genetic erosion. Hawaii can ill afford any such loss given its fragile and unique ecology and its need for economic diversity both of which would suffer from the demise of koa forests.

Implementation of this project in conjunction with the State Forest Stewardship Program will help to ameliorate the current trend towards depletion. According to James Brewbaker (May 1995), of the Department of Horticulture, University of Hawaii, "the remaining koa forests and trees are disappearing much faster than natural regeneration and current planting programs can replace them". This project will help to relieve the pressure to harvest native stands for commercial purposes by providing an alternative source of koa wood to satisfy commercial demand. It also has the potential to sustain and greatly expand at some point, the current level of direct and indirect economic activity in the commercial koa industry, and more immediately, provide a use for this vacant agricultural (former forest) land, business opportunities for Hawaii investors and employment opportunities for unemployed agricultural laborers (displaced Hamakua sugar workers) and processors of value-added forest products.

1.5.2 Land Use Designations

The State land use designation for the subject property and surrounding area is agricultural, and county zoning is listed as agricultural (AG-5), with emphasis on orchards and/or extensive agriculture. This koa farming project is consistent with all of the land use designations and regulations of the State and County of Hawaii.

1.6 Agencies Consulted

County:	Department of Research & Development
Federal:	US Department of Agriculture Natural Resources Conservation Service
Private:	CAM Resource Management Hawaii Agricultural Research Center
State:	Department of Land and Natural Resources Division of Forestry and Wildlife SHIPO
University of Hawaii:	Agricultural Diagnostic Service Center Dept. of Horticulture Extension Service Plant Pathology

2. ENVIRONMENTAL SETTING

2.1 Physical Environmental Characteristics

2.1.1 Soils Type and Soil Condition

The soils on the subject property consist of two soil types of the Honokaa soils series as classified by the Natural Resources Conservation Service are HsD and HTD. These soil types consists of the same properties except that HTD is mapped at higher elevations.

The available water holding capacity is very high and there are no natural root restricting layers within 60 or more inches of the surface. This soil rarely dries to more than an inch or two below the surface due to uniformly distributed high rainfall amounts.

The Honokaa series consists of well-drained soils formed in volcanic ash. The surface layer is dark brown silty clay loam about 6 inches thick. The subsoil is very dark brown and very dark grayish-brown silty clay loam about 59 inches thick. The soils are weakly to moderately smeary and dehydrate irreversibly into fine gravel-size aggregates.

These soil can become very strongly acidic where fertilized unless limed. Aluminum saturation of the effective CEC is generally less than 30 percent however. Liming to raise the pH significantly can require large liming rates. Liming should be performed to reduce aluminum levels for sensitive crops or more typically to provide calcium nutrition or to increase micronutrient availability. Phosphorous application rates on newly cultivated land can be extremely high especially. Rates often remain high due to the kind of clay minerals present. In addition, soil analysis where conducted in five areas of the property. These tests have shown an average soil pH of 6.0 and deficiencies in calcium, nitrogen, phosphorous, and lime.

This deep, well drained soil was formed in volcanic ash. Permeability is rapid, runoff is medium, and the erosion hazard is moderate.

2.1.2 Topography, Rainfall, Climate, Hydrology, and Drainage

The topography map outlines the key elevations of the subject property which run from 1,700 feet to 2,000 feet above sea level, which indicates that there are no steep slopes (see Figure 2 and Topography Map). The annual rainfall for the project area is approximately 116 inches with almost daily cloud cover. The wettest months of the year are December through April. The mean annual temperature is 60 degrees Fahrenheit.

The Natural Resource Conservation Service has identified a shallow aquifer (with the potential for drinking water usage) and a deep water aquifer (currently being used for drinking water) below the subject property. However, the Natural Resources Conservation Service has given their support and approval of H & G Koa Enterprises' Management Plan and Soil and Water Conservation Plan. The Natural Resources Conservation Service has rated the proposed usage of soil amendments and herbicides as non threatening to this water table and surrounding area.

The Natural Resources Conservation Service has determined the runoff travel distance for identified surface pathways from the subject property to any receiving water as non threatening:

<u>Water Body</u>	<u>Runoff Travel Distance</u>
Kaumoali Stream (Perennial Stream)	1,800 feet
Ocean	14,000 feet

2.1.3 Flora, Fauna, Historic, Cultural, and Recreational Resources

The subject property's existing vegetation and cover types include sugarcane, desmodium, sleeping grass and other alien weed species. The property has no existing forest and the probability of fire is low since the fuel load in the area is kept to a minimum through intensive ranching and agricultural activities. Due to the vacant state of the surrounding area there is no fire threat.

Historic uses of the property include coffee and sugar, and more recently ranching. There are no timber, wetland, historic, or cultural resources present on the property. There has been no evidence of a threatened and endangered plant or animal species on the project site.

There are opportunities for recreational activities like mountain biking and horseback riding, however, no such activities exist at this time. The site offers panoramic ocean views that will be complemented with the splendor of a koa forest.

2.2 Socio-Economic Setting

2.2.1 Socio-Economic Characteristics

The Hamakua District is renown for its deep rich fertile soil and diversified agriculture which includes macadamia nuts, fruits and vegetable, flowers and ornamental stock plants. With the closing of the sugar industry the economy in this district has become somewhat depressed.

The Hamakua community is in transition in deciding what industry will replace the production of sugar cane. The community is favoring the production of native hardwoods and diversified agriculture which is in line with the objectives of this project.

2.2.2 Adjacent Land Uses

The subject project site is located in the Hamakua Coffee Plantation Subdivision in Paauiilo Mauka, Hamakua, Hawaii. The State land use designation for the project site and surrounding area is agricultural, and county zoning is listed as (AG-5), with emphasis on orchards and/or extensive agriculture. Adjacent land uses include ranching and vegetable farming.

2.3 Public Facilities and Services

2.3.1 Roads and Traffic

Access to the property is provided by Homestead Road, which is a paved County road off the Mamalahoa Highway (Hwy 19). Vehicle access on the project site is provided by sixteen foot unpaved private access roads that run along the western border, north border (makai) and east-west within the north section of the property (see Figure 3). The operation of this project will not add significantly to the traffic of the Homestead Road. Post harvest trucking scheduling would be scheduled at slow traffic times.

2.3.2 Water, Electricity, and Telephone

Water, electricity, and telephone service is available to the project area. However, the koa farming operation will not require any of these services and will not be adversely impacted by their absence or presence.

2.3.3 Protective Services

County fire and police protection services are available in the town of Honokaa situated 6 - 8 miles northwest of the project area. The proposed project is not likely to create an additional burden on the existing service providers.

3. SUMMARY OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

3.1 Bulldozing

Impacts: Short term impacts will result from the minor bulldozing of the koa planting area. Impacts consists of temporary noise, dust and exhaust from machinery.

Mitigation: As clearly indicated in 2.1.1. Soil Type and Soil Condition, the erosion hazard for the project site is moderate. Soil disturbance will occur during the site preparation stage only, when planting rows will be ripped along the natural contours of the land to prevent erosion. This site preparation has been planned so as to minimize surface soil disturbances.

The Natural Resource Conservation Service has approved H & G Koa Enterprises' Management Plan and developed a Soil and Water Conservation Plan rating the effects of this project as having no impact on the environment and surrounding area. The Soil and Water Conservation Plan also requires the maintenance of all conservation measures in compliance with Federal, State, and County laws and ordinances. Impacts of public health affected by air and noise will be insignificant or not detectable and positive in terms of public health as compared to the "no action" alternative.

3.2 Koa Farming

Impacts: Koa farming operations commonly involve the application of fertilizer and herbicides.

Mitigation: The Natural Resource Conservation Service has stated that effects of H & G Koa Enterprises' project will not cause any erosion or pollution problems. Organic fertilizer will be used and only stable herbicides will be used in compliance with Federal, State, and County laws and ordinances. There is no threat of any surface or groundwater contamination by use of these soils amendments and herbicides.

3.3 Harvesting

Impact: Short term impacts from temporary noise will result from the harvesting of the koa plantation. Temporary traffic impacts could also result from logging trucks during the harvest period.

Mitigation: Harvesting will take place over a five year period. Therefore, the noise impacts will be somewhat mitigated by conducting the harvesting this extended period time. Also harvesting will conducted during the daylight hours during the weekdays. The project site is also located in county zoned agricultural community. Noise levels will be well within the allowable decimal rating set by County ordinances.

Post harvest trucking scheduling would be scheduled at slow traffic times. This additional traffic will also be dispersed over the five year harvesting period. Where these trucks would travel to would depend on whom the lumber is eventually sold. Obviously, we hope it will be sold on island to generate more value added jobs.

4. ALTERNATIVES

4.1 No Action

Millions of dollars of potential revenue will not be circulated within the Hamakua District and the State's economy. Thousand of genetically superior koa seedlings will not be available to the public for reforestation use.

Loss in koa culture research will also result in a loss in koa culture education of genetically superior gene pools and commercial koa culture. If this project is not implemented the rigorous investigation of the costs of koa reforestation, and, more specifically to entrepreneurial private land owners, potential returns of commercial koa culture in Hawaii will remain unanswered. This research/reforestation effort and availability of a commercial alternative is necessary to ameliorate the current trend towards depletion.

Loss of koa production will result in a loss of employment opportunities for unemployed agricultural laborers and processors of value-added forest products. More importantly, non implementation of this project will result in a lost alternative source of commercial grade koa for the State of Hawaii. Hawaii can ill afford any such loss given its fragile and unique ecology and its need for economic diversity both of which would suffer from the non-implementation of this project.

5. ANTICIPATED DETERMINATION

5.1 Findings

Based on the foregoing information presented, it is determined that the proposed project in conjunction with the State Forest Stewardship Program will not have a significant effect on the environment and does not fit any of the established Rules of 13 Significant Criteria (11-200-12):

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

This project does not contribute to the loss or destruction of any natural or cultural resources. Instead, this project will enhance the beauty of this otherwise vacant agricultural land.

(2) Curtails the range of beneficial uses of the environment;

The subject property is zoned for agricultural use. This project does not curtail the beneficial uses of the environment. This project will benefit the environment by increasing the health of the soil and by preventing other weed species from propagating on this site.

(3) Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders;

This project is also in line with the State's long-term environmental policies, as it has been approved by the State Department of Land Natural Resources State Forest Stewardship Committee as a project meeting the criteria of the State's objectives.

(4) Substantially affects the economic or social welfare of the community or state;

The proposed project will also benefit the economic welfare of the community by creating jobs from the development stage to the commercial production of koa. Thereby, this project will generate new sources of direct and indirect revenue for the community.

(5) Substantially affects public health;

Impacts of public health affected by air, noise, and water quality, will be insignificant or not detectable and positive in terms of public health as compared to the "no action" alternative.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

There are no substantial secondary impacts, such as population changes or effects on public facilities involved with this project.

(7) Involves a substantial degradation of environmental quality;

This proposed development will utilize existing vacant agricultural land. The overall contour design will complement the background vistas and prevent erosion.

(8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;

The Natural Resources Conservation Service has determined that this project will not cause any pollution or environmental problems. Instead, this project has been determined to be beneficial to the environment.

(9) Substantially affects a rare, threatened or endangered species or its habitat;

There are no endangered plant or animal species located on the subject property. Therefore this project does not substantially affect a rare, threatened or endangered species or its habitat.

In regards to a threatened or endangered species taking up residence in this koa plantation, H & G Koa Enterprises has anticipated this possibility and is in the process of developing a Habitat Conservation Plan with the Natural Resources Conservation Service. This plan will address any issues concerning the safety and protection of an endangered species habitat should they take residence within the project site.

(10) Detrimentally affects air or water quality or ambient noise levels;

The Natural Conservation Service have developed and approved a Water and Soil Conservation Plan for H & G Koa Enterprises. Also, the Natural Conservation Service has determined that this project will not cause any pollution or environmental problems.

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters;

The project site is not compatible with the above criteria since there are not environmentally sensitive areas associated with this project.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

Due to topographical characteristics of the project site, the koa plantation will not affect scenic vistas and view plane due to the slope of the land.

(13) Requires substantial energy consumption;

This proposed project does not require substantial energy consumption.

As such, a determination of *No Significant Impact* for the proposed project is appropriate.

5.2 Reasons Supporting Determination

The reasons why a determination of No Significant Impact should be declared is due to the fact that this project objectives do not fit any of the established Rules of 13 Significant Criteria. The nature and scale of the proposed action is such that no significant environmental effects are anticipated. Potential impacts, are insignificant or undetectable with respect to environmental and water quality issues, according the Natural Resources Conservation Service. In addition, the State Department of Land and Natural Resources, Division of Forestry and Wildlife and the Natural Resources Conservation Service have given their approval the proposed management practices of H & G Koa Enterprises. These

State and Federal officials will also monitor the management practices of this project.

REFERENCES

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- Skolmen, Roger, *Where Koa Can Be Grown*, Dept. of Land and Natural Resource - US Dept. of Agriculture, Hilo, Hawaii, 1986.
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Forest Stewardship Plan

for

H & G Koa Enterprises
P.O. Box 182
Pahoa, Hawai'i 96778
(808)966-4968

Located in

Paauilo, Hamakua, Hawai'i County
TMK 3-4-03-014-006
13.47 acres

Prepared by

C.A.M. Resource Management
P.O. Box 11441
Hilo, Hawai'i 96721
(808)981-0253

November 25, 1997

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:

 11/25/97

Professional Resource Consultant's Date
Signature

Courtney A. Murrill, Owner C.A.M. Resource Management
Professional Resource Consultant's
Name

Landowner 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:

 11/25/97

Landowner's Signature Date

Gwendolyn Hill, Partner, H & G Koa Enterprises
Landowner'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:

 12/5/97

State Forester's Signature Date

Michael 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 landowner meet his/her objectives for the management of the property. It provides guidelines for a sound strategy which reflects the landowner'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 landowner's objectives, conditions, and/or opportunities change.

Applicable Resource Areas Covered

Those checked are targeted by landowner management objectives and are consistent in this stewardship plan.

- | | |
|--|--|
| <input type="checkbox"/> Water Quality | <input type="checkbox"/> Threatened/Endangered Species |
| <input type="checkbox"/> Agroforestry | <input checked="" type="checkbox"/> Forest Health |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Archaeological - 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 landowner to protect or enhance all resources in the management of the property for at least 10 years.

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IV. Introduction

1. Property Description

This property is 13.47 acres and is located above the town of Paauilo, approximately 36 miles northwest of Hilo on the Big Island of Hawai'i in the district of Hamakua (see Figure 1). Figures 2 and 3 outline the property boundary which is roughly rectangular with its longest axis running northeast (makai) to southwest (mauka).

Access to the property is provided by Homestead Road off the Mamalahoa Highway (Hwy 19). Vehicle access on the site is provided by sixteen foot private access roads that run along the western border, north border (makai) and east-west within the north section of the property (see Figure 3).

The tax map key is 3-4-13-014-006. The State land use designation for the parcel and surrounding area is agricultural, and county zoning is listed as agricultural (AG-5), with emphasis on orchards and/or extensive agriculture. The property was acquired by Steven Guttman, a partner in H & G Enterprises, in 1990.

The topography map outlines the key elevations of the property which run from 1,700 feet to 2,000 feet above sea level (see Figure 2). Annual precipitation ranges from 60 to 150 inches per year and there is daily cloud cover during a portion of the day. The mean annual temperature is 60 degrees Fahrenheit.

Historic uses of the property include coffee and sugar, and more recently ranching. The property is vacant of any significant plant species.

2. Landowner Management Objectives

The landowner has established the following stewardship objectives. Applicable Stewardship Incentive Program (SIP) codes are shown in parentheses.

- Develop a Forest Stewardship Plan and enter into the State's Forest Stewardship Program (SIP-1).
- Establish and maintain ten acres of genetically superior native *Acacia koa* (koa) for commercial timber, develop management techniques that will increase growth rates and overall quality of koa, and generate superior seed sources for future koa production (SIP-2, SIP-3).

V. Land and Resource Description

Existing vegetation and cover types include sugarcane, desmodium, sleeping grass and other alien weed species. The property has no existing forest and the probability of fire is low since the fuel load in the area is kept to a minimum through intensive ranching and agricultural activities.

The soils on the property have been classified by the Natural Resource Conservation Service (NRCS) as Honoka'a soil series HsD and HTD soil types. The Honoka'a series consists of well-drained soils formed in volcanic ash. The surface layer is about six inches deep with a subsoil of about fifty-nine inches thick. Permeability is rapid, runoff is medium, and the erosion hazard is moderate. The aspect of the property is east northeast with slopes ranging from ten to twenty percent. HsD and HTD soil types are silty clay loam, with HTD occurring on the upper half of the property. The water holding capacity is very high, and there are no natural root restricting layers within 60 or more inches of the surface. These soils rarely dry to more than an inch or two below the surface because of uniformly distributed rainfall. In addition, the landowner has conducted soil analyses in five areas of the property. These tests have shown an average soil pH of 6.0 and deficiencies in calcium, nitrogen, phosphorus and magnesium.

Hawai'i County water is available at the site, and a large pond will be constructed and used for irrigation. There are no streams or significant stream courses on the property. There is evidence of a water carrying gully approximately 500 yards on the upper mid section of the property which appears to only collect water during the heaviest of storms.

There are no timber, wetland, historic, or cultural resources present on the property. Wild turkeys and pigs have been seen in the surrounding area. There has been no evidence of threatened and endangered plant or animal species on the property.

There are opportunities for recreational activities like mountain biking and horseback riding, however, no such activities exist at this time. The site offers panoramic ocean views that will be complemented with the splendor of a koa forest.

VI. Recommended Treatments and Practices

Approximately ten acres will be managed under Forest Stewardship guidelines. The remaining acres will be retained for residential and other agricultural activities. A detailed implementation plan by SIP code follows:

1. SIP-1 - Forest Stewardship Management Plan.

This management plan has been prepared and submitted by a professional natural resource planner and was developed in conjunction with the landowner. In the planning process, several meetings were held with the landowner, including a site visit. 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 and boundaries were located. Several experts were consulted and information regarding koa was researched (see Page 13). Two additional practices of the Steward Incentive Program have been identified as applicable to this 25 year management plan; these are reforestation and afforestation (SIP-2) and forest and agroforest improvement (SIP-3).

2. SIP-2 - Reforestation and Afforestation

The main objective under this practice is to plant ten acres of genetically superior koa for commercial timber. Genetically superior seed stock will be used in addition to intensive management to ensure a high growth rate of high quality, commercial size trees. Koa culture research is the leading edge in Hawai'i's koa industry, and the landowner would like to contribute to this important field. Therefore, the landowner in conjunction with the Hawai'i Agriculture Research Center will closely monitor and keep detailed records for the life of this project.

The first step in attaining this goal is securing a fence around the property to protect the trees from pigs, grazing animals and other unwanted visitors (see Figure 3). Currently the property is fenced along the southwest border and lower eastern border, and fencing will need to be installed to enclose the unprotected borders (see Figure 3). Five strands of 11 gauge smooth hog wire and 12.5 gauge galvanized barbed wire will be tightly strung and secured to wooden and steel posts. Posts will be spaced about ten feet apart, and set approximately eighteen inches into the soil and set three feet into the soil at the corners. Costs to install a fence around the property are outlined in Table 1 below.

Table 1 - Tree Protection Costs

Item	Units	Cost/Unit	Total Cost	Per Acre Cost
Labor	136 hours	10	1360	\$136
Post Hole Digger	2 days	65	130	13
Come-A-Long	2 days	20	40	4
12.5 Gauge Barb Wire	3,960 feet	0.0455	180	18
11 Gauge Smooth Wire	3,630 feet	0.3878	1408	141
Steel Gates	3 Gates	125	375	38
6' Steel Posts (T-133)	333 posts	3.45	1149	115
6' Wooden Posts	55 posts	10	550	55
Fasteners	1 box	100	100	10
Total Cost			\$5,292	\$529

The second step is to prepare the site for planting by clearing all undesirable plant species. Cattle will be temporarily introduced to the area to keep grass and weed cover to a minimum. In accordance with registered uses, directions on label, and all other applicable federal, state and local policies a minimum amount of Karmex and Roundup will be applied to eliminate remaining weeds. Contour lines will be identified for row preparation, trees will then be planted along these contours following the natural landscape to prevent soil run off and contour (See Figure 4 and Figure 5). Planting rows will be ripped and filled with a large bulldozer to breakup the clay hardpan. Soil amendments will then be added to the soil, organic will be used when possible to replenish soil nutrient loss. Site preparation costs are outlined in Table 2 and include independent contract services, labor and materials.

Table 2 - Site Preparation Costs

Item	Units	Cost/Unit	Total Cost	Per Acre Cost
Bulldozer & Operator	1 bulldozer	\$3,500	\$3,500	\$350
Roundup & Spreader	12 gallons	65	650	65
Karmex	8 lbs	5.75	46	5
Tractor Sprayer	1 sprayer	600	600	60
Contour ID Service	10 hours	50	500	50
Rock Phosphte	15000 lbs	0.17	2,475	248
Crushed Coral	15000 lbs	0.02	225	23
Dolomite	5000 lbs	0.10	490	49
Nitro 10-0-0	1500 lbs	0.579	869	87
Amendment Application	120 hrs	10	1200	120
Tractor Application	40 hrs	40	1600	160
Total Cost			\$12,155	\$1,215

The third step is to acquire genetically superior koa seeds with assistance from Wei Guo Sun of the Hawai'i Agriculture Research Center. Sun will help identify koa seed sources from trees that have exhibited the strongest genetic qualities and the fastest growth rates. These seeds will then be propagated and grown to dibble tube size. Approximately 27,000 trees will be planted on the property and 30,000 seeds will be collected and propagated to ensure the highest number of healthy seedlings for planting. The total cost to acquire the seedlings is estimated to be \$22,500 and includes costs for seed selection, collection and extraction (\$.50 each) and propagation (\$.25 each).

Fourth, seedlings will be planted on the site during the wettest time of the year (March - May) and irrigated in times of drought for the first two years. All seedlings will be planted on a weekly basis until all 10 acres have been planted. It is estimated that 3 people planting 500 trees per person per day, will take approximately one month to plant all the trees. Seedlings will be placed on a 3.5 ft. by 3 ft. and 6 ft. double row spacing or 3 ft. by 5 ft. single row spacing grid which, based on University of Hawai'i research, will minimize weed competition, encourage erect growth and reduce evaporation. It is estimated that it will cost \$3,800 to plant the entire ten acres. This figure is based on taking 330 hours (\$3,300) to plant the trees and \$500 for needed tools and equipment such as shovels, wheelbarrows, etc..

In addition, the trees will be fertilized six months after planting to ensure maximum growth and health. Fertilization thereafter will take place every twelve months through year four with appropriate levels of fertilizer depending on annual soil and foliage test results and tree vigor. It is estimated that it will take 120 hours for each fertilizer treatment after planing. A detail of fertilizer costs are outlined below in Table 3.

Table 3 - Fertilizer Costs per Treatment

Item	Units	Cost/Unit	Total Cost	Per Acre Cost
Fertilizer Application	120 hrs	\$10	\$1,200	\$120
Chicken Manure	15000 lbs	\$0.16	2,400	240
Total Cost			\$3,600	\$360

Controlling undesirable plant species will be conducted only as needed after planting through year four depending on weed growth. Weed control will be essential in the beginning years until full canopy has been reached to shade out competing plants. In accordance with directions on label and all other applicable federal, state and local policies, herbicides treatments of Fusalaide and Roundup will be used to reduce competition from both grass and broadleaf species and will be applied around saplings taking care not to come into direct contact with seedlings or saplings. It is estimated that it will take two hours to treat one acre in this manner, therefore a total of 20 hours. In addition, thinning of young trees will be conducted as needed to reduce competition from sickly and slower growing trees. Removal of young trees shall occur three times per year to achieve an optimal spacing of 5' by 10' by the end of year four. All trimmings will be left on the ground as a mulch to help retain moisture and reduce weed growth. It is estimated that it will take three hours to thin one acre in this manner, therefore a total of 30 hours (\$300) will be needed for each thinning.

3. SIP- 3 - Forest and Agroforest Improvement

The primary objective under this practice is to improve the quality of the koa plantation. Thinning of sickly, damaged, and slow growing trees will be conducted in year eight with assistance from a State Forester to achieve an optimal final spacing of 24' by 24'. Chemical treatments and other needed maintenance will also be applied as necessary to forestall the spread of fungi or insect pests and to improve the growing conditions of the trees. In addition, the landowner, with assistance from the Hawai'i Agriculture Research Center, will pay close attention to tree form and growth and will harvest seed from the best trees to obtain local, genetically superior seed sources for future reforestation and research efforts.

Trees will be harvested when they reach a diameter breast height (dbh) of 25 inches or greater and are assumed to have an average height of fifty feet at that time. It is estimated that twenty percent, or 760 trees will attain a dbh of 25 inches by year twenty, and the remaining trees will be harvested over a five year cycle. The potential harvest in years twenty to twenty-five is estimated to be 34 thousand board feet (mbf) per acre, making a total harvest of 342 mbf for the entire ten acres.

Based on 1995 stumpage fees for koa of \$1,000 and \$2,000 per mbf (\$1 and \$3 per board foot), it is estimated that total koa sales for the ten acres will fall between \$342,000 and \$1,026,000. However, it is reasonable to conclude that stumpage fees will be higher because there is a great potential for koa and demand will likely increase on account of its uniqueness, quality and Hawaiian origin.

It is estimated that total costs over the life of the plantation will be \$193,585 (See Table 4); therefore a net profit between \$148,415 and \$832,415 can be expected.

Table 4 - Other Costs

Expense Item	Total Cost	Per Acre Cost
General & Administrative	\$3,443	\$344
Irrigation	4000	400
Insurance	25000	2500
Lease Rent	12000	1200
Property Tax	12500	1250
State (4%) & Federal Taxes (15%)	64,980	6498
Miscellaneous Expenses (2% Operating)	1377	138
Operating Costs per Stewardship Plan	70285	7029
Total Cost	\$193,585	\$19,359

VII. Practice Implementation Schedule

Year 1 - 1998

Practice component and SIP #	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Site Preparation (SIP-2)	10 acres	1156	11,555	5,778	5,778
Planting (SIP-2)	10 acres	380	3,800	2,600	1,200
Seedling Acquisition (SIP-2)	30,000 seedlings	0.75	22,500	11,250	11,250
Fertilizer/Soil Amendments-1 Treatments (SIP-2)	10 acres	360	3,600	2,600	1,000
Weed/Moisture Control - 3 Treatments (SIP-2)	30 acres	125	3,750	2,250	1,500
Tree Establishment Protection (SIP-2)	10 acres	529	5,290	3,790	1,500
Total for Year 1 SIP Activities			\$50,495	\$28,268	\$22,228

Year 2 - 1999

Fertilizer/Soil Amendments-1 Treatments (SIP-2)	10 acres	228	2,280	1,280	1,000
Weed/Moisture Control - 3 Treatments (SIP-2)	30 acres	125	3,750	2,250	1,500
Total for Year 2 SIP Activities			\$6,030	\$3,530	\$2,500

Year 3 - 2000

Fertilizer/Soil Amendments-1 Treatments (SIP-2)	10 acres	228	2,280	1,280	1,000
Weed/Moisture Control - 3 Treatments (SIP-2)	30 acres	125	3,750	2,250	1,500
Total for Year 3 SIP Activities			\$6,030	\$3,530	\$2,500

Year 4 - 2001

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Fertilizer/Soil Amendments-1 Treatment (SIP-2)	10 acres	228	2,280	1,280	1,000
Weed/Moisture Control-3 Treatments (SIP-2)	30 acres	125	3,750	2,250	1,500
Total for Year 4 SIP Activities			\$6,030	\$3,530	\$2,500

Year 5 - 2002

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
No SIP Activity	0 acres	0	0	0	0
Total for Year 5 SIP Activities			\$0	\$0	\$0

Year 6 - 2003

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Maintenance as Needed - No Cost Share Activity	0 acres	0	0	0	0
Total for Year 6 SIP Activities			\$0	\$0	\$0

Year 7 - 2004

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Maintenance as Needed - No Cost Share Activity	0 acres	0	0	0	0
Total for Year 7 SIP Activities			\$0	\$0	\$0

Year 8 - 2005

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Non-Commercial Thinning (SIP-3)	10 acres	170	1,700	850	850
Total for Year 8 SIP Activities			\$1,700	\$850	\$850

Year 9 - 2006

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Maintenance as Needed - No Cost Share Activity	0 acres	0	0	0	0
Total for Year 9 SIP Activities			\$0	\$0	\$0

Year 10 - 2007

Practice Component and SIP Number	Units to be Accomplished	Cost per Unit	Total Cost	Landowner Share	State Share
Maintenance as Needed - No Cost Share Activity	0 acres	0	0	0	0
Total for Year 10 SIP Activities			\$0	\$0	\$0

VIII. Budget Summary

Year	State Share	Landowner Share	Total
1998	\$24,478.00*	\$29,019.00*	\$53,497.00*
1999	\$2,500.00	\$3,530.00	\$6,030.00
2000	\$2,500.00	\$3,530.00	\$6,030.00
2001	\$2,500.00	\$3,530.00	\$6,030.00
2002			
2003			
2004			
2005	\$850.00	\$850.00	\$1,700
2006			
2007			
TOTALs	\$32,828.00	\$40,459.00	\$73,287.00

* Budget summary totals for 1998 include the State and Landowner shares of cost of developing the Forest Stewardship Management Plan (SIP-1), which are \$2,250.00 and \$750.00 respectively. These costs are not included in the 1998 budget that is itemized on page 6.

Attachments

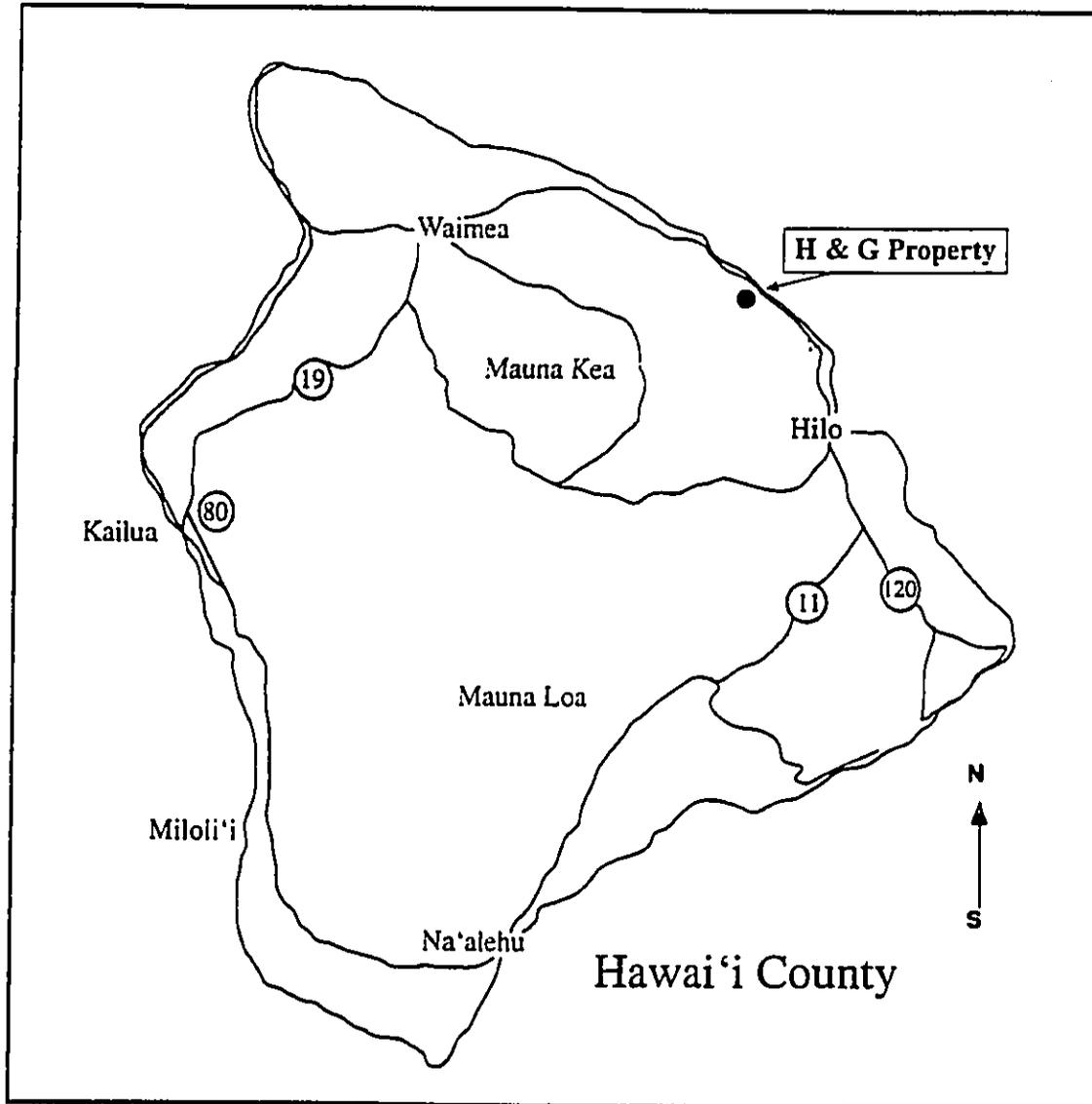
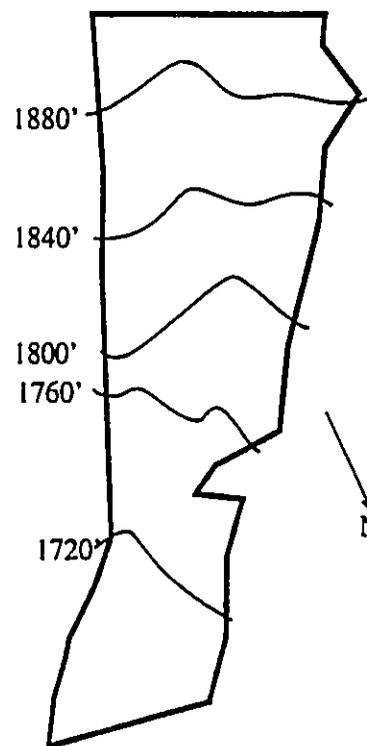
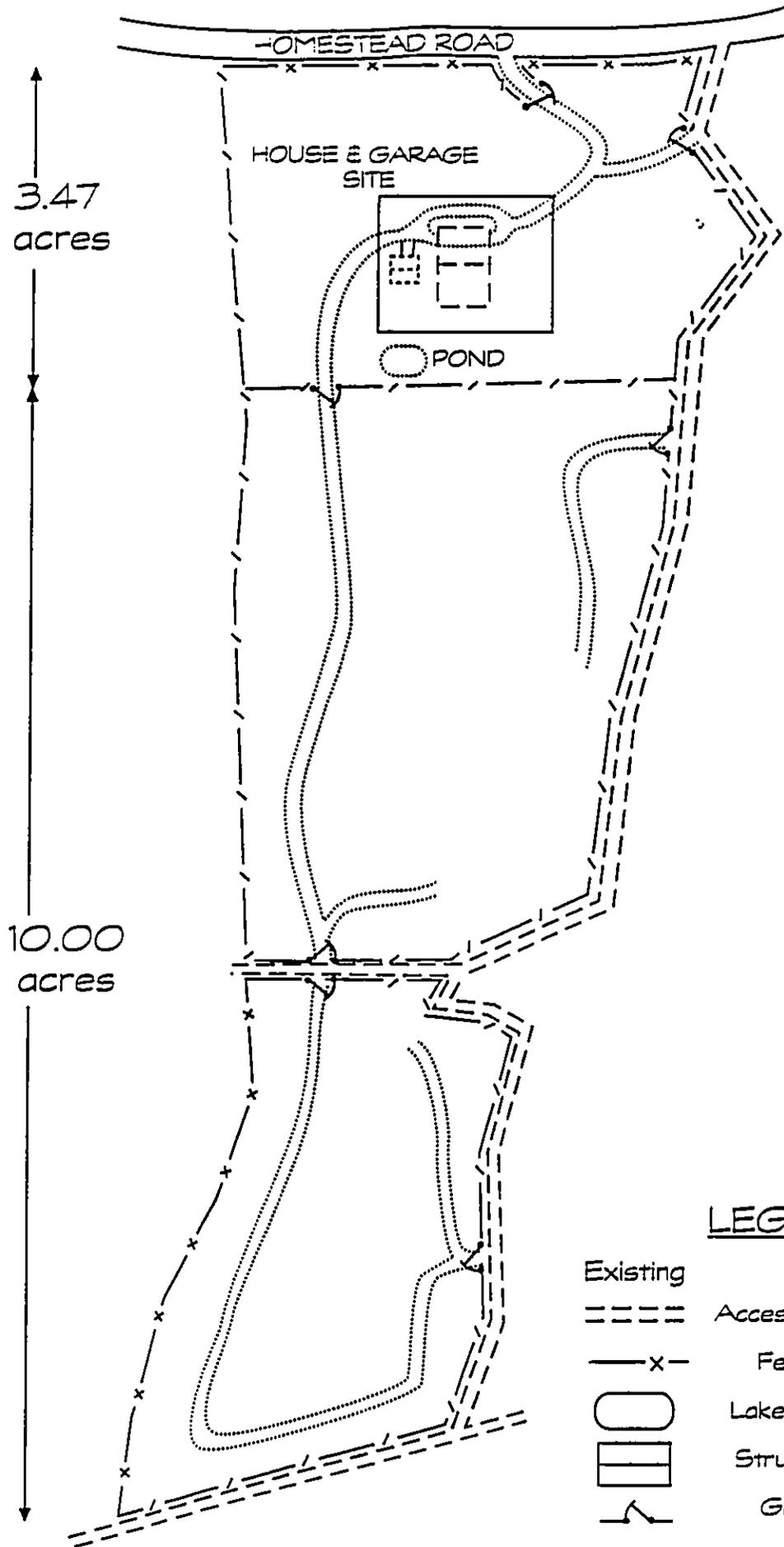


Figure 1
Location Map

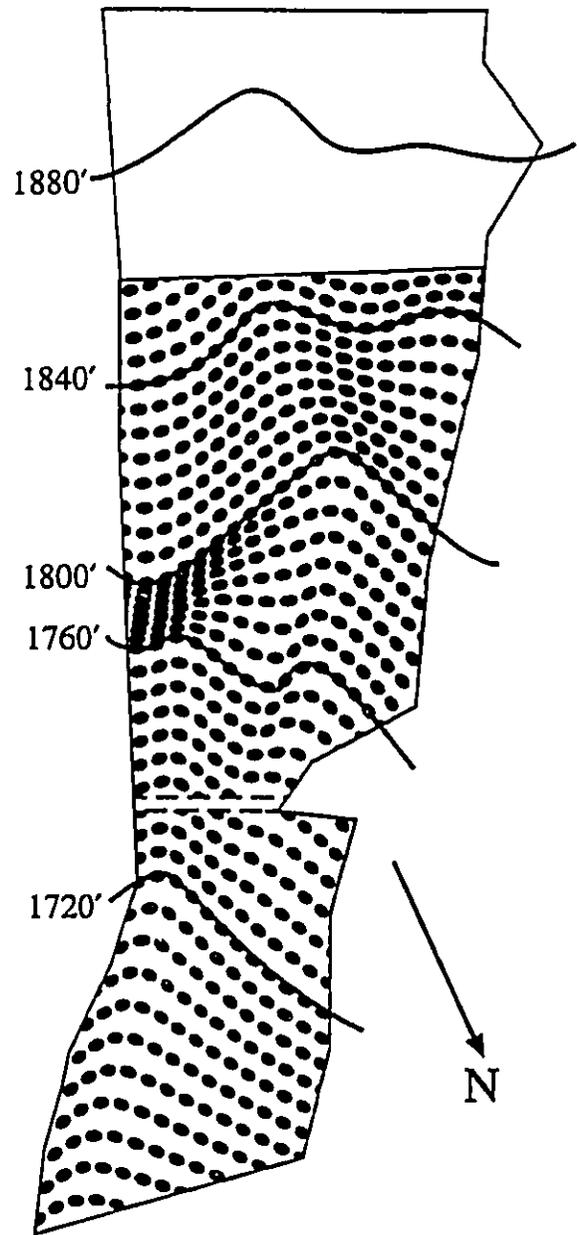
Figure 2
Topography Map



**Figure 3
Project/Site Map**



**Figure 4
Planting Layout**



LEGEND

Existing		Planned
----	Access Road	-----
-x-	Fence	-/-
○	Lake/Pond	○
▭	Structure	▭
⌒	Gate	⌒

DOCUMENT CAPTURED AS RECEIVED



Sources of Assistance and Information

- Agricultural Diagnostic Service Center, Personal Comm., CTAHR, Univ. of Hawai'i, 1997.
- Anon., *An Analysis of Native Forest Management in Hawai'i With Emphasis on Koa Forests*, Dept. of Land and Natural Resources-Dept. of Forestry and Wildlife, December 1984.
- Brewbaker, James L. and Wei Guo Sun, *Prospects for Genetic Improvement of Koa in Hawai'i*, Unpublished treatise, Dept. of Horticulture, Univ. of Hawai'i, 1995.
- Dudley, Nick, Personal Comm., Hawai'i Agriculture Research Center, 1997.
- Imoto, Roger, Service Forester, Personal Comm., Dept. of Land and Natural Resources - Dept. of Forestry and Wildlife, Hilo, Hawai'i, 1997
- 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.
- Mikami, George, et. al., Conservation Planner, Personal Comm., US Dept. of Agriculture-Natural Resource Conservation Service, Hilo, Hawai'i, 1997.
- Sipes, Brent S., Personal Comm., Dept. of Plant Pathology, Cooperative Extension Service, CTAHR, Univ. of Hawai'i, 1997.
- Sun, Wei Guo, Personal Comm., Hawai'i Agriculture Research Center, 1997.
- Skolmen, Roger, *Where Koa Can Be Grown*, Dept. of Land and Natural Resource - US Dept. of Agriculture, Hilo, Hawai'i, 1986.
- Ward, Debbie, et. al., Personal Comm., Cooperative Extension Service, CTAHR, Univ. of Hawai'i, 1997.

PLANTING SCHEDULE

1 person plants = 500 trees per day

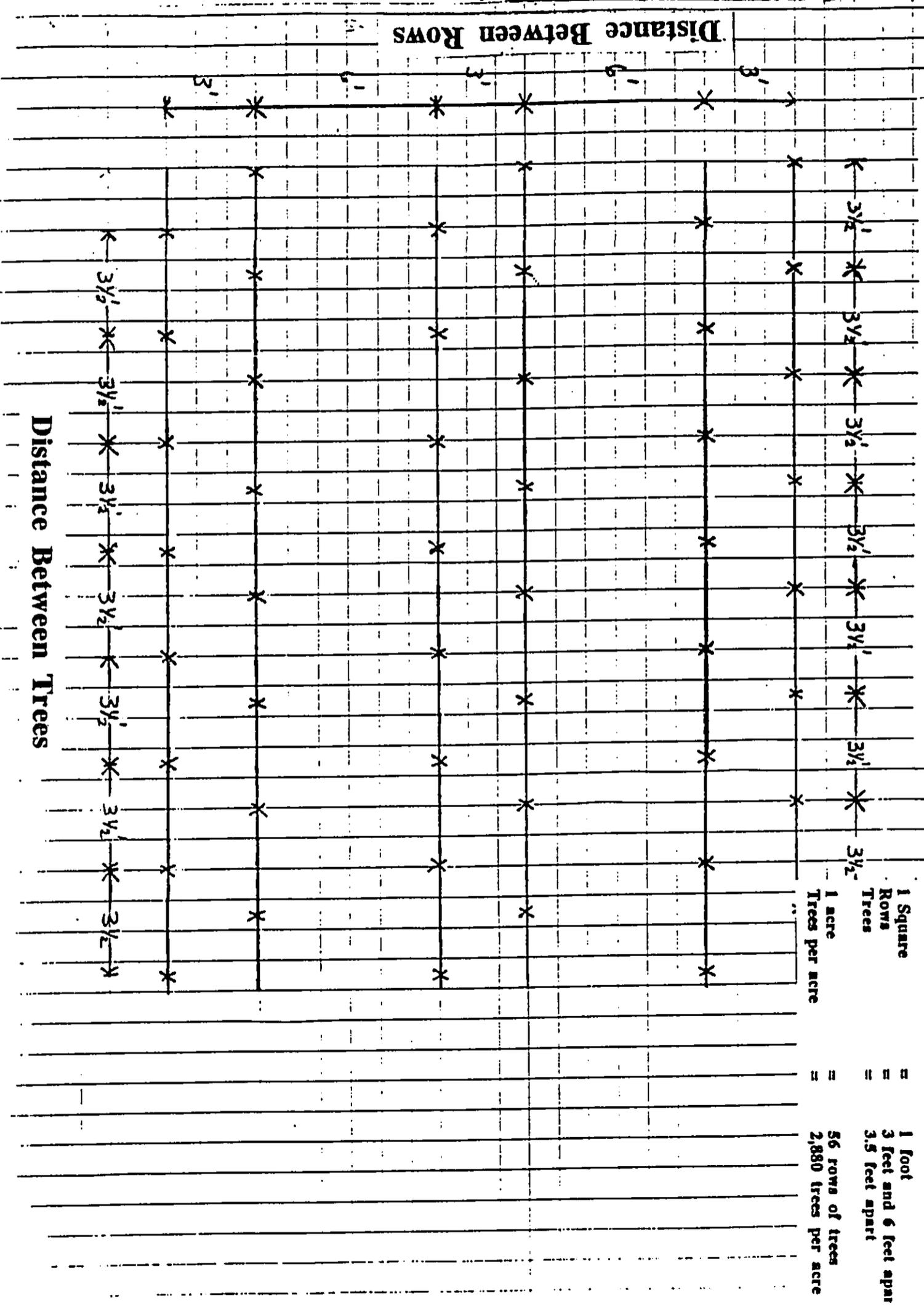
3 person team = 1500 trees per day

1 week (5 days) = 7500 trees per week (3 persons)

Estimate planting hours of 27,000 trees = 330 hours or
approx. 1 month

TREE SPACING = 3.5' X 3' & 6' double rows

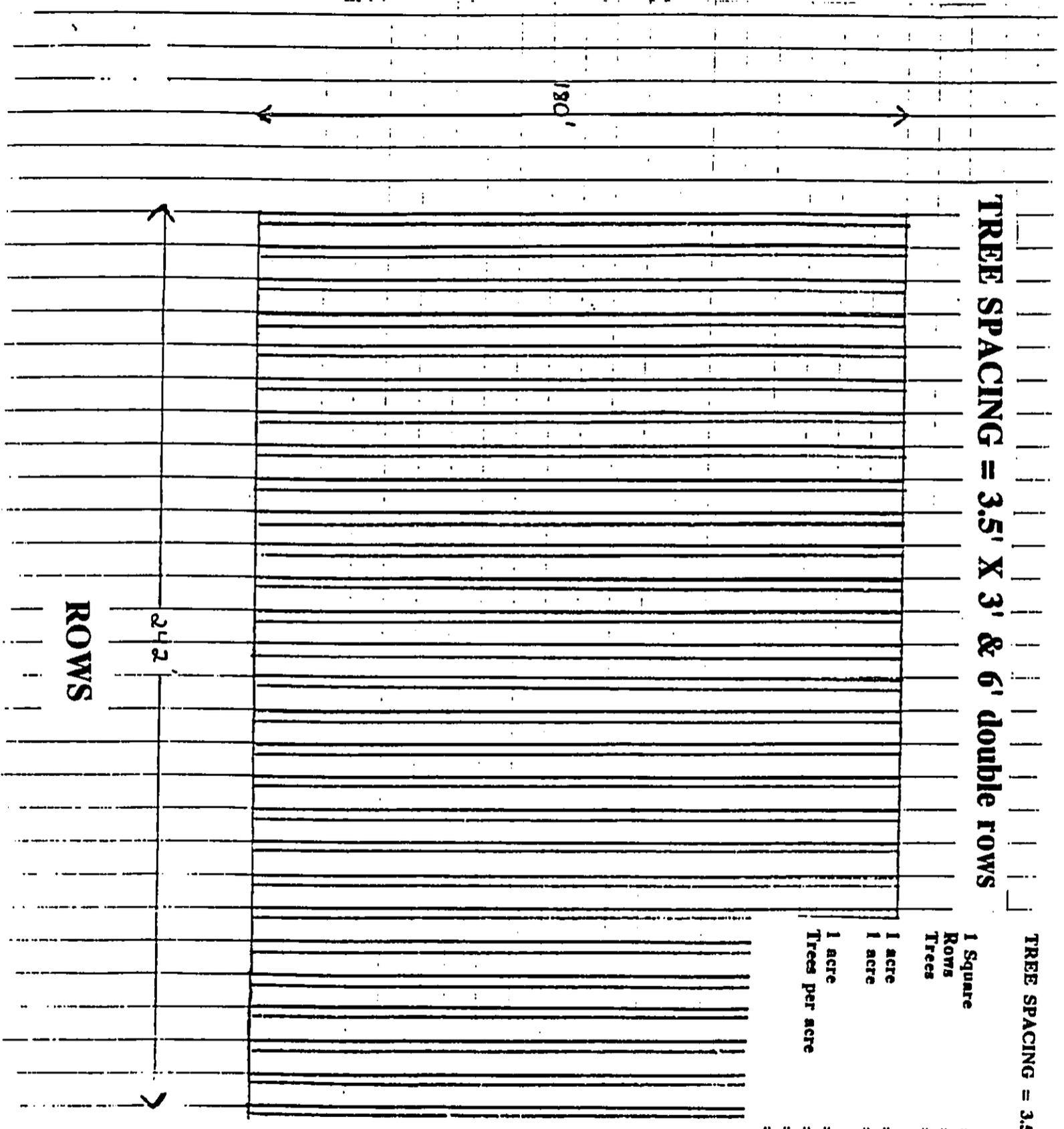
TREE SPACING = 3.5' X 3' & 6' double rows



1 Square
Rows
Trees
= 1 foot
3 feet and 6 feet apart
3.5 feet apart
56 rows of trees
2,880 trees per acre

TREE SPACING = 3.5' X 3' & 6' double rows

TREE SPACING = 3.5' X 3' & 6' double rows



1 Square
Rows
Trees = 9 feet
3 feet and 6 feet apart
3.5 feet apart

1 acre = 43,560 square feet
1 acre = 180' x 242'

1 acre = 56 rows of trees
Trees per acre = 56 rows x 180' = 10,080
10,080' / 3' = 2,880 trees per acre

ROWS

242'

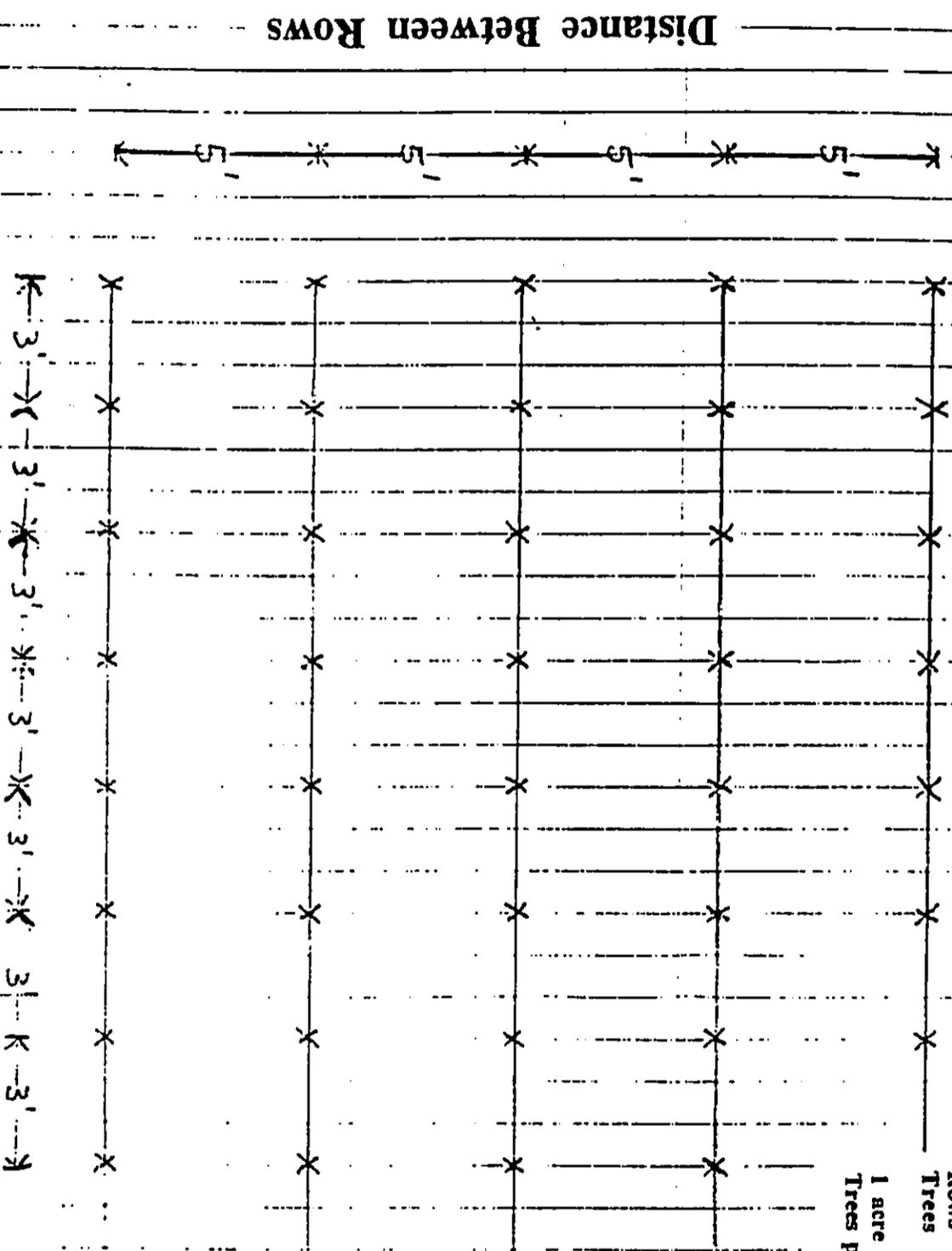
180'

TREE SPACING = 3' X 5' single rows

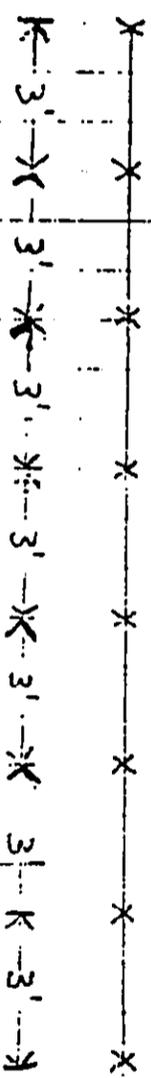
TREE SPACING = 3' X 5' single rows

1 Square Rows Trees = 1 foot 5 feet apart 3 feet apart

1 acre Trees per acre = 4356 rows of trees 2,904 trees per acre

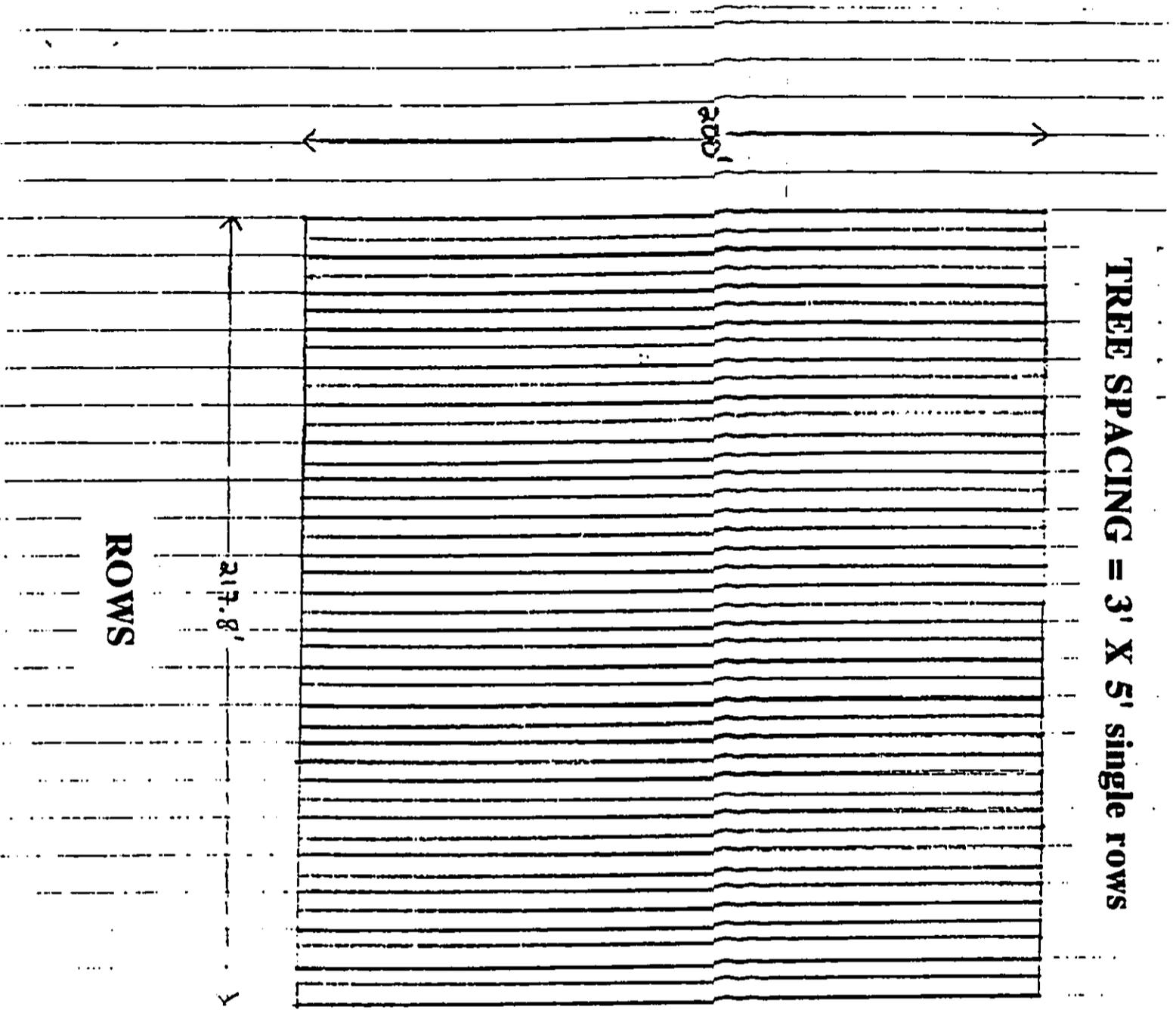


Distance Between Trees



Distance Between Rows

TREE SPACING = 3' X 5' single rows



TREE SPACING = 3' X 5' single rows

1 Square	=	10 feet
Rows	=	5 feet apart
Trees	=	3 feet apart
1 acre	=	43,560 square feet
1 acre	=	200' x 217.8'
1 acre	=	43.56 rows of trees
Trees per acre	=	43.56 rows x 200' = 8400
	=	8400' / 3'
	=	2,904 trees per acre

APPENDIX A

MAPS

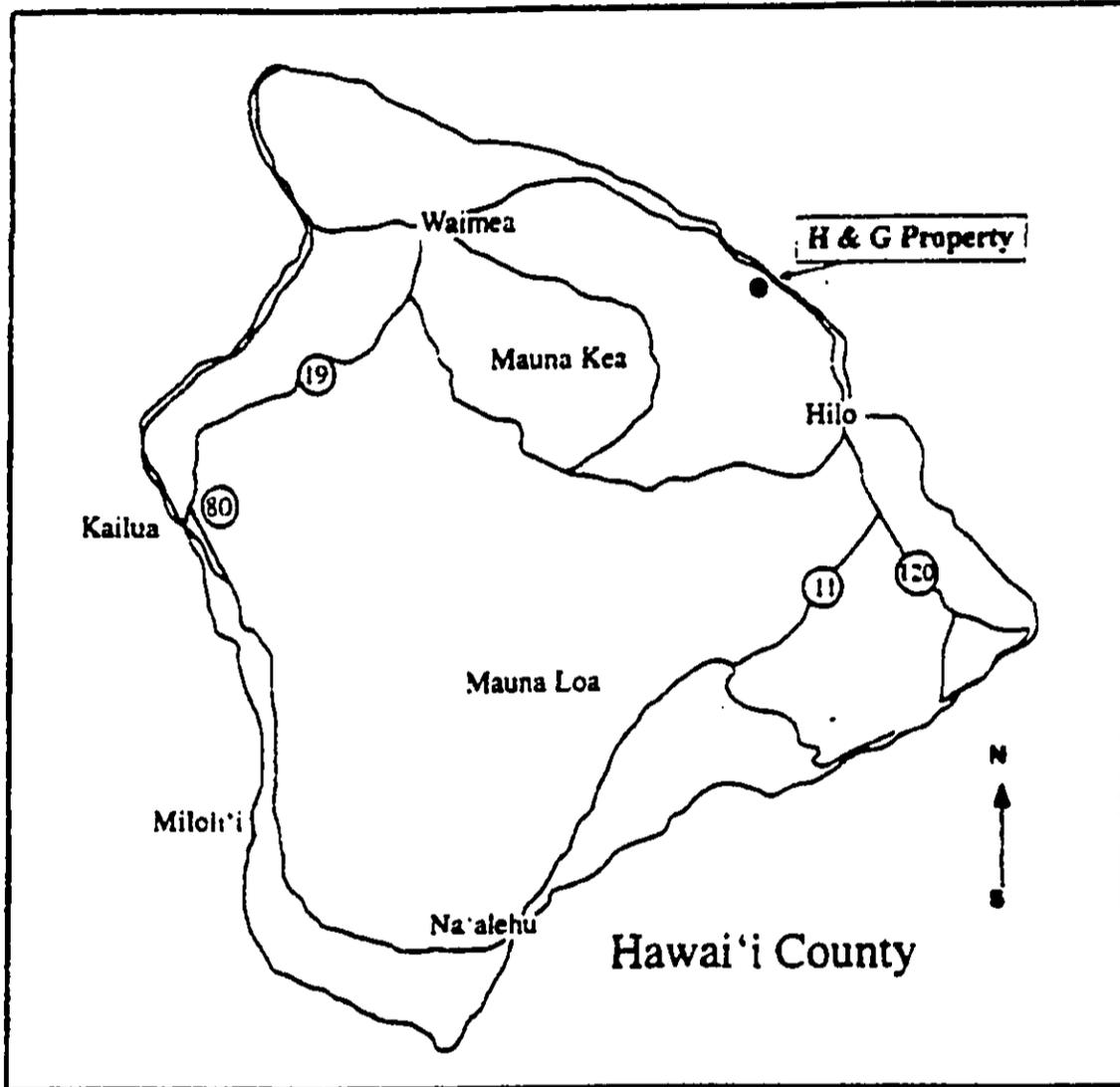


Figure 1
Location Map

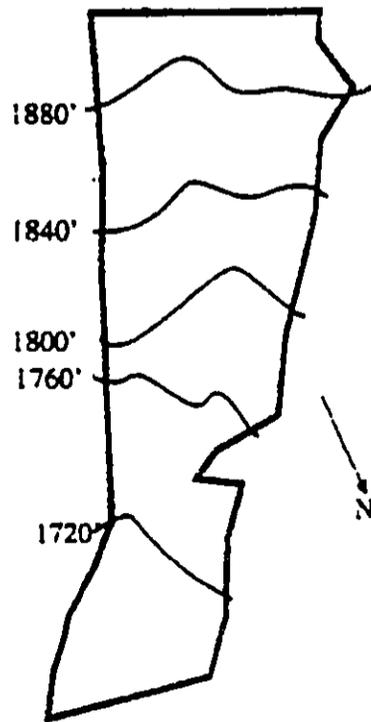
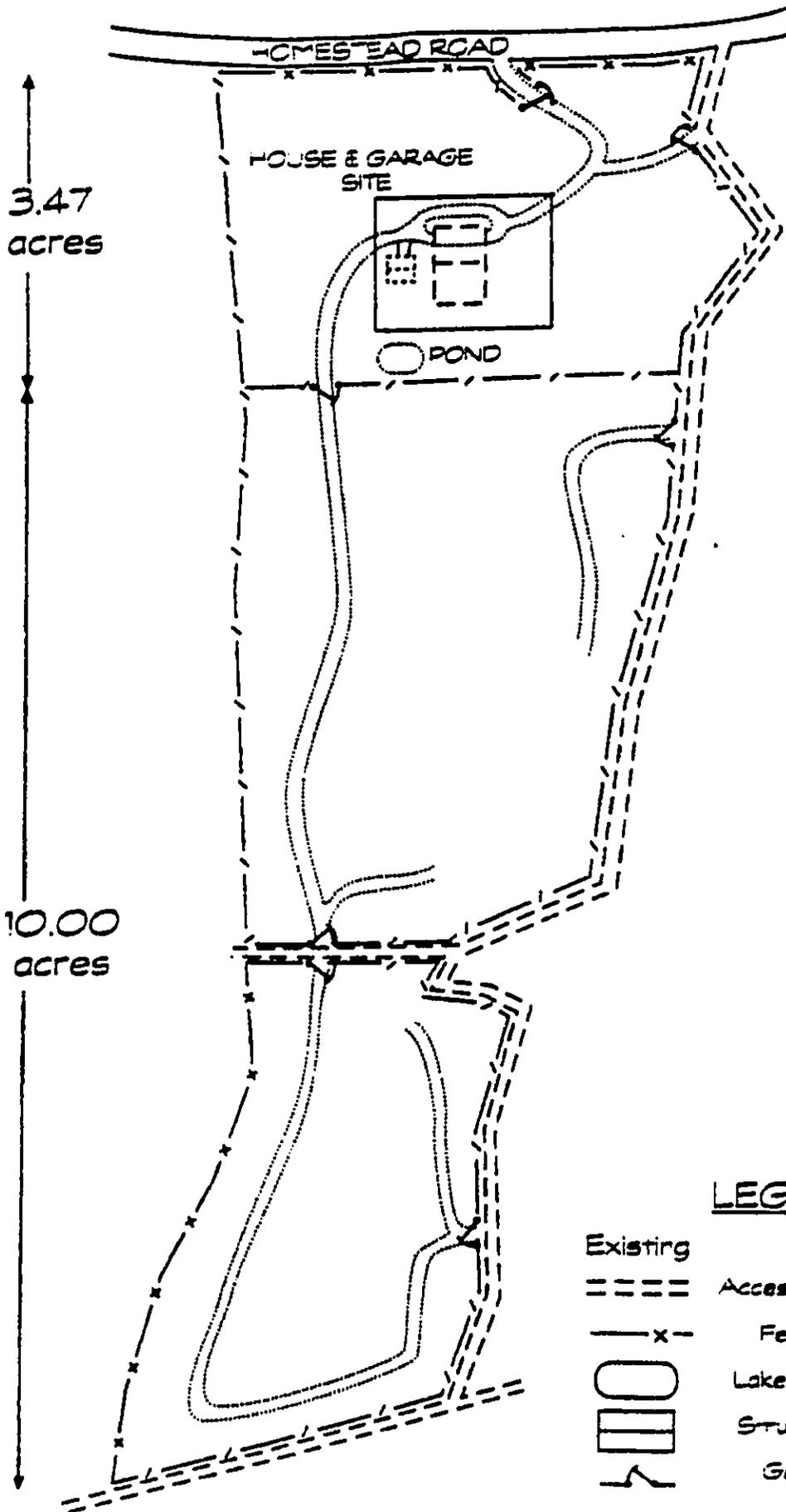
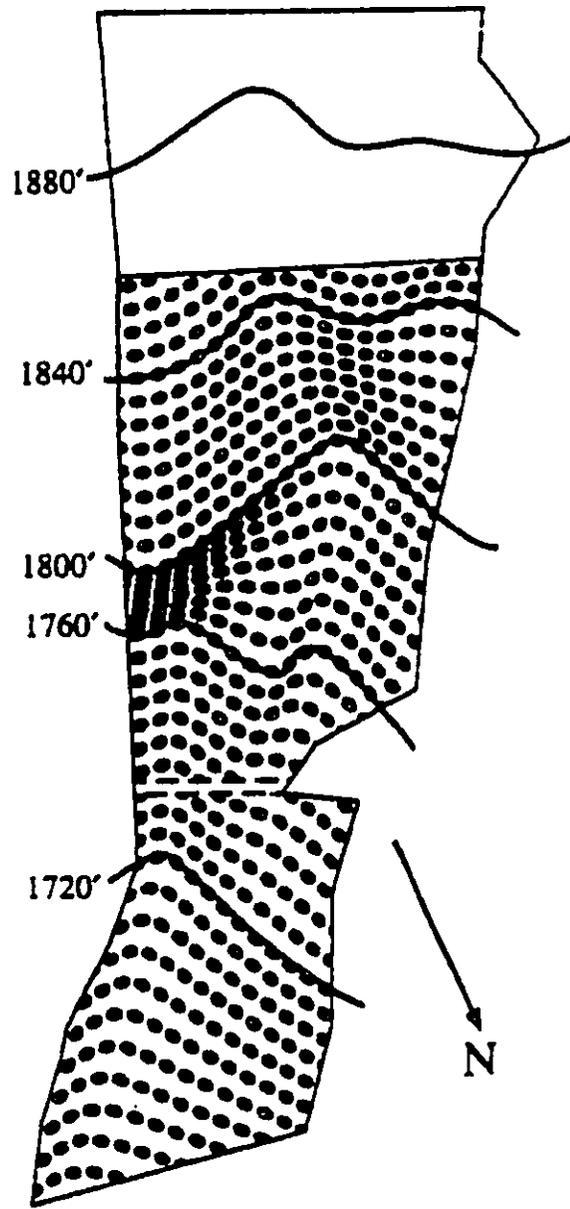


Figure 2
Topography Map

**Figure 3
Project/Site Map**

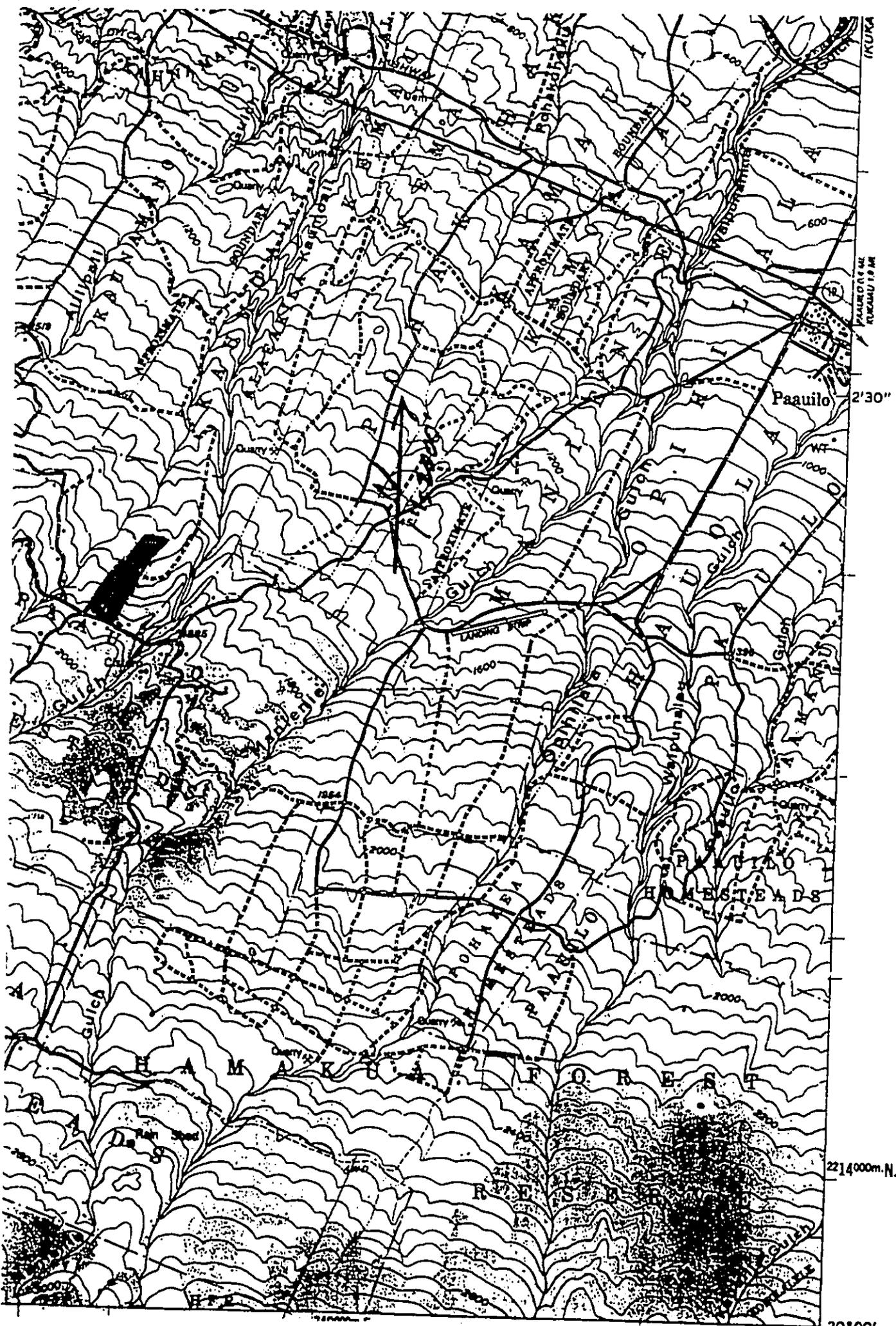


**Figure 4
Planting Layout**



LEGEND

Existing		Planned
====	Access Road	====
-x-	Fence	-x-
○	Lake/Pond	○
□	Structure	□
∩	Gate	∩



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APPENDIX B

Comments Received From Reviewers of
Draft Environmental Assessment

BENJAMIN J. CAYETANO
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

236 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 588-4185
FACSIMILE (808) 588-4185

March 10, 1998

Ms. Gwendolyn Hill
H & G Koa Enterprises
P.O. Box 182
Pāhoa, Hawai'i 96778

Dear Ms. Hill:

Having reviewed the Draft Environmental Assessment (DEA) for the State of Hawai'i Forest Stewardship Program, Acacia Koa Farm, Pa'auilo, Hamakua, Hawai'i, Tax Map Key 3rd Div. 4-13-014-006, we submit the following comments for your response.

- 1) Under Section 2, Environmental Setting, please discuss the location of any drinking water wells and surface water bodies in the region especially areas hydrologically downgradient of the project site.
- 2) In Section 3.1, please discuss in detail any short or long term impacts of earth moving activities (from bulldozing and other long term agricultural activities).
- 3) In Section 3.2, the DEA notes that "[a]ll chemical applications will be in accordance with label restrictions, as required by Federal and State laws." Please discuss in detail, the direct, cumulative and indirect effects of fertilizer and herbicide application on groundwater, surface water, nearshore water quality and flora and fauna.
- 4) The EIS rules require that all state or county funds involved in the project be disclosed, including any federal funds flowing through the state or county. Please disclose the amount of funding along with the sources of such funding.
- 5) Please discuss the potential for endangered or threatened species (e.g. birds, and other organisms) using the proposed project as new habitat.
- 6) After harvesting, the duration required for stump removal is a concern. Non-removal of stumps and other impacts may occur in the post-harvest period as well. Please discuss the impacts of harvesting, and mitigation measures planned to reduce these impacts. Also, please discuss the impacts of the post-harvest remains, and what will be done to mitigate these effects. Impacts include, but are not limited to:
 - * Fire hazards during growth, harvest and post-harvest periods.
 - * Noise impacts from the cutting equipment.

Ms. Gwendolyn Hill
H & G Koa Enterprises
March 10, 1998
Page 2 of 2

- * Air quality impacts from burning.
 - * Traffic impacts from logging trucks during the harvest period.
 - * Lack of availability of this land in the post-harvest period.
 - * Effect on endangered or threatened species that may have become established on the site during the life of the project.
- 6) Please consult with the Office of Hawaiian Affairs to determine if there are nearby cultural resources which may be impacted by the proposed project.
- 7) Please consult with the County of Hawai'i Planning Department (required by Section 11-200-9(b)(1), Hawai'i Administrative Rules).
- 8) In Chapter 10, please discuss the thirteen significance criteria contained in Section 11-200-12 of the Hawai'i Administrative Rules (approved on August 31, 1996). A sample discussion from another environmental assessment is attached for your information.

Please submit a copy of this letter, any other comment letters and your responses to the Department of Land and Natural Resources, Division of Forestry and Wildlife, for their inclusion in the final environmental assessment for this project. If there are any questions, please call Leslie Segundo of my staff at 586-4185. Thank you for the opportunity to comment.

Sincerely,


GARY GILL

Attachments

c: Courtney A. Murrill, CAM Resource Management
→ Nelson Ayers, DLNR-DOFAW



University of Hawai'i at Mānoa

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

March 10, 1998
RE:00169

Ms. Gwendolyn Hill
H & G Koa Enterprises
P.O. Box 182
Pahoa, Hawaii 96778

Dear Ms. Hill:

Draft Environmental Assessment
Hamakua Forest Stewardship Project
Hamakua, Hawaii

H & G Enterprises plans to establish a 10-acre Acacia koa plantation on former pasture land on the Hamakua Coast of the Big Island. The applicant intends to establish a genetically superior stand of Acacia koa timber, to create a genetically superior seed source, and to develop silviculture techniques that increase growth rates and timber quality. Prior to planting, the applicant will fence the site to exclude grazing animals and apply herbicide to control weeds. The trees will be harvested when they reach a diameter at breast height (dbh) of 25 inches or when they are approximately 25 years old.

We reviewed this draft Environmental Assessment (EA) with the assistance of Tracie Menard, Geography; and Paul Berkowitz of the Environmental Center.

Sustainable Forestry Management

In general, our reviewers strongly support the proposed Acacia koa plantation; however, the Environmental Assessment for the project needs to include more detail on several points. Our reviewers noted that many of the standard criteria and indicators for sustainable management of forests are relevant to the proposed project. First, the EA needs to address the age class, successional stage, genetic diversity, and productive capacity of the forestry. For instance, will all the trees be harvested at approximately the same time? Has a schedule for future planting been established? Second, the EA should discuss various elements of the forest ecosystem, such as insects, nutrients, disease, and fire. Will the Acacia koa forest have an understory? Third, the document needs to provide more information on the conservation of soil and water resources, including soil erosion, soil chemistry, and the potential for polluted runoff. What pesticides, herbicides, and fertilizers will be applied, and how stable and toxic are these products? Where is the nearest stream? What are the steepest slopes in the 10-acre project area? Have erosion studies

Ms. Gwendolyn Hill
March 10, 1997
Page 2

been conducted for major rainfall events during various stages of the project, especially after a significant harvest?

Provisions to Guarantee Harvest

In any long-term project such as the proposed H & G Enterprises plan, the investor faces some uncertainty on the return of the initial investment. For the proposed Acacia koa farm, what provisions have been taken to ensure that the applicant will be able to harvest trees after 25 years? For instance, suppose an endangered bird species colonizes the forest after 20 years. Then at the time of scheduled harvest, the applicant may have difficulty justifying the destruction of endangered species habitat. Has this issue been considered, and what provisions, if any, have been taken to avoid such a problem? The document should note recent amendments to the State Endangered Species Act which provide for preparation of a Habitat Conservation Plan through which some of these questions may be addressed.

Miscellaneous Issues

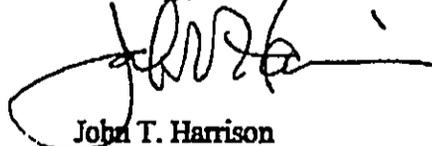
In addition to the above issues, our reviewers noted a few miscellaneous concerns. In the attachment section which shows annual costs for the project, why is "maintenance as needed" assigned a cost of zero? Presumably some cost will be associated with such maintenance. Also, the tree planting schedules seem optimistic in the assumption that one person can plant 500 trees in a day. Finally, Figure 3 should be improved by using less ambiguous map symbols and including a bar scale to indicate distance.

Conclusion

In short, we support the project but would like to see more information in the Environmental Assessment, especially related to sustainable forestry practices. To make the document adequate and give the public a fair chance to review the project, the above concerns should be addressed in the final EA.

Thank you for the opportunity to comment on this draft EA.

Sincerely,



John T. Harrison
Environmental Coordinator

Ms. Gwendolyn Hill
March 10, 1997
Page 3

cc: OEQC
Roger Fujioka
Trac Menard
Nelson Ayers
Courtney Murrill
Paul Berkowitz

APPENDIX C

Responses to Comments

Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813
Phone (808) 587-4174 Facsimile (808) 587-0160

March 19, 1998

Mr. Richard Stook
Office of Hawaiian Affairs
Land and Natural Resource Division
711 Kapiolani Blvd. Ste. # 500
Honolulu, Hawaii 96813

Dear Mr. Stook,

We have been asked by the Office of Environmental Quality Control (OEQC) to consult with your office regarding the enclosed draft Environmental Assessment. OEQC wants to confirm that the project will not negatively impact any cultural resources.

H & G Koa Enterprises, under the direction of Ms. Gwendolyn Hill has requested Forest Stewardship Program funding assistance to establish a 10-acre plantation of Acacia Koa on former pasture land near Pa'auilo on the Hamakua Coast of the Big Island.

Please review the enclosed draft Environmental Assessment and comment at your earliest convenience. Should you have any questions, please contact either myself at 587-4174 or Nelson Ayers at 587-4175.

Thank you for your assistance.

Sincerely,



Karl R. Dalla Rosa
Forest Stewardship Coordinator

cc: Gwendolyn Hill
Nelson Ayers



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

March 09, 1998

Ms. Gwendolyn Hill
H & G Koa Enterprises
P.O. Box 182
Pahoa, HI 96778

Doc. EIS Permit-156

Subject: Draft Environmental Assessment (DEA) for The State of Hawaii Forest Stewardship Program, Acacia Koa Farm, Paauilo, Hamakua, Island of Hawaii

Dear Ms. Hill:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for The State of Hawaii Forest Stewardship Program, Acacia Koa Farm, Paauilo, Hamakua, Island of Hawaii. The applicant in conjunction with the State of Hawaii is proposing to implement a program to produce 10 acres of koa for commercial timber on private land. The intent is to develop technology needed to successfully grow koa in the Hamakua area.

The Office of Hawaiian Affairs (OHA) has no concerns at this time regarding the proposed forest research program. The project itself brings no adverse effects to either the overall environment or nearby flora and fauna resources. In recent times, the area has been under sugarcane and coffee production and contains no archaeological resources.

Although the statement is quite appealing, OHA disagrees with the applicant's contention that "If this Koa Project and State Stewardship Program is not implemented, the downward trend of the depletion of koa will continue." (see page 10 of DEA).

Letter to Ms. Gwendolyn Hill
March 09, 1998
Page 2

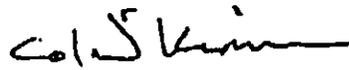
Depletion of koa reserves is an endemic process in Hawaii which has been exacerbated by economic hardship and inefficient implementation of mechanisms protecting forest resources. Research on koa will provide the technology to grow koa but will unlikely stop depletion. Creating new job pools and expanding existing ones, educating people on the pitfalls of forest depletion, and enforcing regulations on the preservation of forest resources are likely to curb the need to rely on forest gathering as a source of income.

Please contact Colin Kippen (594-1938), LNR Officer, should you have any questions on this matter.

Sincerely yours,



Randall Ogata
Administrator



Colin Kippen
Officer,
Land and Natural
Resources Division

cc: Board of Trustees
CAC, Island of Hawaii

Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325, Honolulu, Hawaii 96813
Phone (808) 587-4174 Facsimile (808) 587-0160

March 19, 1998

Ms. Virginia Goldstein
Department of Planning
County of Hawaii
25 Aupuni Street, Ste. #109
Hilo, Hawaii 96720-4252

Dear Ms. Goldstein,

We have been asked by the Office of Environmental Quality Control (OEQC) to consult with your office regarding the enclosed draft Environmental Assessment.

H & G Koa Enterprises, under the direction of Ms. Gwendolyn Hill has requested Forest Stewardship Program funding assistance to establish a 10-acre plantation of Acacia Koa on former pasture land near Pa'auilo on the Hamakua Coast of the Big Island.

Please review the enclosed draft Environmental Assessment and comment at your earliest convenience. Should you have any questions, please contact either myself at 587-4174 or Nelson Ayers at 587-4175.

Thank you for your assistance.

Sincerely,



Karl R. Dalla Rosa
Forest Stewardship Coordinator

cc: Gwendolyn Hill
Nelson Ayers

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

April 3, 1998

Mr. Karl R. Dalla Rosa
Forest Stewardship Coordinator
Division of Forestry & Wildlife
1151 Punchbowl Street, Room 325
Honolulu, HI 96813

Dear Mr. Dalla Rosa:

Preliminary Draft Environmental Assessment for the
State of Hawaii Forest Stewardship Program-Acacia Koa Farm
TMK: 4-3-14: 6; Paauilo, Hamakua, Hawaii

Thank you for your letter dated March 19, 1998, requesting our review of the above-described draft environmental assessment. We have completed our review and have the following comments to offer:

1. The tax map key number for the subject property as listed on the cover page and on Page 3 under Technical Description, is incorrect. The correct tax map key number is (3) 4-3-14: 6.
2. Page 7, Section 2.2.2 Adjacent Land Uses - This section should be clarified. The County of Hawaii General Plan Land Use Pattern Allocation Guide (LUPAG) map designates the subject area for Intensive and Extensive Agricultural uses. The State Land Use Designation for the subject property is "Agricultural". The property is zoned Agricultural-5 acres (A-5a) by the County of Hawaii. The proposed koa forest stewardship program is consistent with uses permitted by these land use designations.

Mr. Karl R. Dalla Rosa
Page 2
April 3, 1998

We will reserve further comment pending our review of the draft and final environmental assessments. Please contact Daryn Arai of this office should you have any questions.

Sincerely,



VIRGINIA GOLDSTEIN
Planning Director

DSA:jkg
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All other comments are addressed in the text of the final Environmental Assessment except for question #4 of the letter from OEQC of March 10, 1998.

H & G Koa will receive a sum total of \$32,828.00 during state fiscal years 1998, 1999, 2000, 2001 and 2005. Funding will be provided in the form of partial cost-share reimbursements for the completion of approved Forest Stewardship Management activities.

The source of funding is the Forest Stewardship Fund, established by Chapter 195F-4, HRS.

Claron
Island