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JAN 23 2016

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GOVERNOR OF HAWAII

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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 11, 2016

Director Scott Glenn
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment and Anticipated FONSI for The Black Rhinoceros Foundation Forest Stewardship Project and Management Plan, TMK (3) 9-3-003:073, Ka'ū District, Island of Hawai'i.

Dear Director Glenn,

The State of Hawaii Department of Land and Natural Resources is submitting the draft environmental assessment (DEA) for the Black Rhinoceros Foundation Forest Stewardship Project and Management Plan, TMK (3) 9-3-003:073, Ka'ū District, Island of Hawai'i, with an anticipated finding of no significant impact (FONSI). Please publish notice of availability for the DEA for this project in the next available edition of the Environmental Notice.

Enclosed please find a completed OEQC publication form; one paper copy of the DEA; and a CD containing the .pdf file for the DEA, a word file with the OEQC Environmental Notice Publication Form with the DEA summary information.

Please contact Irene Sprecher at (808) 587-4167 or by email at Irene.M.Sprecher@hawaii.gov for questions or clarification.

Sincerely,

Suzanne D. Case
Chairperson

Enclosures

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

July 2015 Revision

APPLICANT ACTION SECTION 343-5(E), HRS PUBLICATION FORM

Project Name: The Black Rhinoceros Foundation Forest Stewardship Project and Management Plan
HRS §343-5 Trigger(s): Use of State funds
Island: Hawai'i
District: Ka'ū
TMK: (3) 9-3-003:073
Permits: Board of Land and Natural Resources approval, County grading and grubbing
Approving Agency: Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, HI 96813

Applicant: Jelle Boersma
17 S. Cloudstone Dr.
Santa Fe, NM 87501

Consultant: John Pipan
44-317 Pua Olena St
Honokaa, HI 96727

Status (check one only):

_x_DEA-AFNSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.

__FEA-FONSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__FEA-EISPN — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.

__Act 172-12 EISPN — Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

__DEIS — The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

__FEIS — The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__ Section 11-200-23 Determination — The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.

__Section 11-200-27 Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

__Withdrawal (explain)

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

The goal of The Black Rhinoceros Foundation is to establish a thriving mixed species forest on the 190 acre agricultural property, maintaining a sustainable yield of valuable forest products, while preserving cultural sites within, and the health and function of the Puueo Ahupuaa and the South Point Watershed. We plan to establish primarily indigenous and endemic native Hawaiian trees to the site. A smaller number (approximately 20% of the total plantings) of introduced hardwood timber trees will increase the planting diversity, provide wildlife habitat and continued productivity for the project. Eventually, estimated at 30 or more years, trees will be selectively harvested and regenerated to support the goals of The Black Rhinoceros Foundation, a 501(c)(3) non-profit, and to continue management of the property as a working forest.

Draft Environmental Assessment

The Black Rhinoceros Foundation Forest Stewardship Project

Applicants:
John Pipan
44-317 Pua Olena St
Honokaa, HI 96727

Jelle Boersma
17 S. Cloudstone Dr.
Santa Fe, NM 87501

Approving Agency:
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, HI 96813

Requirement for EA:
Seeking cost-share funds from the State of Hawaii in the form of a Forest Stewardship Program grant agreement for establishment of an agroforestry and timber project in which harvesting of timber trees will be no earlier than 30 years after planting.

Anticipated Determination:
Finding of No Significant Impact (FONSI) is anticipated.

Agencies and Individuals Consulted:
USDA Natural Resources Conservation Service, Hilo
Department of Land and Natural Resources, Division of Forestry and Wildlife
University of Hawaii CTAHR, Agricultural Diagnostic Service Center
University of Hawaii NREM
Hawaii County Planning Department
Neighboring Property Owners:
- Steve Brorson
- George Pitts

Project Location: Kau District, Hawaii Island
Acreage: 190 acres
Tax Map Keys: (3) 9-3-003:073
Land Use District: Agriculture (State, County)

Table of Contents:

I. Summary

The goal of The Black Rhinoceros Foundation is to establish a thriving mixed species forest on the 190 acre agricultural property, maintaining a sustainable yield of valuable forest products, while preserving cultural sites within, and the health and function of the Puueo Ahupuaa and the South Point Watershed. We plan to establish primarily indigenous and endemic native Hawaiian trees to the site. A smaller number (approximately 20% of the total plantings) of introduced hardwood timber trees will increase the planting diversity, provide wildlife habitat and continued productivity for the project. Eventually, estimated at 30 or more years, trees will be selectively harvested and regenerated to support the goals of The Black Rhinoceros Foundation, a 501(c)(3) non-profit, and to continue management of the property as a working forest.

II. Project Description

The Black Rhinoceros Foundation Forest Stewardship project is proposed for funding by a cost-share grant with the State of Hawaii through the Forest Stewardship Program pursuant to Chapter 195F, Hawaii Revised Statutes (HRS). The associated Forest Stewardship management plan meets the requirements of the program as outlined in the Forest Stewardship Handbook and as established in Chapter 13-109, Hawaii Administrative Rules (HAR). The project site occurs on approximately 190 acres of gently sloping former ranchlands in the South Point region of the Kau District in Hawaii County. The land is currently covered in a mixture of introduced noxious and invasive weeds, which will be controlled and replaced with more desirable and productive vegetation throughout the project. The primary species to be established through this project are Hawaiian sandalwood, iliahi (*Santalum* spp.) and koaia (*Acacia koaia*) in addition to a variety of other native, Polynesian, and non-native, non-invasive species. The site will serve as a seed bank for these valuable Hawaiian endemics, as well as serve as a demonstration site for a viable and productive investment strategy for formerly forested agricultural lands. Although the timber element is at least a 30 year project, the Forest Stewardship grant will cover only the first ten years of the project.

Project activities over the ten year period will include:
There are several initial steps that must occur before planting of the desired species can begin. First, a perimeter fence will be built to control feral animals from damaging new plantings, particularly for feral ungulates such as hogs and goats that are known to roam the area. Hog wire fence will be erected around the entire project area in two phases. At the completion of each unit of fencing some animals may be trapped inside the fenced areas, and will need to be removed from the project area to minimize the potential for seedling damage.

Concurrent with fencing and brush clearing operations for the alien noxious and invasive weed removal, a 15 foot fuel break will be established around the perimeter of the planting areas to protect the area from wildfire threat.

The site preparation will begin in grassy areas (see Map 2. Unit 1a) and will include mechanical cutting of the grasses centered on the planting rows. In Units 1b and 2 Christmas berry brush thickets will be treated via hack and squirt method. The trees will be cut and mulched with a skid

steer mounted brush cutter. Within a 15 meter buffer zone on either side of Kaalualu stream, heavy machinery will not be used; only hand clearing will be permitted.

Since persistent trade winds are considered a resource concern in the area and may affect plant establishment, windbreaks will be established using a fast growing timber species. To help protect the young trees while first establishing, some rows of Christmas berry will be left standing between planting rows. The non-native vines (*Desmodium* sp. and *Passiflora* sp.) currently growing on site will provide a temporary windbreak in conjunction with the remaining standing Christmas berry trees until the planted windbreak is established.

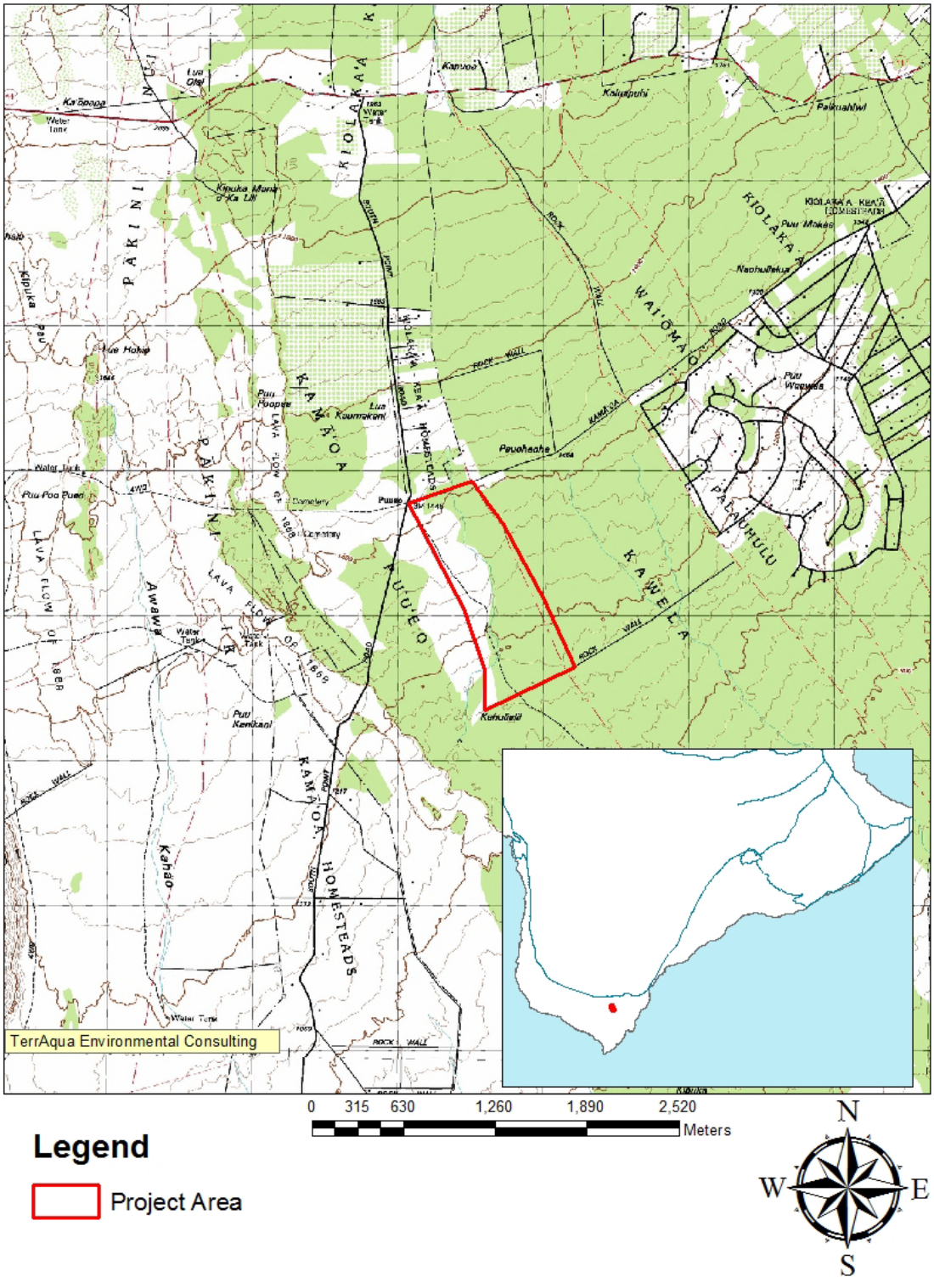
Planting of desired tree species will follow site preparation, which will include the use an 8 to 12 inch diameter by 24 inch long earth auger to dig planting holes. The excavated top soil will be amended with proper amounts of fertilizer as determined by soil tests. One quart of hydrated polyacrylate (water absorbing polymer) will also be incorporated in the topsoil to serve as a soil moisture reserve. Initial tests will be done to determine the effectiveness of polymer amendment, and if no benefit is seen it will be omitted.

A 3 ft. by 3 ft. (1m) square of woven plastic weed mat fabric will be placed over the planting hole and the seedling will be planted through a hole cut in the weed mat. The amended soil will be back filled and pressed firmly around the root ball of the seedling. If the seedling being planted is sandalwood, an intermediate host will also be planted approximately 3 feet (1 meter) from the sandalwood. Lastly the weed mat will be staked at its four corners and the planting will be watered in thoroughly. New plantings will take place in the wetter and cooler winter months, to reduce transplant shock and aid establishment.

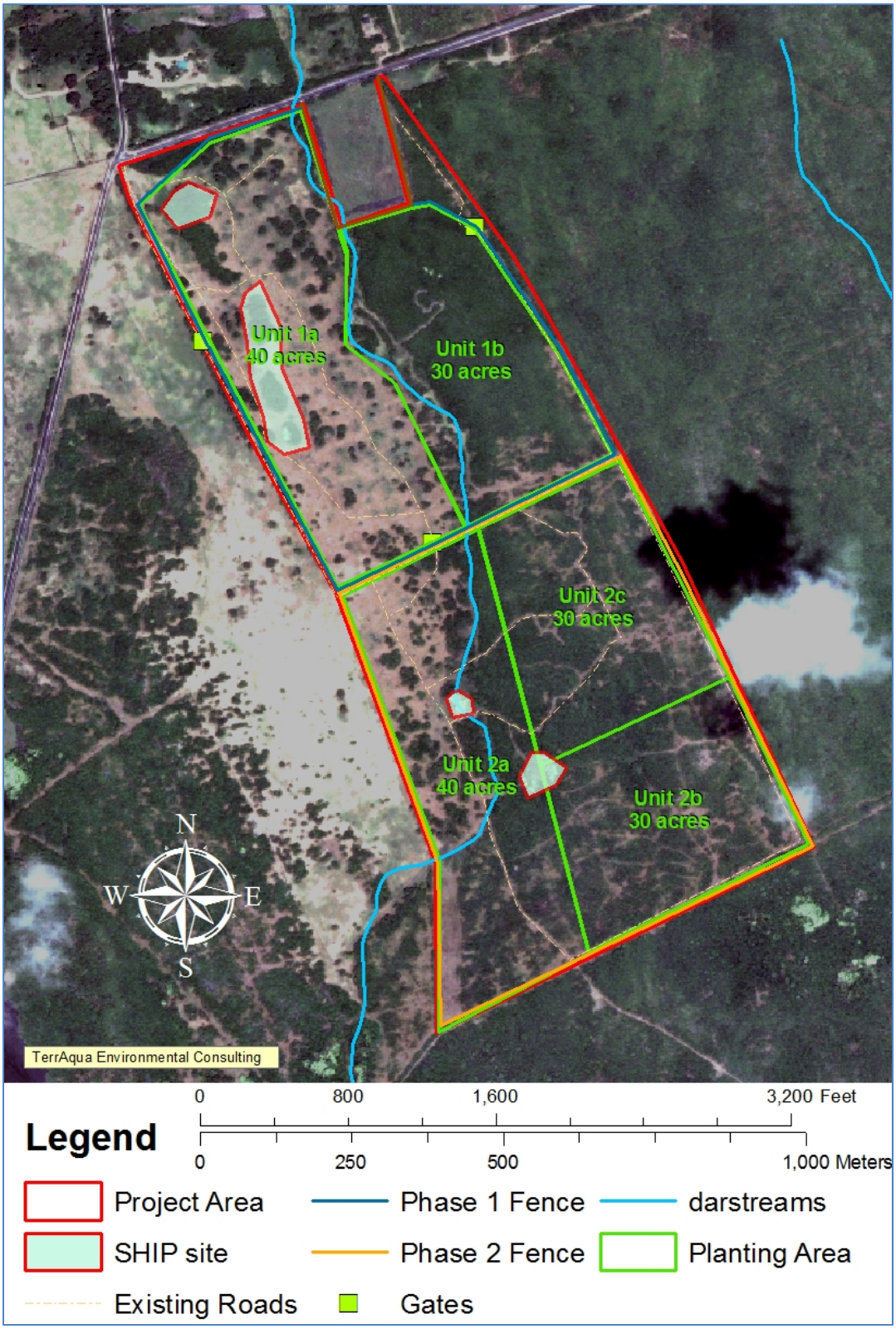
Species to be planted:

Koaia (*Acacia koaia*)
Iliahi (*Santalum paniculatum* and *S. ellipticum*)
Milo (*Thespesia populnea)*
Sapote (*Pouteria sp.)*
Cocobolo (*Dalbergia retusa*)
Granadillo (*Dalbergia turcurensis*)
Guanacaste *(Enterolobium cyclocarpum)*
Intermediate shrub hosts for sandalwood: Aweoweo *(Chenopodium oahuense),* Aalii *(Dodonaea viscosa),* Kolomona *(Senna gaudichaudii),* Pigeon pea *(Cajanus cajan).*

Details on project activities and implementation are included in the Black Rhinoceros Foundation Forest Stewardship management plan (Appendix A).



Map 1. Location Map.



Map 2. Project Map. Planting areas contain the following practices: Site Preparation, Tree and Shrub Establishment, Mulching, Fertilizing, Weed control, Fuel Break Establishment, and Pruning.

III. Description of Affected Environment

The project site occurs on approximately 190 acres of gently sloped former ranch land near the intersection of South Point Road and Kamaoa Road in Kau on the Island of Hawaii. The land has a long history of ranching and general degradation, and is currently zoned for agriculture by the State and County. The land is currently covered in a mixture of introduced noxious and invasive weeds, which will be controlled and replaced with more desirable and productive vegetation. The Christmas berry thickets currently found on the property have done a good job at halting soil erosion but are of little use ecologically or economically. Particularly in the dry season, current vegetation produces abundant fine fuels, increasing the risk of wildfires. We intend to establish, in place of alien noxious and invasive weeds, a diverse productive forest composed of native and introduced trees, and shrubs. Sandalwood and Koaia will yield seed crops valuable for restoration efforts. Sandalwood trees will eventually yield valuable heartwood and essential oil. Milo (*Thespesia populnea)* will yield wood for crafts. Larger tree species like Sapote (*Pouteria* sp.), Cocobolo (*Dalbergia retusa*), Granadillo (*Dalbergia turcurensis*), and Guanacaste (*Enterolobium cyclocarpum)* will provide soil protection, with fruit and wood yields. Wildfire threat will be reduced by the clearing of the dense Christmas berry thickets and replacement with higher branching trees.

Vegetation cover
According to U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) ecological site descriptions, natural native vegetation of the project site would be *Diospyros sandwicensis, Psydrax odorata, Osteomeles anthyllidifolia, Dodonaea viscosa,* and *Pepperomia sp.* However, no native vegetation has been observed on the property.

The property is currently covered with Christmas berry (*Schinus terebinthifolius*) brush and alien grasses. Scattered lantana (*Lantana camara*), and haole koa (*Lucaena leucocephala*) shrubs and common guava (*Psidium guajava*) occur in places, as well as non-native vines (*Passiflora* sp. and *Desmodium* sp**.**). Kukui (*Aleurites moluccana*) and Eucalyptus (*Eucalyptus microcorys)* trees occur in small patches, particularly around archaeological sites. The current vegetation is largely undesirable and invasive, while the planned plantings will be of native and productive timber trees.

Wildlife
Wildlife observed on the property include:
Wild hogs (*Sus scrofa)*
Barn owls (*Tyto alba)*
Rodents (*Rattus* sp.*)*
Various introduced birds, including Common Myna (*Acridotheres tristis*) and House sparrow (*Passer domesticus*), etc.

Endangered species
Endangered Hawaiian Hawks *Buteo solitarius* have been seen soaring some distance from the property. Hawks prefer to nest in larger stature trees than are currently found at the project site, so no negative impacts to hawks are anticipated.

Water Resources
Rainfall at the project site is mapped as approximately 40 inches (1 meter) per year. Test plantings of the planned core species have been successful without supplemental irrigation. There is currently no domestic water hookup on the property. We plan to supply initial water at planting using portable tanks filled at a nearby agricultural hookup.

One intermittent stream crosses the property from North East to South West, Kaalualu. The stream is not mapped extending far above or below the property. Numerous lava tubes occur in these areas and are frequently underground conduits for storm water. Lava tubes, both intact and collapsed, have been mapped on the property (coinciding with archaeological sites), but none have been identified affecting the stream as it crosses the property. Descriptions of the lava tubes are included in Appendix B and all occur outside planned planting areas.

Soils
Soils consist of Kiolakaa medial loam, coinciding with the open grassy areas with clumpy Christmas berry, and Keaa cobbly medial loam in the areas of thick brush on the East side of the unit. Soils in Unit 2 consist of Kiolakaa medial loam, just makai of Unit 1a, and Keaa cobbly medial loam in the remainder of unit 2. The soils on the site are fairly easily worked and present no major impediments to planting.

Historical or cultural resources
Archaeological sites have been identified and mapped on the property. Archaeological sites include pre and post contact burials inside separate lava tubes, and modified rock outcrops and rock platforms (possibly ahu). A treatment plan has been approved for the sites and is included (Appendix B). In short, no clearing or planting will occur within the identified buffer zones, and access will be maintained for interested parties. Additionally due to the previous agricultural use and the lack of native or Polynesian species on the site, there is limited opportunity for cultural gathering at the project site.

Adjacent land use
Adjacent land is primarily agricultural, ranching being most common, but with a good diversity of macadamia, coffee and mixed orchards in the area. Small businesses catering to tourist traffic along South Point Rd are also common, including coffee shops, orchid nurseries, and honey farms.

IV. Alternatives Considered

1. Proposed Action

The proposed action involves fencing of the land, control of feral ungulates, clearing of invasive weeds and planting of desired species. This alternative will realize the greatest environmental and economic benefit. The proposed action will contribute to conservation and restoration of historically exploited native tree species and will serve as a valuable seed source for future projects.

2. No fence Alternative

Alternative 2 would involve invasive weed clearing and planting of desired species as in Alternative 1, but without erecting perimeter fencing and controlling feral animals. Establishment of desired tree species would be considerably less effective in this alternative since feral hogs would likely destroy many new plantings. Further soil erosion would be expected to continue in areas where feral pigs dig up the ground; this loose sediment is then transported during storm events into the near shore environments leading to the degradation of coral reef ecosystems.

3. No Action

The no action alternative would leave the land un-fenced and covered in noxious and invasive weeds. Environmental and economic benefits of the proposed action would not be realized and risks associated with wildfire, weed dispersal, and feral animal action would continue.

V. Anticipated Impacts and Mitigation Measures

Department of Land and Natural Resources (DLNR) and NRCS best management practices (BMPs) planned for the project are detailed further in the Forest Stewardship Management Plan (Appendix A).

Soil
The proposed project is expected to positively impact soils and improve soil health. The establishment of tree and shrubs at the project site will improve soil by reversing soil compaction from years of agricultural use and improve soil moisture retention through the development of deeper and more complex root systems compared to the existing alien grasses. Further the chipping and mulching of trees followed by application of the material at the site will increase the organic material in the soil and reduce soil erosion. Any fertilizer used at the site will use appropriate formulas for their respective areas to reduce the potential for runoff into streams. Any soil disturbing work such as fence line clearing and brush clearing will be done in phases to reduce the potential for soil erosion and will be completed in accordance with established BMPs.

Water
As the Kaalualu stream is intermittent, the water quality of the stream is tied to the conditions of the site prior to a rain event. With the presence of feral pigs in the area, the stream is likely negatively impacted by animal activity that overturns the soil. This exposed soil is carried into the stream and deposited as sediments in the ocean often negativity impacting surrounding near shore environments and coral reef ecosystems. The proposed project aims to improve water quality by removing the impact from feral ungulates and establishing a native dominated forest. Additionally native dominated forests have been shown to improve water quality and quantity when compared to other land uses.

A 15 meter wide buffer zone will be observed on either side of the intermittent Kaalualu stream to protect the area from erosion during storm events. No heavy machinery will be used in the buffer zone to prevent soil erosion and transport to the drainage network. All herbicide label

instructions and precautions will be observed, including avoiding application during rain events. The forest management plan has been developed to minimize herbicide use as much as possible.

Cultural and Archaeological
A treatment plan (Appendix B) has been approved for archaeological sites on the property and will be followed to avoid any adverse impacts on those sites. Basically, no clearing or planting will occur within a 20 foot buffer of the defined archaeological sites.

Flora and Fauna
No threatened or endangered species are known to occur on or use the project area. Under the proposed action the project area will improve and increase habitat for native flora and fauna as well as address threats to quality habitat, such as excluding the site from feral ungulates. The exclusion of ungulates and planting of native trees and shrubs will provide habitat for many bird species as well as provide habitat for the endangered Hawaiian hoary bat. No negative impacts are anticipated on wildlife.

Social concerns
Often changes in rural areas are opposed, however the planting of native Hawaiian trees in place of invasive weeds is almost universally welcomed. Initial conversations with community members and neighbors have been favorable. Furthermore, archaeological sites will be protected by project actions and traditional access will be maintained.

Noise and Aesthesis
Short term noise and aesthetic impacts associated with land preparation will be mitigated with restrictions in operating hours (8AM to 6PM). The large property size and distance to neighboring homes will further mitigate noise impacts.

Economic
The proposed action will put idle agricultural lands back into a productive forestry program. Forest yields will provide favorable returns in the long run and project actions will provide income for many local small businesses in the South Kona and Kau Districts of Hawaii County.

VI. Findings and Reasons Supporting Anticipated Determination

A Finding of No Significant Impact (FONSI) is anticipated based on the project's adherence to the following criteria:

1.) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.*

The project does not involve an irrevocable commitment to loss or destruction of any natural or cultural resource. Instead, the project will improve the natural resources of the project area while conserving the existing cultural resources.

2.) *Curtails the range of beneficial uses of the environment.*

The project does not curtail the range of beneficial uses of the environment. In fact the range of beneficial uses will be increased, as a more productive forest ecosystem will be established in place of noxious and invasive weeds.

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.*

The proposed action is consistent with the environmental policies established in Chapter 344, HRS. The project will improve all aspects of environmental quality of the subject property.

4.) *Substantially affects the economic or social welfare of the community or state.*

The proposed project will not adversely affect the economic or social welfare of the community or state. In fact, the project will provide employment to area workers and income to local businesses.

5.) *Substantially affects public health.*

The proposed project is not anticipated to adversely affect public health.

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

The proposed project is not anticipated to have substantial secondary impacts, such as population changes or effects on public facilities.

7.) *Involves a substantial degradation of environmental quality.*

The proposed action will not substantially degrade the areas environmental quality, in fact, the restoration of native forest in the area could conceivably improve environmental quality.

8.) *Is individually limited but cumulatively has considerable effect upon environment or involves a commitment for larger actions.*

The proposed action does not involve any commitment for larger actions or considerable cumulative effect upon the environment.

9.) *Substantially affects a rare, threatened or endangered species, or its habitat.*

The proposed project does not negatively affect any rare, threatened or endangered species or their habitat. Actually, the project involves the planting of rare and historically exploited native tree species.

10.) *Detrimentally affects air or water quality or ambient noise levels.*

The proposed action will not substantially negatively affect air or water quality or ambient noise levels. Best Management Practices for mitigating the potential for these affects will be followed at all times.

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, fresh water, or coastal waters.*

The project is not located in an environmentally sensitive area and is not likely to suffer damage as a result of its location.

VII. List of Permits Required for Project

For grubbing and grading in excess of 1 acre of land a grubbing and grading permit or conservation plan prepared with the area Soil and Water Conservation District will be prepared.

VIII. Agencies and Community Groups Consulted

USDA Natural Resources Conservation Service, Hilo
Department of Land and Natural Resources, Division of Forestry and Wildlife
University of Hawaii CTAHR, Agricultural Diagnostic Service Center
University of Hawaii NREM
Hawaii County Planning Department
Neighboring Property Owners:
    Steve Brorson
    George Pitts
Lineal Descendant of project area konohiki, Clarence Medeiros Jr.

Appendix A. The Black Rhinoceros Foundation Forest Stewardship Program Management Plan. Prepared By John Pipan (2015)

Appendix B. A Burial Treatment Plan for Two Sites Located on TMK:3-9-3-03:73. Prepared by Robert B. Rechtman, Ph. D. (2005)

The Black Rhinoceros Foundation
Forest Stewardship Program Management Plan

Applicant: Jelle Boersma, 17 South Cloudstone Dr. Santa Fe, NM 87505

Landowner name: The Black Rhinoceros Foundation Inc.
Lease/License holder name: N/A
TMK: (3)93003073
State Land Use and County Zone designation: Agricultural
Property acreage: 190 ac.
Farm Service Agency Farm No. and Tract No.: N/A
Proposed acres in stewardship management area: 190 ac.
General elevation: 1200 ft to 1400 ft
Slope: 5% or less, to the South
Perennial or intermittent stream courses: There is one, intermittent small drainage (Kaalualu), that crosses the property from the N-E to the S-W.

Consultant: John Pipan, Director, TerrAqua Environmental Consulting,
44-317 Pua Olena St, Honokaa, HI 96727, Phone: (405)808-3515

10/12/2015

Appendix D

Signature Page

Applicant	**Date**
Consultant	**Date**

Approved on:

FSAC	**Date**
State Forester	**Date**

III. Introduction

It is the goal of The Black Rhino Foundation to establish a thriving mixed species forest on the property, maintaining a sustainable yield of valuable forest products, while preserving cultural sites within, and the health and function of the Pu‘u‘eo Ahupua‘a and the South Point Watershed. We plan to establish primarily indigenous and endemic native Hawaiian trees to the site. While a smaller number (approximately 20% total) introduced timber trees will increase the planting diversity, provide wildlife habitat and continued productivity. Eventually, trees will be selectively harvested and marketed to support the goals of The Black Rhinoceros Foundation a 501(c)(3) non-profit.

The project site occurs on approximately 190 acres of gently sloped former ranch land near the intersection of South Point Road and Kamaoa Road in Kau on the Island of Hawaii. The land is currently covered in a mixture of introduced noxious and invasive weeds, which will be controlled and replaced with more desirable and productive vegetation. The main species to be planted are Hawaiian sandalwood, Iliahi (*Santalum ellipticum* and *Santalum paniculatum*), and Koaia (*Acacia koaia*). These trees have historically been exploited and threatened by over-harvesting and land use change. This forest will serve as an important seed bank for these valuable Hawaiian endemics. We intend to demonstrate a viable and productive investment strategy that improves the land in all regards.

The christmasberry thickets currently found on the property have done a good job at halting soil erosion but are of little use ecologically or economically. Particularly in the dry season, current vegetation produces abundant fine fuels, increasing the risk of wildfires. We intend to establish, in place of alien noxious and invasive weeds, a diverse productive forest composed of native and introduced trees, and shrubs. Multiple yields will be possible from the different tree species.

Sandalwood and Koaia will yield seed crops valuable for restoration efforts. Sandalwood trees will eventually yield valuable heartwood and essential oil. Milo (*Thespesia populnea)* will yield wood for crafts. Larger tree species like Sapote (*Pouteria sp.*), Cocobolo (*Dalbergia retusa*), Granadillo (*Dalbergia turcurensis*), and Guanacaste(*Enterolobium cyclocarpum)* will provide soil protection, with fruit and wood yields. Future harvests and re-plantings will always be selective and phased so that soil disturbance is minimized. Wildfire threat will be reduced by the clearing of the dense christmasberry thickets and replacement with higher branching trees.

IV. Land and Resource Description

According to NRCS eco-site descriptions, natural native vegetation would be *Diospyros sandwicensis, Psydrax odorata, Osteomeles anthyllidifolia, Dodonaea viscosa, and Pepperomia sp.* However, no native vegetation has been observed on the property, although a thorough survey has not been performed. The property is currently covered with christmasberry (*Schinus terebinthifolius*) brush and alien grasses. Scattered lantana (*Lantana camara*), and haole koa (*Lucaena leucocephala*) shrubs and common guava (Psidium guajava) occur in places, as well as non-native vines (*Passiflora sp. & Desmodium sp.*). Kukui (*Aleurites moluccana*) and Eucalyptus (*Eucalyptus microcorys)* trees occur in small patches, particularly around archaeological sites. The current vegetation is largely undesirable and invasive, while the planned plantings will be of desirable native and productive timber trees.

Unit 1 covers approximately 80 acres and is characterized by christmasberry thickets and open meadows. Approximately 30 acres of christmasberry brush is continuous on the East side of Unit 1 and is typically short in stature (12 ft tall or less) and densely tangled. Travel through these areas is not by walking, but by crawling and scrambling. There is also approximately 10 acres of larger stature (15 to 25 ft) christmasberry trees in 33 discreet patches with grasses and shrubs between. The 40 acres of grassland and scattered shrubs in Unit 1 is covered with thigh to waist high grasses and infrequent lantana and haole koa shrubs. Unit 2 is almost entirely continuous christmasberry brush, similar in character to that seen in Unit 1b.

Soils in Unit 1 consist of approximately 40 acres of Kiolakaa medial loam, coinciding with the open grassy areas with clumpy christmasberry, and Keaa cobbly medial loam in the areas of thick brush on the East side of the unit (40 acres). Soils in Unit 2 consist of approximately 20 acres of Kiolakaa medial loam, just makai of Unit 1a, and 80 acres of Keaa cobbly medial loam in the remainder of unit 2. The soils on the site are fairly easily worked and present no major impediments to planting.

The intermittent stream that crosses the property from NE to SW, Kaalualu, is not mapped extending far above or below the property. In the young volcanic substrate, stream channel development has not evolved this stream system very far. Numerous lava tubes occur in these areas and are frequently underground conduits for storm water. Lava tubes, both intact and collapsed have been mapped on the property (coinciding with archaeological sites), but none have been identified affecting the stream as it crosses the property. Descriptions of the lava tubes are included in Appendix A and all occur outside planned planting areas.

Rainfall at the project site is mapped as approximately 40 inches (1 meter) per year. Test plantings of the planned core species have been successful without supplemental irrigation. There is currently no domestic water hookup on the property. We plan to supply initial water at planting using portable tanks filled at a nearby agricultural hookup.

Wildlife observed on the property include:

Wild hogs, *Sus scrofa*
Barn owls, *Tyto alba*
Rodents, *Rattus sp.*
Other introduced birds, Common Myna(*Acridotheres tristis*), House sparrow (*Passer domesticus),* etc.

Endangered Hawaiian Hawks *Buteo solitarius* have been seen soaring some distance from the property. Hawks prefer to nest in larger stature trees than are currently found at the project site, so no negative impacts to hawks are anticipated.

Archaeological sites have been identified and mapped on the property. A treatment plan has been approved for the sites and is included (Attachment A). In short, no clearing or planting will occur within the identified buffer zones, and access will be maintained for interested parties.
Currently access to the property can be made at two places. The first access is at the West end of Kamaoa road where it meets South Point road. The other access is approximately ¼ mile East of

the first access (along Kamaoa). Both are on the South side of the road. A system of old disused ranch roads crisscrosses the property. The roads have not been fully mapped but will be used as needed. No new road construction is anticipated.

V. Management Objectives and Practices

Access Control - 472
There are several initial steps that must occur before planting of the desired species can begin. First a perimeter fence will be built to control access to the site, particularly for feral ungulates, such as hogs and goats, that are known to roam the area. Hog wire fence (NRCS Practice 472) will be erected around the entire project area in at least two phases. Unit 1 (mauka) will require approximately 6,900 ft of fence, and Unit 2 will require approximately 8,800 ft.

Feral Animal Control
At the completion of each unit of fencing some animals will likely be trapped inside the fenced areas. These animals will need to be removed from the project area to minimize the potential for seedling damage. Initially, traps will be used to remove the animals. Eventually some trap shy animals will remain and will need to be hunted out. Hunting and trapping will be performed humanely by licensed hunters. Any animals harvested will be used to the utmost.

Tree and Shrub Site Preparation - 490
After the trapping and hunting is completed, planting site preparation can begin (NRCS Practice 490). In grassy areas (Unit 1a) the site preparation will include mechanical cutting of the grasses to ground level in a 6ft (2m) width, centered on the planting rows. In Units 1b and 2 (a,b,&c) xmasberry brush thickets will be killed by hack and squirt, using 1 to 2 ml of milestone (aminopyralid) herbicide per tree. Once dead, the trees will be cut and mulched in place with a skid steer mounted brush cutter. Some re-growth is expected and will be re-cut and herbicide re-applied. Within a 15 meter buffer zone on either side of Kaalualu stream, heavy machinery will not be used. Only hand clearing will be permitted.

Windbreak –
Since persistent trade winds are considered a resource concern in the area, windbreaks will be established. The fast and thick growing alien timber species (Cocobolo, Granadillo, Guanacaste, and Sapote) are good choices for this task. Double rows of windbreak species will be planted at the same time as sandalwood and host plants. To help protect the young trees while first establishing, narrow rows of dead xmasberry will be left standing between planting rows. Desmodium and Passiflora vines currently growing on site will quickly take over the xmasberry and provide windbreak. Since planting timing and rate are the same for windbreak species, they are not listed separately on the practice implementation schedule, they are included in the tree and shrub establishment total.

Tree and Shrub Establishment – 612
Planting of desired tree species (NRCS Practice 612) will follow site preparation. We intend to use an 8 to 12 inch diameter by 24 inch long earth auger to rapidly dig planting holes. The excavated top soil will be amended with proper amounts of fertilizer as determined by soil tests (NRCS Practice 590). One quart of hydrated polyacrylate (water absorbing polymer) will also be

incorporated in the topsoil to serve as a soil moisture reserve. Initial tests will be done to determine the effectiveness of polymer amendment, and if no benefit is seen it will be omitted. A 3ft by 3ft (1m) square of woven plastic weed mat fabric (NRCS Practice 484) will be placed over the planting hole and the seedling will be planted through a hole cut in the weed mat. The amended soil will be back filled and pressed firmly around the root ball of the seedling to the level of the top of the root ball. If the seedling being planted is a sandalwood, an intermediate host will also be planted approximately 3 ft (1 m) from the sandalwood (generally to the North of the sandalwood to prevent excessive shading). Lastly the weed mat will be staked at its four corners and the planting will be watered in thoroughly. New plantings will be marked with brightly colored flags and recorded for monitoring purposes. New plantings will take place in the wetter and cooler winter months, to reduce transplant shock and aid establishment.

Species to be planted:
Koaia (*Acacia koaia*)
Iliahi (*Santalum paniculatum*)
Milo (*Thespesia populnea)*
Sapote (*Pouteria sp.)*
Cocobolo (*Dalbergia retusa*)
Granadillo (*Dalbergia turcurensis*)
Guanacaste *(Enterolobium cyclocarpum)*
Intermediate shrub hosts for sandalwood: *Aweoweo (Chenopodium oahuense),* A'alii *(Dodonaea viscosa),* Kolomona *(Senna gaudichaudii),* Pigeon pea *(Cajanus cajan)*

Plant materials will be sourced from three Big Island nurseries (EarthyStuff Farms near Honokaa, Future Forests Nursery in Kona, and Aileen's Nursery in Hilo).
Seeds for native plantings will be collected from Big Island sources as near to South Point as possible. All seedlings will be containerized in dibble tubes or Anderson band pots.

Planting Layout

W	W	H	S	H	S	H	S	ETC.
W	W	S	H	S	H	S	H	
W	W	H	S	H	S	H	S	
W	W	S	H	S	H	S	H	
W	W	H	S	H	S	H	S	
W	W	S	H	S	H	S	H	
W	W	H	S	H	S	H	S	

Figure 1. The above diagram shows the generic planting layout, where "S" represents a sandalwood seedling *with* an intermediate host, "H" represents the long term native tree hosts

(Koaia and Milo). In general the planting layout will consist of 8 rows of native trees and 2 rows of introduced timber trees “T”, also acting as hosts for the sandalwoods. One row in five gives the 20% introduced to 80% native ratio desired.
Spacing between rows and between trees in each row is 5m (15 ft). The wider spacing will permit mowing between rows with the same brush cutter we intend to use for clearing. Wider spacing will also make harvest easier and less likely to accidentally damage adjacent trees. We have planned alternating rows and alternating sandalwood and host trees within rows to maximize sandalwood to host connections and minimize sandalwood to sandalwood competition.

All native species were evaluated for site appropriateness using known range information and Jon Price's species ranges http://pubs.usgs.gov/of/2012/1192/. All natives (except milo) were recorded for the South Point region. Milo commonly grows up to 900 ft of elevation around the coastlines but can be planted higher (1200-1400 at this site). Also milo has established well in test plantings at the site. Timber trees were selected based on their elevation and rainfall requirements and were all found to be suitable to this site.

Mulching – 484
At planting, 1m square sections of woven weed mat fabric will be centered on each planting hole, through which the seedling will be planted. Furthermore, cut vegetation (grass and wood chips) created by the site prep and herbaceous weed control practices will be piled adjacent to the plantings, but not touching the stems of the young trees.

Herbaceous Weed Control - 315
In the first three years following planting, weed control will be performed (NRCS Practice 315). Four times a year (in the first year following planting), then twice a year for the next three years, grasses and weeds growing 6ft (2m) around all sides of the weed mat for each seedling will be mechanically cut to the ground and left as supplemental mulch. Grass specific herbicides will also be tested for negative impacts on sandalwoods or host trees. Costs and results of the two methods will be compared to feed back into management decisions.

Nutrient Management – 590
Proper amounts of fertilizer as determined by soil tests will be incorporated in the soil at the time of planting. Repeat applications will be made at the schedule suggested by the specific fertilizer. As an example, time release fertilizers are slowly made available to the plant over a period of time (typically three months to a year), and need to be applied less frequently than ordinary fertilizers . Care will be taken to prevent burning of the plants due to over-application of fertilizer. O’o bars will be used to create small holes around the dripline of the seedling and the fertilizer will be applied in the holes.

Pruning – 660
Beginning in the fourth year after planting, companion trees will be pruned to prevent crowding or shading of young sandalwood trees. Also broken or diseased wood will be removed from trees and disposed of appropriately.

Fire Pre-Suppression - Fuel Break - 383
Concurrent with fencing and brush clearing operations, a fuel break (NRCS practice 383) will be established around the perimeter of the planting areas. A 15 ft wide fuel break will be established and kept clear of flammable weed growth by mechanical and chemical means. Furthermore, all vehicles and machines will be equipped with appropriate fire extinguishers. First responder and access protocols will be established with the Ka'u Fire Department.

Harvest
Selective harvest and marketing of trees will occur after the completion of this plan in year 10. Sandalwood trees will be selected for harvest according to tests for heartwood and oil content. Any clearing will be done selectively, in small groups of rows, to minimize soil disturbance.

VI. Practice Implementation Schedule

For all planned practices the best available data were used to develop cost estimates. Where possible, actual values from trials were used. For example past experience with earth augers has shown the average rate of 50 holes dug per man per hour, can be expected. Actual fence construction costs from an experienced contractor were used. Estimated fuel burn rates for skid steer use were based on reports of similar sized machines doing similar work. Established FSP in-kind rates were used for labor, and all consumable materials were priced out.

Year 1

Area	Practice Component	Component	Amt.	Unit	Cost/ Unit	Total Cost	Applicant Share	FSP Share
Unit 1	Fence	382	6846	ft.	$6.50	$44,500	$44,500	
Unit 1b	Tree and Shrub Site Preparation	490	35	ac.	$1,250.00	$43,750	$21,875	$21,875
Unit 1b	Tree and Shrub Establishment	612	6790	ea.	$9.25	$62,808	$31,404	$31,404
Unit 1b	Mulching	484	61110	Ft^2	$0.20	$12,222	$6,111	$6,111
Unit 1b	Nutrient Management	590	35	ac.	$100.00	$3,500	$1,750	$1,750
Unit 1b	Monitoring		35	ac.	$85.00	$2,975	$1,488	$1,488
Unit 1a	Tree and Shrub Site Preparation	490 & 384	43	ac.	$500.00	$21,500	$10,750	$10,750
Unit 1	Fuel Break		3	ac.	$400.00	$1,200	$600	$600
	Year 1 total					$192,455	$118,477	$73,977

Year 2

Area	Practice Component	Component	Amt.	Units	Cost/Unit	Total Cost	TBRF share	State Share
Unit 1b	Herbaceous Weed Control	315	43	ac.	$400.00	$17,200	$8,600	$8,600
Unit 1b	Nutrient Management	590	43	ac.	$50.00	$2,150	$1,075	$1,075
Unit 1b	Tree and Shrub Establishment	612	340	ea.	$9.25	$3,145	$1,573	$1,573
Unit 1b	Pruning	660	35	ac.	$50.00	$1,750	$875	$875
Unit 1a	Tree and Shrub Establishment	612	8342	ea.	$9.25	$77,164	$38,582	$38,582
Unit 1a	Mulching	484	75078	sq. ft	$0.20	$15,016	$7,508	$7,508
Unit 1a	Nutrient Management	590	43	ac.	$100.00	$4,300	$2,150	$2,150
Unit 1	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 1	Monitoring		78	ac.	$85.00	$6,630	$3,315	$3,315
Unit 2	Fence	382	9000	ft	$6.50	$58,500	$29,250	$29,250
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
	Year 2 total					$188,254	$94,127	$94,127

Year 3

Area	Practice Component	Component	amt	Units	Cost/unit	Total Cost	TBRF share	State Share
Unit 1	Herbaceous Weed Control	315	78	ac.	$400.00	$31,200	$15,600	$15,600
Unit 1	Nutrient Management	590	78	ac.	$50.00	$3,900	$1,950	$1,950
Unit 1a	Tree and Shrub Establishment	612	420	ea.	$9.25	$3,885	$1,943	$1,943
Unit 1a	Pruning	660	43	ac.	$50.00	$2,150	$1,075	$1,075
Unit 1	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 1	Monitoring		78	ac.	$85.00	$6,630	$3,315	$3,315
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 2a	Tree and Shrub Site Preparation	490 & 384	40	ac.	$1,250.00	$50,000	$25,000	$25,000
Unit 2a	Tree and Shrub Establishment	612	7760	ea.	$9.25	$71,780	$35,890	$35,890
Unit 2a	Mulching	484	27900	sq. ft	$0.20	$5,580	$2,790	$2,790
Unit 2a	Nutrient Management	590	40	ac.	$100.00	$4,000	$2,000	$2,000
Unit 2a	Monitoring		40	ac.	$85.00	$3,400	$1,700	$1,700
	Year 3 total					$184,925	$92,463	$92,463

Year 4

Area	Practice Component	component	amt	units	Cost/unit	Total Cost	TBRF share	State Share
Unit 1	Herbaceous Weed Control	315	78	ac.	$208.00	$16,224	$8,112	$8,112
Unit 1	Nutrient Management	590	78	ac.	$50.00	$3,900	$1,950	$1,950
Unit 1	Fuel Break		3	ac.	$400.00	$1,200	$600	$600
Unit 1	Monitoring		78	ac.	$85.00	$6,630	$3,315	$3,315
Unit 1b	Pruning	660	43	ac.	$50.00	$2,150	$1,075	$1,075
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 2a	Herbaceous Weed Control	315	40	ac.	$416.00	$16,640	$8,320	$8,320
Unit 2a	Nutrient Management	590	40	ac.	$50.00	$2,000	$1,000	$1,000
Unit 2a	Tree and Shrub Establishment	612	388	ea.	$9.25	$3,589	$1,795	$1,795
Unit 2a	Pruning	660	40	ac.	$50.00	$2,000	$1,000	$1,000
Unit 2b	Tree and Shrub Site Preparation	490 & 384	30	ac.	$1,250.00	$37,500	$18,750	$18,750
Unit 2b	Tree and Shrub Establishment	612	5820	ea.	$9.25	$53,835	$26,918	$26,918
Unit 2b	Mulching	484	20925	sq. ft.	$0.20	$4,185	$2,093	$2,093
Unit 2b	Nutrient Management	590	30	ac.	$100.00	$3,000	$1,500	$1,500
Unit 2a,b	Monitoring		70	ac.	$85.00	$5,950	$2,975	$2,975
	Year 4 total					$160,003	$80,002	$80,002

Year 5

Area	Practice Component	component	amt	units	Cost/ unit	Total Cost	TBRF share	State Share
Unit 1	Herbaceous Weed Control	315	78	ac.	$208.00	16,224	8,112	8,112
Unit 1	Nutrient Management	590	78	ac.	$50.00	3,900	1,950	1,950
Unit 1a	Pruning	660	35	ac.	$50.00	1,750	875	875
Unit 1	Fuel Break		3	ac.	$400.00	$1,200	$600	$600
Unit 1	Monitoring		78	ac.	$85.00	6,630	3,315	3,315
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 2a	Herbaceous Weed Control	315	40	ac.	$208.00	8,320	4,160	4,160
Unit 2a	Nutrient Management	590	40	ac.	$50.00	2,000	1,000	1,000
Unit 2b	Herbaceous Weed Control	315	30	ac.	$416.00	12,480	6,240	6,240
Unit 2b	Nutrient Management	590	30	ac.	$50.00	1,500	750	750
Unit	Tree and Shrub Establishment	612	291	ea.	$9.25	2,692	1,346	1,346

2b								
Unit 2b	Pruning	660	30	ac.	$50.00	1,500	750	750
Unit 2c	Tree and Shrub Site Preparation	490 & 384	30	ac.	$1,250.00	37,500	18,750	18,750
Unit 2c	Mulching	484	20925	sq. ft.	$0.20	4,185	2,093	2,093
Unit 2c	Nutrient Management	590	30	ac.	$50.00	1,500	750	750
Unit 2c	Tree and Shrub Establishment	612	5,820	ea.	$9.25	53,835	26,918	26,918
Unit 2	Monitoring		100	ac.	$85.00	8,500	4,250	4,250
	Year 5 total					164,916	82,458	82,458

Year 6

Area	Practice Component	component	Amt.	units	Cost/ unit	Total Cost	TBRF share	State Share
Unit 2a	Herbaceous Weed Control	315	40	ac.	$208.00	$8,320	$4,160	$4,160
Unit 2a	Pruning	660	40	ac.	$50.00	$2,000	$1,000	$1,000
Unit 2b	Herbaceous Weed Control	315	30	ac.	$208.00	$6,240	$3,120	$3,120
Unit 2c	Herbaceous Weed Control	315	30	ac.	$416.00	$12,480	$6,240	$6,240
Unit 2c	Tree and Shrub Establishment	612	291	ea.	$9.25	$2,692	$1,346	$1,346
Unit 2c	Pruning	660	30	ac.	$50.00	$1,500	$750	$750
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
Unit 2	Nutrient Management	590	100	ac.	$50.00	$5,000	$2,500	$2,500
Unit 2	Monitoring		100	ac.	$85.00	$8,500	$4,250	$4,250
	Year 6 total					$47,932	$23,966	$23,966

Year 7

Area	Practice Component	component	amt	units	Cost/ unit	Total Cost	TBRF Share	State Share
Unit 2	Herbaceous Weed Control	315	100	ac.	$208.00	$20,800	$10,400	$10,400
Unit 2	Nutrient Management	590	100	ac.	$50.00	$5,000	$2,500	$2,500
Unit 2b	Pruning	660	30	ac.	$50.00	$1,500	$750	$750
Unit 2	Monitoring		100	ac.	$85.00	$8,500	$4,250	$4,250
Unit 2	Fuel Break	383	3	ac.	$400.00	$1,200	$600	$600
	Year 7 total					$37,000	$18,500	$18,500

Year 8

Area	Practice Component	component	amt	units	Cost/ unit	Total Cost	TBRF Share	State Share
Unit 2b	Herbaceous Weed Control	315	30	ac.	$208.00	6,240	3,120	3,120
Unit 2b	Nutrient Management	590	30	ac.	$50.00	$1,500	$750	$750
Unit 2c	Herbaceous Weed Control	315	30	ac.	$208.00	6,240	3,120	3,120
Unit 2c	Nutrient Management	590	30	ac.	$50.00	$1,500	$750	$750
Unit 2c	Pruning	660	100	ac.	$50.00	$5,000	$2,500	$2,500
Unit 2	Monitoring		100	ac.	$85.00	$8,500	$4,250	$4,250
	Year 8 total					28,980	14,490	14,490

Year 9

Area	Practice Component	component	amt	units	Cost/unit	Total Cost	TBRF share	State Share
Unit 2c	Herbaceous Weed Control	315	30	ac.	$208.00	6,240	3,120	3,120
Unit 2	Monitoring		100	ac.	$85.00	8,500	4,250	4,250
	Year 9 total					14,740	7,370	7,370

Year 10

Area	Practice Component	Component	amt	Units	Cost/unit	Total Cost	TBRF share	State Share
						$0.00	$0.00	$0.00
	Year 5 total					0	0	0

VII. Budget Summary

Year	Total Budget	TBRF Share	Program Share	Other Funding Source
Year 1	$192,455	$118,477	$73,977	$0
Year 2	$188,254	$94,127	$94,127	$0
Year 3	$184,925	$92,463	$92,463	$0
Year 4	$160,003	$80,002	$80,002	$0
Year 5	$164,916	$82,458	$82,458	$0
Year 6	$47,932	$23,966	$23,966	$0
Year 7	$37,000	$18,500	$18,500	$0
Year 8	$28,980	$14,490	$14,490	$0
Year 9	$14,740	$7,370	$7,370	$0
Year 10	$0	$0	$0	$0
Totals	$1,019,204	$531,852	$487,352	$0

Economic Analysis for Commercial Timber Projects

Assumptions

In order to perform an economic analysis of this proposed project the publication "Financial Analysis for Tree Farming in Hawaii" was followed. The inclusion of values for the six species of host tree in this calculation would have significantly increased its complexity. As you will see, the sandalwood trees alone will likely provide favorable returns, therefore host tree values were not included. Values of expenses for operations described in this management plan were used. For each year of the project, revenues and costs were calculated, and net revenue was determined. These annual net revenues were then discounted at different rates to the present. The sum of all years' discounted net revenues gives the net present value (NPV) of the project.

Heartwood Prices

Significant uncertainly lies in the age of onset and rate of heartwood development in Hawaiian sandalwood trees. There is also considerable uncertainty in the price of the heartwood when the trees are harvested. Recent reports of heartwood yield and prices for *S. yasi*, *S. austrocalidonicum, and S. album* were used to develop price estimates. In 2010 reported prices ranged from $10,000 to $35,000 per metric ton heartwood. More recent estimates have placed the price of Indian sandalwood heartwood up to $125,000 per metric ton. (Sprecher, 2014) Heartwood development was assumed to begin at year 10 although some projects have reported earlier onset. Also, methods have been reported for instigating the onset of heartwood formation (Radomiljac, 1998). A simple third order polynomial mass growth model was used to interpolate yields. Heartwood onset was assumed to start at year 10 and reported yields in 20 year old trees were used to fit the polynomial. It was assumed that rapid heartwood growth would continue through 40 years after planting, then growth would begin to slow. See figure below.

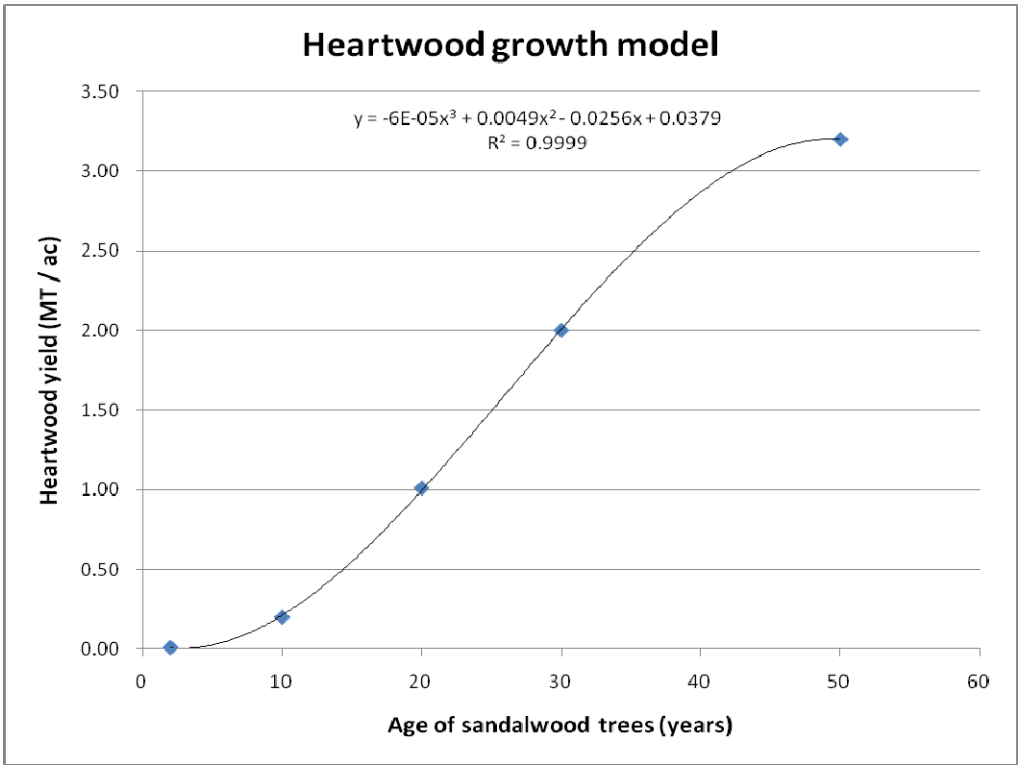


Figure 2. Proposed *Santalum paniculatum* heartwood growth model.

Results

In all but the most pessimistic scenarios, with stumpage prices at $7,500 per ton, the sandalwood yield produces favorable returns. A discount rate of 4% leads to a peak in value at 35 years following planting. A discount rate of 7% leads to an earlier peak in value at 25 years following planting. Internal Rates of Return (IRR) were also calculated for the three price scenarios. For sandalwood prices of $7,500 per MT the IRR was 3.8%. For $25,000 per MT the IRR was 8.2%. For $50,000 per MT the IRR was 10.1%.

Land Expectation Value (LEV) was also calculated for two scenarios. The first scenario was the moderate price ($25,000 / MT), low discount rate (4%) scenario. In that scenario the LEV is $14,755/ac. Alternately we calculated LEV for the moderate price, high discount rate (7%), scenario. In the second scenario the LEV was $2,262/ac.

It should be noted that heartwood quality and oil content improves in older trees. There is also growing interest in developing the sandalwood nut as a premium value added product, which could serve as a supplemental revenue stream as the trees mature. Also note that the host trees (as numerous as the sandalwoods) are valuable as well and will serve to protect the project from possible sandalwood price volatility.

Site establishment costs		
Management plan	11	$/acre
Site Preparation	1250	$/acre
Seedlings	5	$/seedling
# of stems planted / acre	200	#/acre
Planting	800	$/acre
Fencing	550	$/acre
Fertilizer application	100	$/acre
Annual operating costs		
Weed control up to year 4	400	$/acre/year
Fertilizer up to year 4	100	$/acre/year
Maint. starting year 5	25	$/acre/year

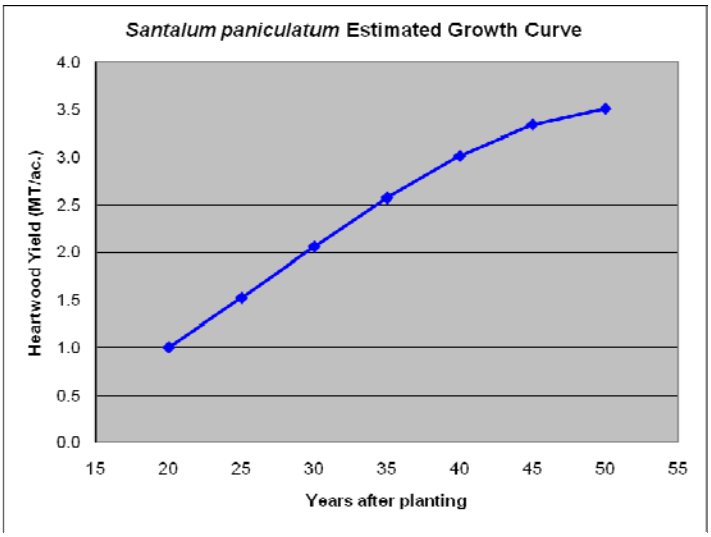


Figure 3. Above left. Implementation costs input to economic model.
Figure 4. Above right. Heartwood growth estimates used in model.

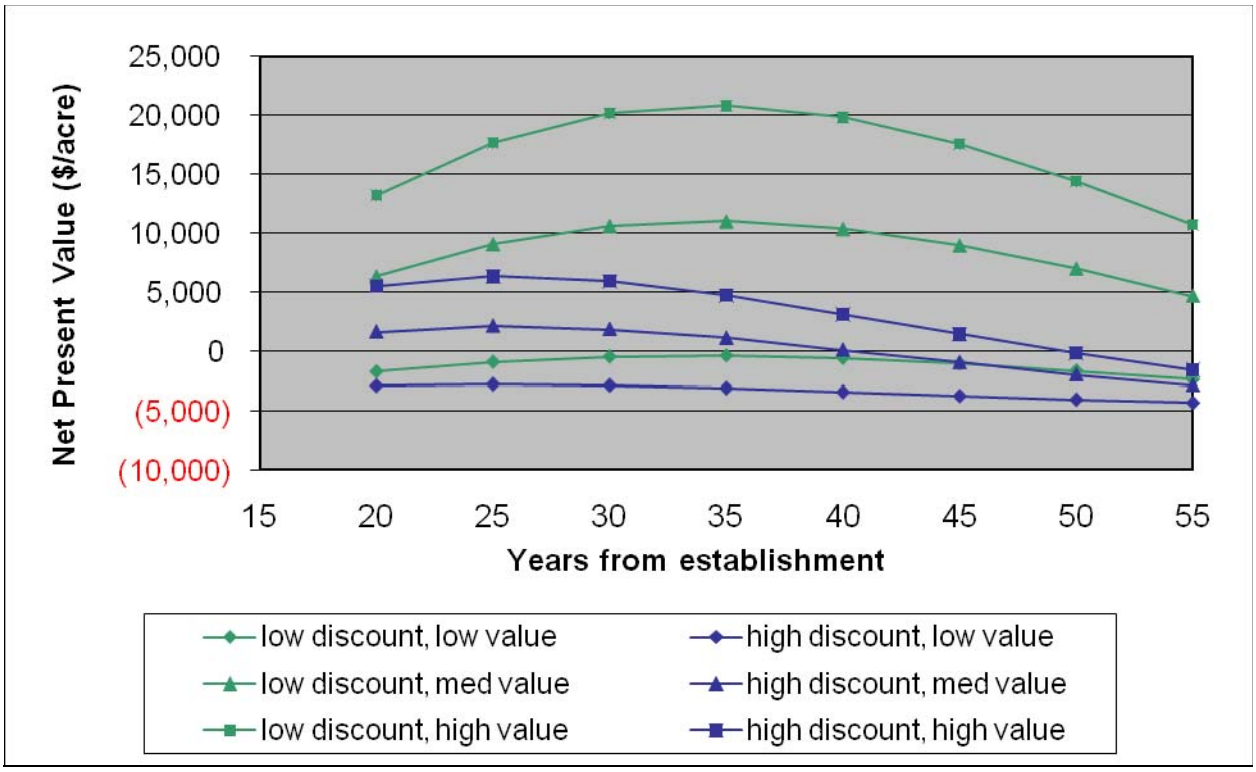
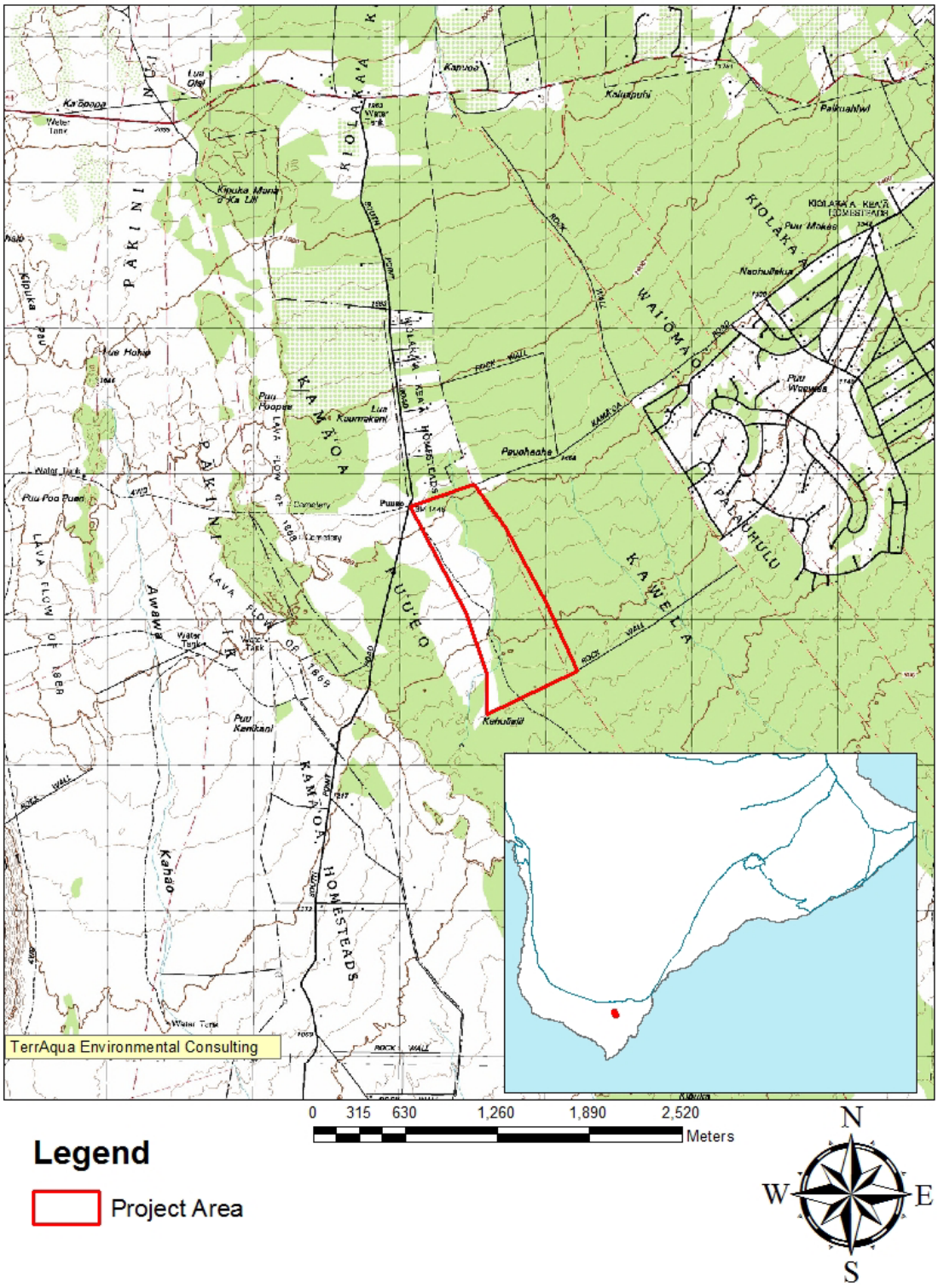
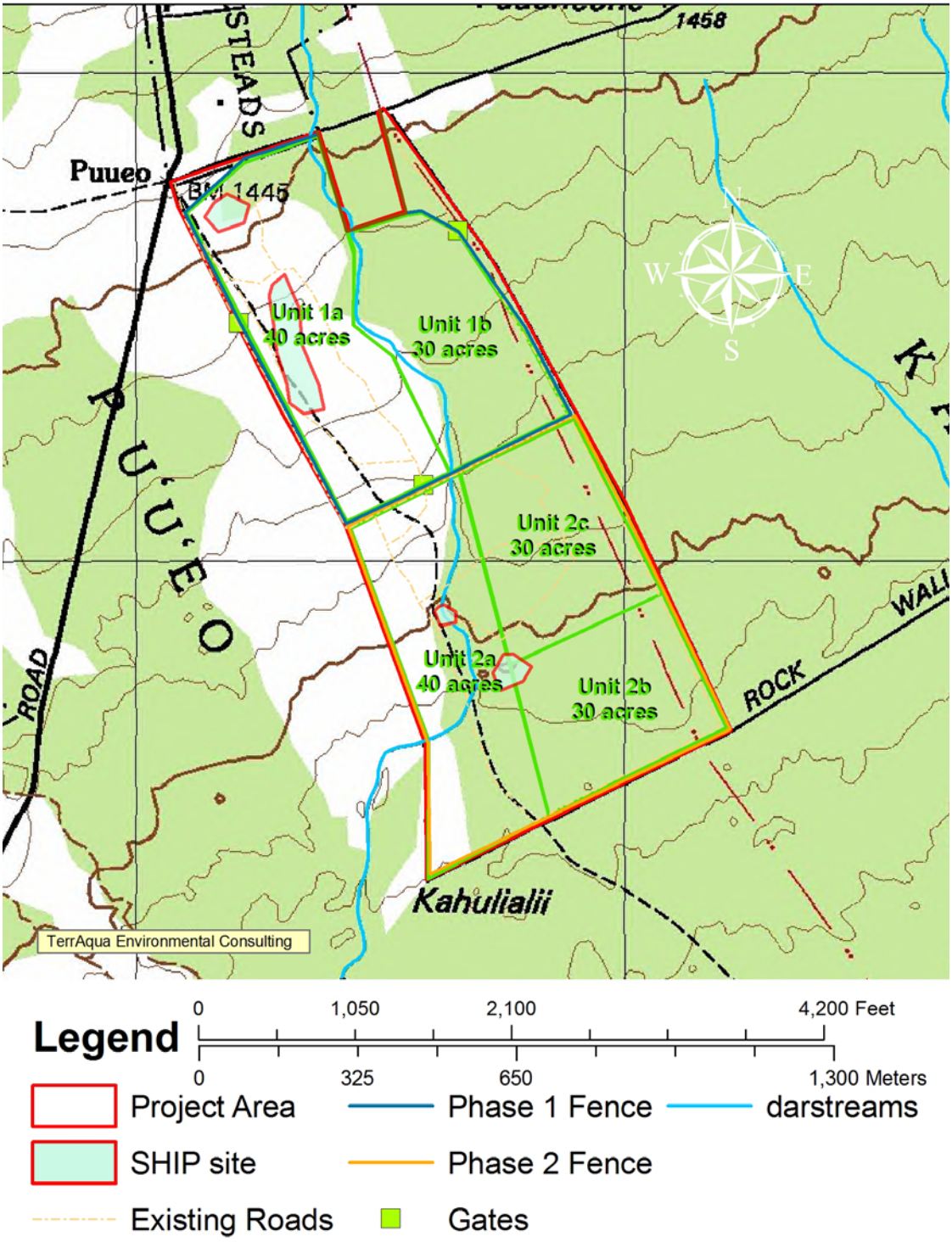


Figure 5. Net Present Value of Sandalwood heartwood with varying prices and discount rates.

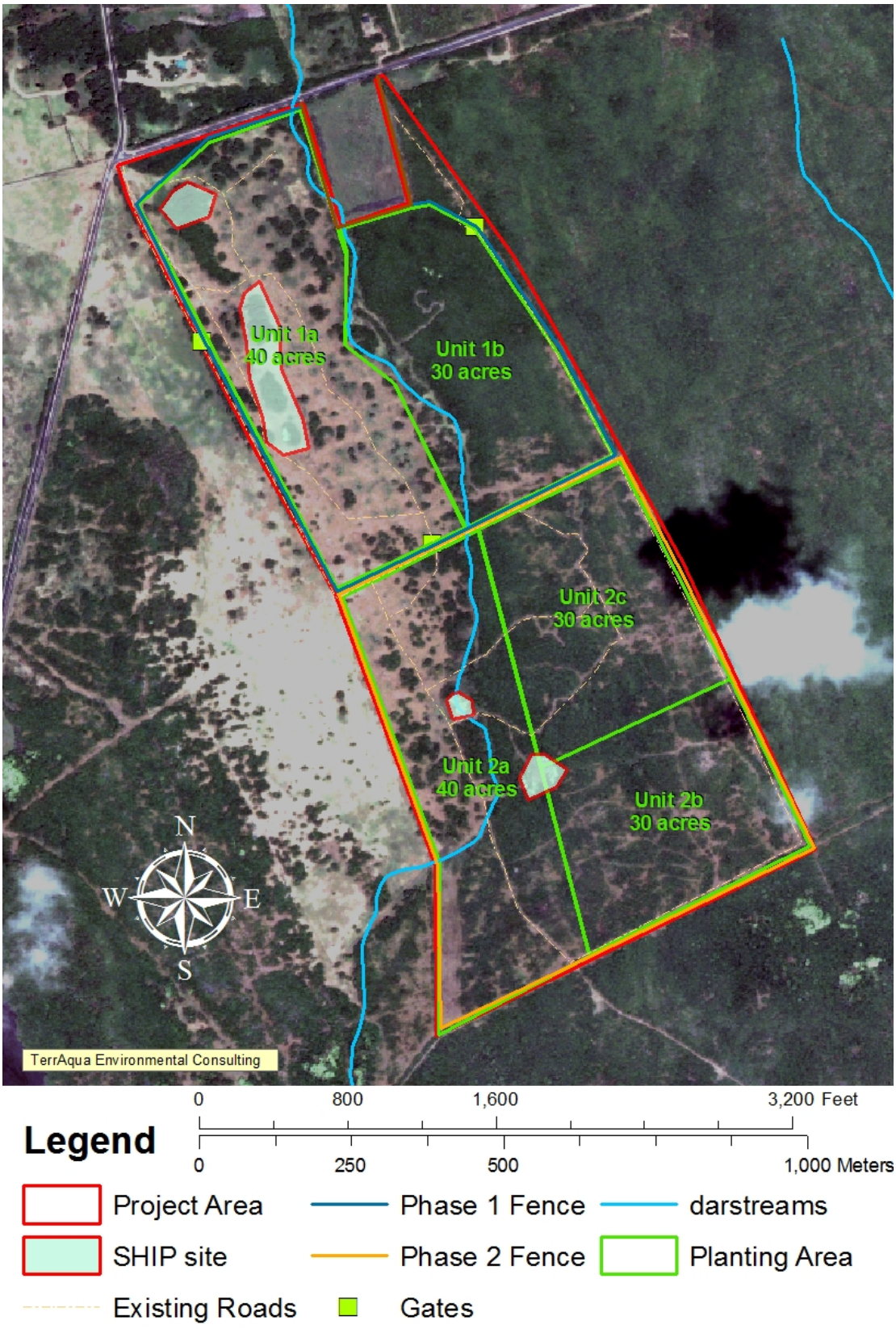
VIII. Required Maps



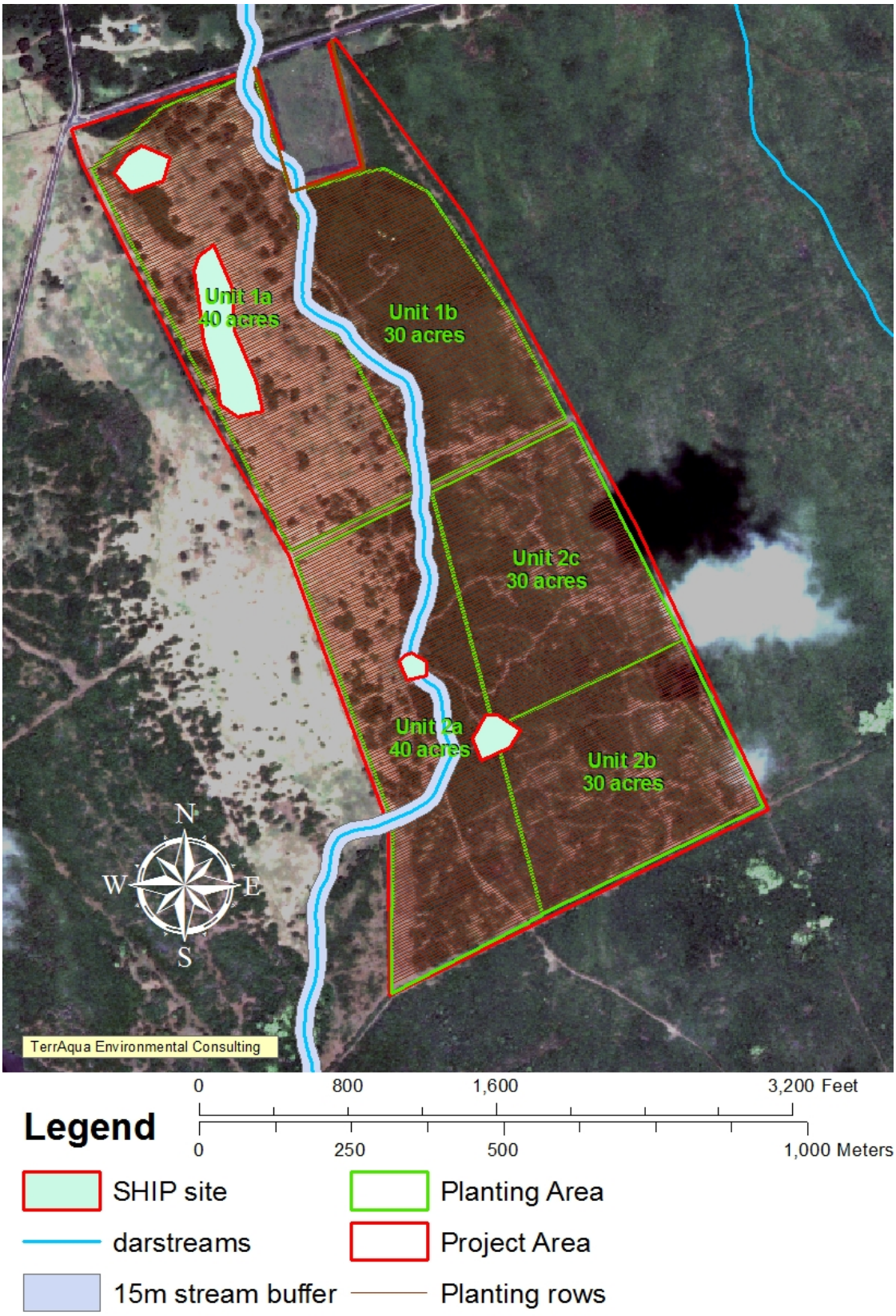
Map 1. Location Map.



Map 2. Topographic map



Map 3. Project Map. Planting areas contain the following practices, Site Prep, Tree and Shrub Establishment, Mulching, Fertilizing, Weed control, and Pruning.



Map 4. Project Map. Cross slope orientation of planting rows at 5m spacing shown.

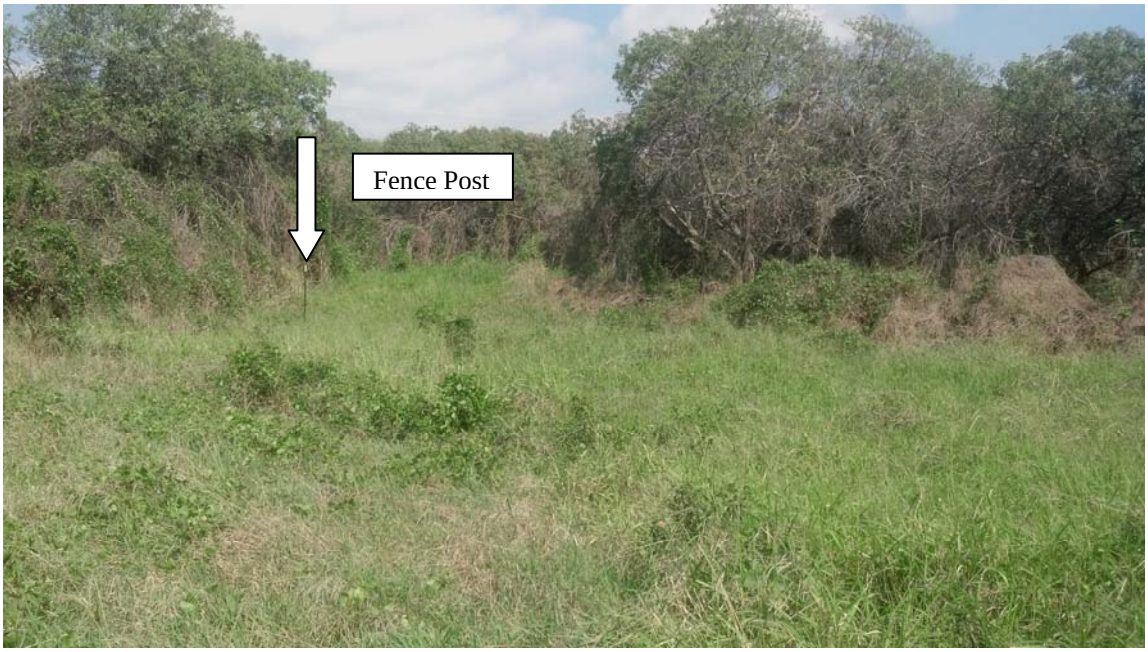


Photo 1. General vegetation outside of Christmasberry thickets. Note 5 ft fence post in picture for scale


Photo 2. General vegetation within christmasberry thickets.

X. Monitoring activities-

Important project parameters will be recorded in order to feedback into project management. Records will reflect (for each acre planting unit) Site prep method and date, Planting dates, average seedling size at planting, quantity and type of fertilizer & amendments used at planting, average seedling size year (n), nursery stock numbers, weed control date, fertilization date, and pruning date. A database will be built and populated with field data to help with reporting and guide management activities

XI. Other Attachments

Environmental Compliance and Permits

Archeological and Historic Sites

Appendix A.

Attached please find: A Burial Treatment Plan for Two Sites Located on TMK:3-9-3-03:73. Prepared by Robert B. Rechtman, Ph. D. (2005)

Environmental Assessment (EA)

Since this project, if approved, involves state funding, an EA will be prepared at that time.

RC-0253

A Burial Treatment Plan for Two Sites Located on TMK:3-9-3-03:73

Pu'u'eo Ahupua'a
Ka'ū District
Island of Hawai'i

PREPARED BY:

Robert B. Rechtman, Ph.D.

PREPARED FOR:

Rick Vidgen
Kamaoa Development Company
78-630 Ihilani Place
Kailua-Kona, HI 96740

July 2005

RECHTMAN CONSULTING, LLC
HC 1 Box 4149 Kea'au, Hawai'i 96749-9710
phone: (808) 966-7636 fax: (808) 443-0065
e-mail: bob@rechtmanconsulting.com
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

A Burial Treatment Plan for Two Sites Located on TMK:3-9-3-03:73

Pu'u'eo Ahupua'a
Ka'ū District
Island of Hawai'i

RECHTMAN CONSULTING

CONTENTS

FIGURES

TABLE

INTRODUCTION

At the request of Mr. Rick Vidgen of Kamaoa Development Company, Rechtman Consulting, LLC has prepared a burial treatment plan (BTP) for two burial sites, SIHP Site 24123 and SIHP Site 24124, located on TMK:3-9-3-03:73. The parcel is roughly 190 acre located southeast of the intersection of South Point Road and Kamā'oa Road (the latter makes up its northern boundary) within the *ahupua'a* of Pu'u'eo, Ka'ū District, Island of Hawai'i (Figures 1 and 2). The landowner is proposing to subdivide the property into nine roughly twenty-acre parcels and develop a central roadway. The purpose of this BTP is to establish procedures for the proper treatment of human skeletal remains that have been identified at SIHP Site 24123 and 24124. This BTP follows the process described in the applicable sections of Chapter 6E - Historic Preservation (Hawai'i Revised Statutes; as amended), and in the current administrative rules for the treatment of burial sites and human remains approved and adopted by the State of Hawai'i. The information presented within this BTP, in conjunction with presentation at the Hawai'i Island Burial Council (HIBC) meeting, is designed to assist the HIBC in making a determination on the preservation of the Native Hawaiian burial sites identified within the project area.

BACKGROUND AND SUMMARY OF THE IDENTIFIED BURIAL SITES

Two sites that contain burials were found during the archaeological inventory survey of TMK:3-9-3-03:73 conducted by Rechtman Consulting, LLC (Clark et al. 2004). SIHP Site 24123 is a small lava tube located in the west-central portion of the parcel (Figure 3) that contains a Historic Period burial. SIHP Site 24124 is a lava tube located in the northwestern portion of the parcel (see Figure 3) that contains two sets of presumably Precontact Period human skeletal remains along with some habitation debris.

Four additional archaeological sites were recorded on the parcel during the inventory survey: Historic boundary walls enclosing the entire study parcel (SIHP Site 24122), two collapsed lava tube depressions with modified edges (SIHP Sites 24125 and 24126), and the remains of a large platform interpreted as a *heiau* (SIHP Site 24127). With the exception of the boundary walls all of these sites are slated for preservation (Table 1).

Table 1. Sites on TMK:3-9-3-03:73 studied by Clark et al (2004).

SIHP Site #	*Type*	*Significance*	*Approved Treatment*
24122	Boundary/ranch walls	D	No further work
24123	Historic burial	D, E	Preservation
24124	Lava tube containing Precontact burials and a habitation area	D, E	Preservation
24125	Collapsed lava tube depressions with modified edges	D	Preservation
24126	Collapsed lava tube depressions with modified edges	D	Preservation
24127	*Heiau*	D, E (A, B?)	Preservation

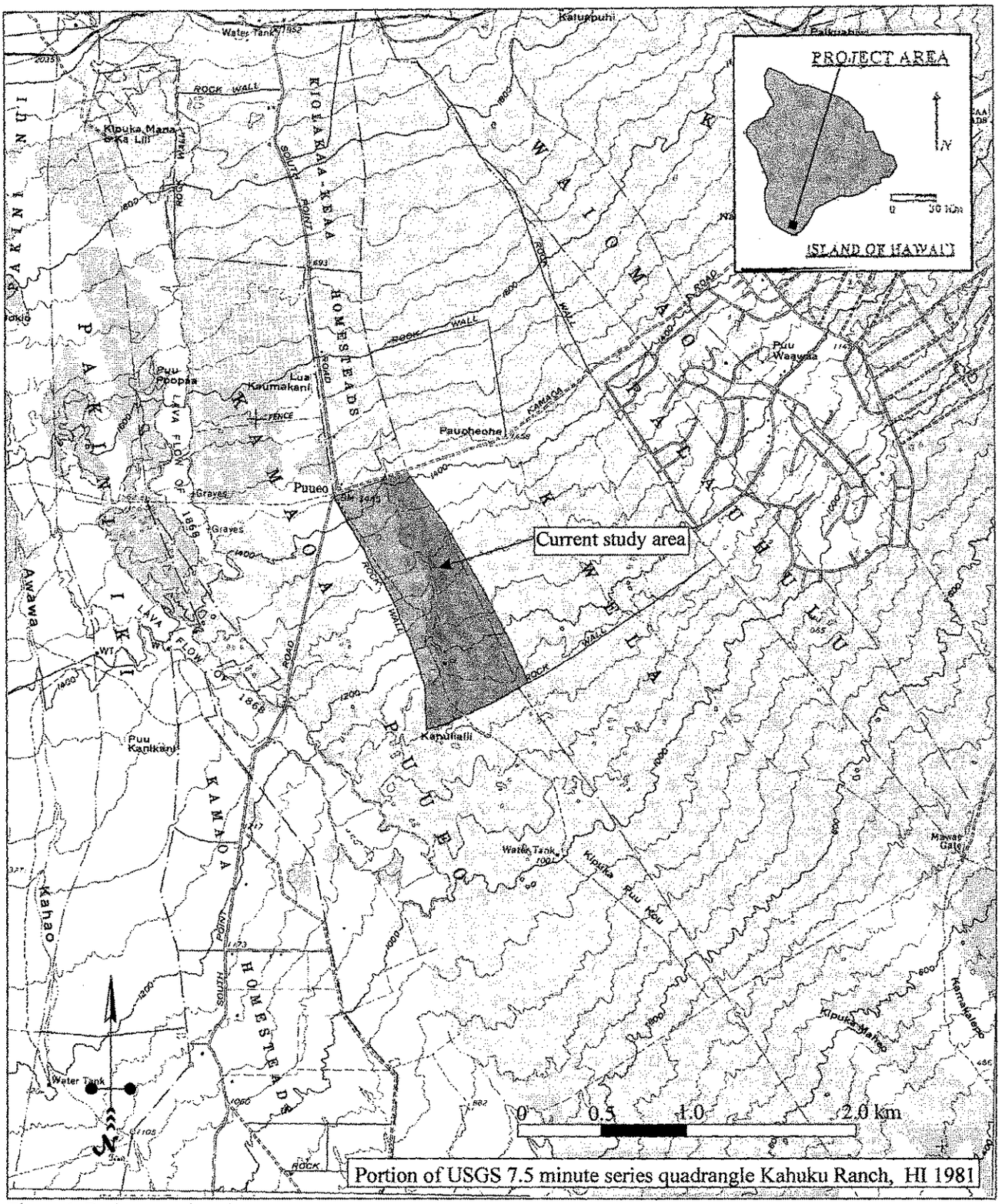


Figure 1. Project area location.

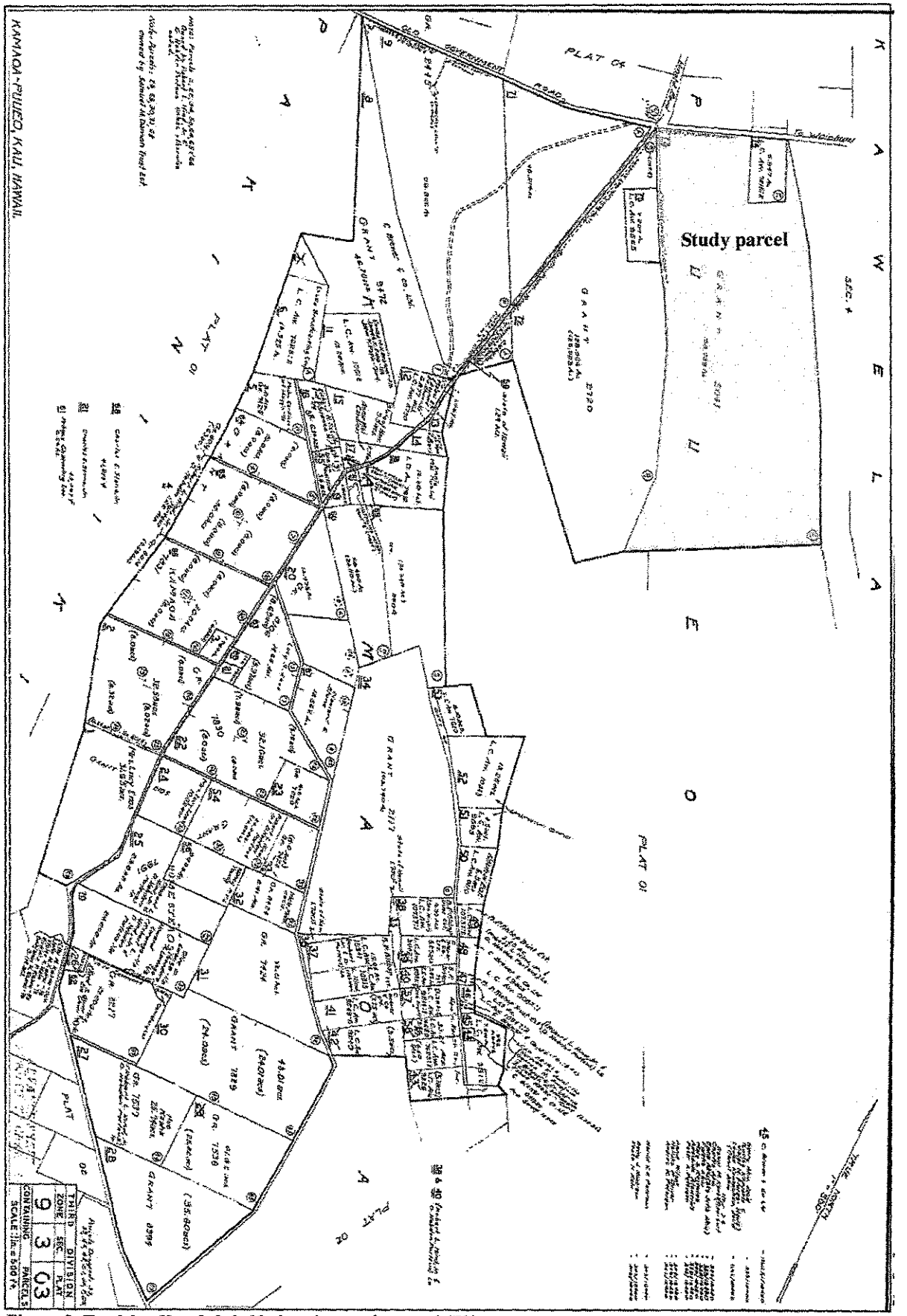


Figure 2. Tax Map Key 3-9-3-03 showing study parcel (73).

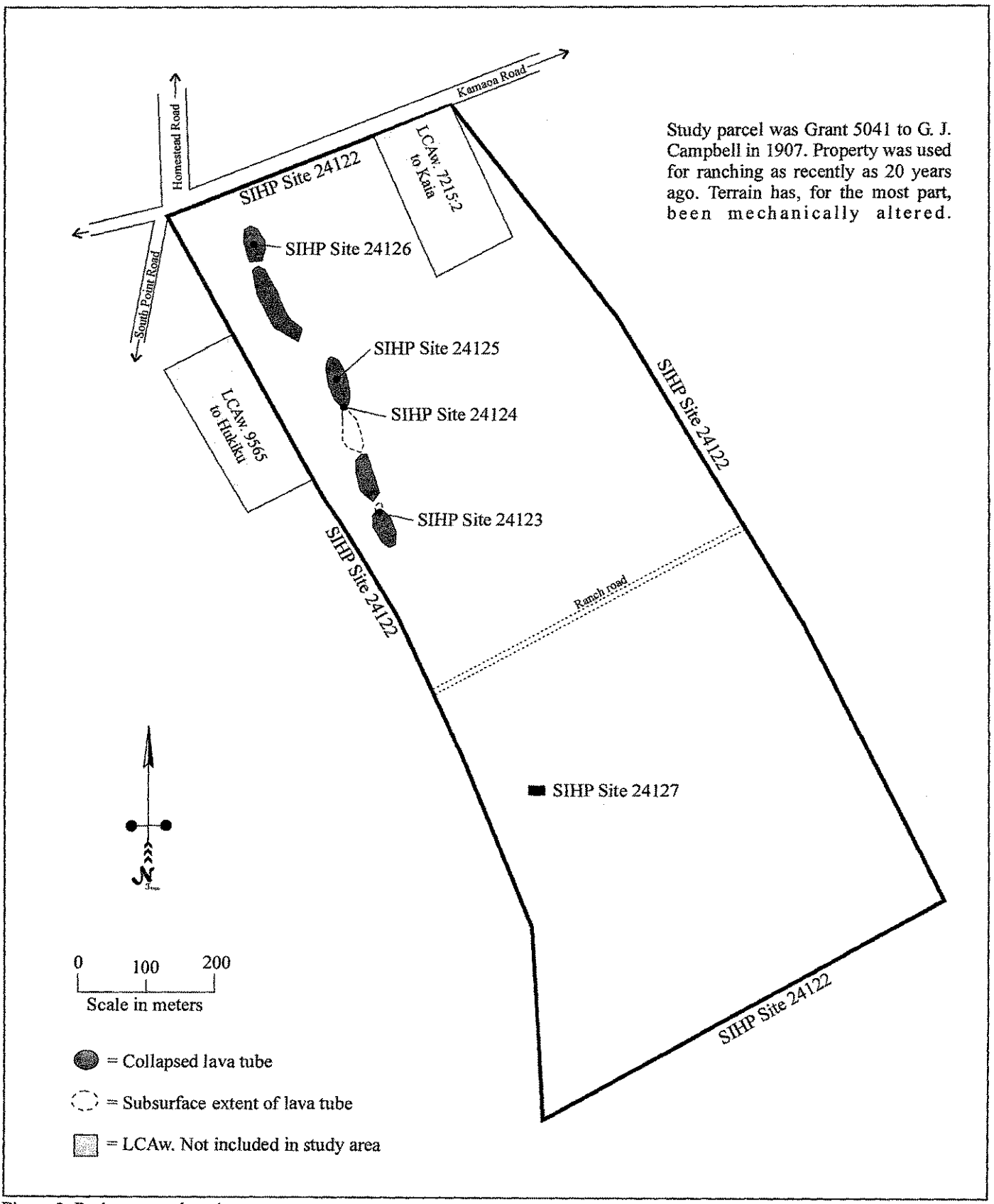


Figure 3. Project area plan view.

SIHP Site 24123

Site 24123 consists of a small lava tube located in the west-central portion of the project area (see Figure 3) that contains a single set of human skeletal remains. The lava tube is located at the northern end of an 18 meter-long by 9 meter-wide oval shaped lava tube collapse; no cultural remains were observed outside of the lava tube that contains the burial. The tube floor is level with the outside ground surface, the opening measures 2.1 meters wide by 0.8 meters tall (Figure 4), and the tube extends approximately 7 meters to the northeast before terminating in collapse. The somewhat scattered human skeletal remains, which include a complete pelvis, sacrum, mandible (no teeth), the distal end of a clavicle, rib fragments, and scapula fragments, are located 5.5 meters from the tube opening, near the terminus of the tube (Figure 5). Several *pāhoehoe* cobbles are located around the bones, possibly remnants of a collapsed or destroyed stone construction. Also observed with the remains was the machine-stitched sole of a leather shoe. Based on this association, Site 24123 is interpreted as a Historic Period burial.

SIHP Site 24124

Site 24124 is a large lava tube located in the northwestern portion of the project area (see Figure 3) that contains two sets of human skeletal remains (Burials 1 and 2) and three stone constructions (Features A, B, and C; Figure 6). The entrance to Site 24124 is beneath a bedrock overhang (Feature D), which is located at the southern end of a large collapse area that also contains Site 24125. A discrete passageway located in the southwestern corner of Feature D descends into a cavernous subsurface chamber that measures 60 meters long (N/S) by 10 meters wide (E/W) by 5.3 meters tall at its highest point. Habitation debris was found beneath the overhang, and charcoal was observed throughout the interior of the tube, possibly the remains of fires used for illumination.

Burial 1

Burial 1 is a set of human skeletal remains located approximately two meters south of the passageway leading into the lava tube (see Figure 6). Three vertebrae and a sacrum were identified on the tube floor adjacent to (west of) a pile of cobbles, located between two huge boulders that may cover the remainder of the interred individual.

Burial 2

Burial 2 is a set of human skeletal remains located approximately four meters east of the passageway leading into the lava tube (see Figure 6). The remains are located beneath a large boulder overhang and are scattered among cobbles on Feature C. Most of the remains are badly decomposed, but several phalanges and one tooth were identifiable.

Feature A

Feature A is an enclosure located 15 meters south of the passageway leading into the lava tube (see Figure 6). Feature A consists of a wall segment, 2.3 meters long by 0.5 meter wide by 0.95 meter tall, along its western side with huge fallen ceiling boulders naturally enclosing the remaining sides. The interior dimensions of the enclosure are 2.1 meters (north/south) by 1.5 meters (east/west). The floor surface is composed of level *ʻaʻā* pebbles; it is uncertain if it was paved or naturally occurring. No artifacts observed in or around the enclosure. The function of Feature A remains uncertain.

Feature B

Feature B is a second enclosure located approximately four meters southeast of Feature A (see Figure 6). The prominent characteristic of this feature is a stacked wall that extends west from the east wall of the lava tube and measures 2.0 meters long by 1.2 meters tall. Cobbles fill in the southern side of the wall to make it level with accumulated fallen ceiling rubble. The wall terminates to the west at a large boulder that makes up the western wall of the enclosure. The northern wall consists of naturally sloping rubble. The interior floor of Feature B consists of scattered cobble rubble and measures 2.2 meters (east/west) by 1.7 meters (north/south). The function of Feature B remains uncertain.

Figure 4. SIHP Site 24123 tube entrance, view to northeast.

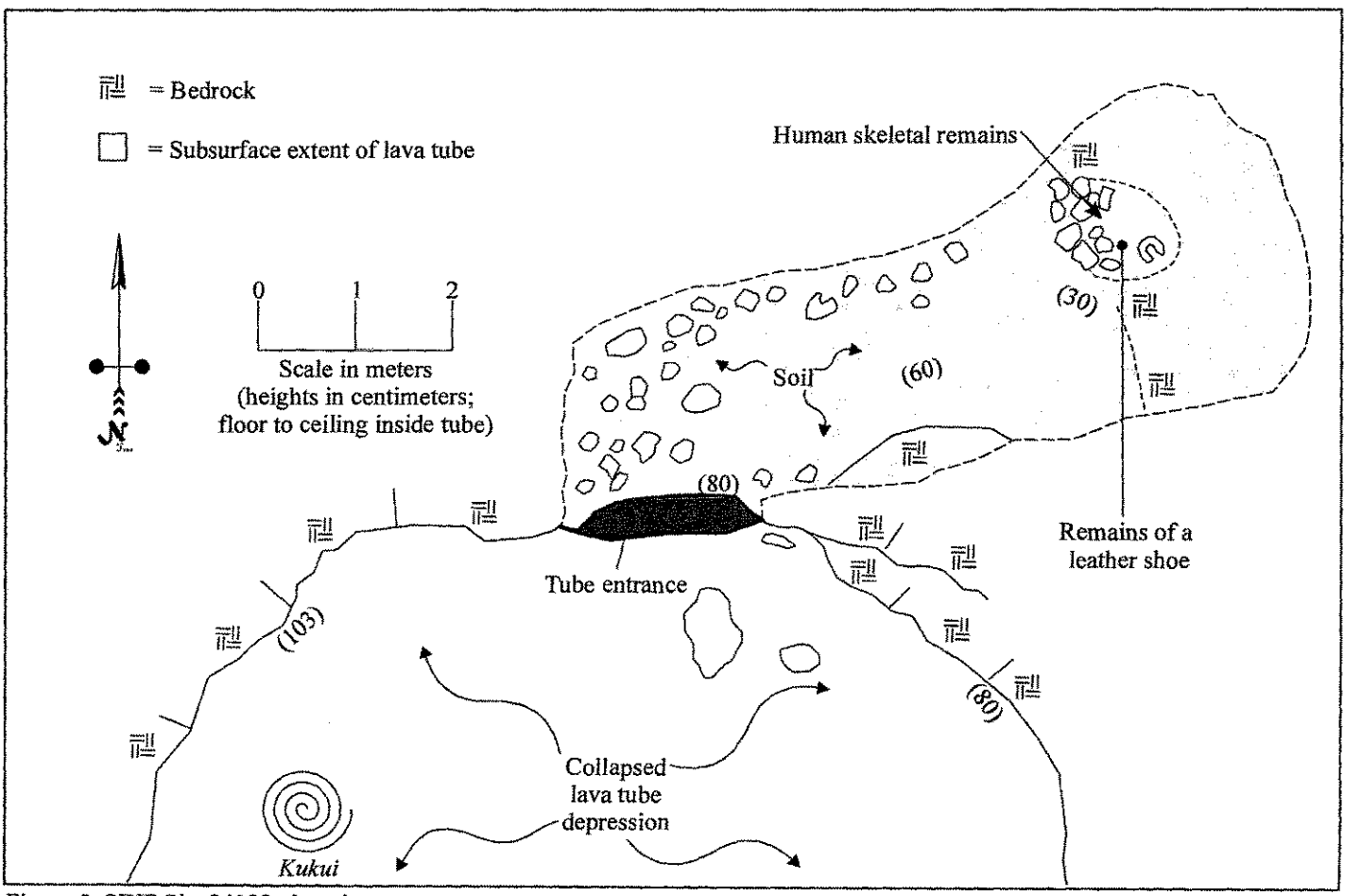


Figure 5. SIHP Site 24123 plan view.

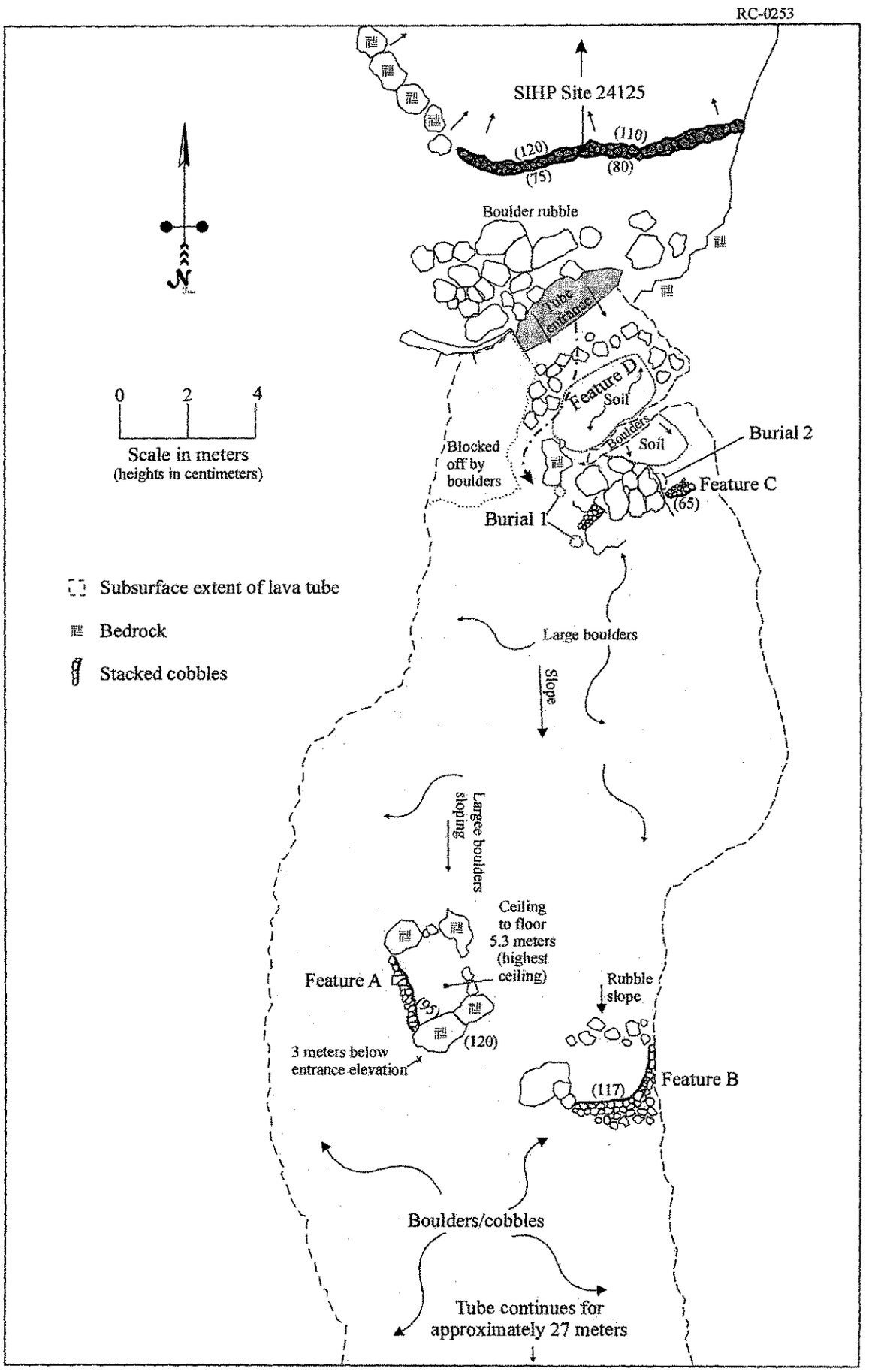


Figure 6. SIHP Site 24124 plan view.

Feature C

Feature C is a stacked wall located 4.5 meters east of the passageway leading into the lava tube (see Figure 6). Feature C could be associated with Burial 2, which is located less than a meter to its north on the level terrace created by the stacked wall. Feature C trends east/west and measures 1.7 meters long by 0.65 meters tall. The level terrace created to the north of the wall measures 1.7 meters long by 0.9 meters wide.

Feature D

Feature D is an overhang shelter that contains the only entrance (Figure 7) into the subsurface portion of the lava tube containing the rest of Site 24124 (see Figure 6). The area inside the overhang measures 6.0 meters east/west by 4.2 meters north/south and stands up to 1.3 meters from floor to ceiling. Large boulders line the area outside the overhang, but inside the shelter is a deposit of thick loamy silt that contains marine shell (including *Cypraea, Cellana,* and *Nerita*), urchin, coral abraders, branch coral, pig bone, and charcoal. The narrow passageway descends from the southwest corner of the overhang into the large subsurface tube chamber. There is a naturally occurring wall of large cobbles and boulders that separates the overhang from the rest of the lava tube. Soil and habitation debris has trickled through the rubble and collected on the tube floor near Burial 1. Based on the presence of habitation debris at Feature D, it is interpreted as a Precontact temporary habitation area.

Figure 7. SIHP Site 24124 tube entrance (Feature D), view to southeast

SEARCH FOR LINEAL AND CULTURAL DESCENDANTS

The search for lineal and cultural descendants consisted of the following:

1. Review of documentary research relating to the project area and its general vicinity;
2. Publication of public notices in newspapers of local and statewide distribution; and
3. Consultation with local community members, the Office of Hawaiian Affairs, the Hawai'i Island Burial Council, and the State Historic Preservation Division.

Documentary Research

As part of the Archaeological Inventory Survey (Clark et al. 2004) historical archival research was performed.

Māhele Claims

During the *Māhele*, Pu'u'eo Ahupua'a was retained as Government Land. The current study parcel was later sold to G. J. Campbell (Grant 5041) in 1907 for cattle ranching purposes. Two *kuleana* lots (LCAw.) were awarded to native tenants by the Land Commission in the immediate vicinity of the current project area (see Figure 2); one within the parcel (LCAw. 7215:2 to Kaia) and one bordering the western edge of the parcel (LCAw. 9565 to Hukiku) (Appendix A). Additionally, Kaumaumanui received a *kuleana* lot (LCAw. 7214; see Appendix A) that may have been located very near to the current project area (see Consultation section below). The location of this roughly 10 acre award is not shown on any of the maps investigated.

Kaia (LCAw. 7215:2) describes his *kuleana* as a "house lot" in the *'ili* of Koaie. He was given the land in 1846 by Kaumaumanui. The house lot was bounded on all sides by the land of the *konohiki*. Hukiku (LCAw. 9565) received his land from Kaumaumanui in 1838. It was located in the *'ili* of Kukalainui and bounded on all sides by the land of the *konohiki*. Hukiku claimed to have one *kihapai* of taro growing on his *kuleana*.

Public Notices

Public notices were published in newspapers of local and statewide distribution. The notices contained the project location information, identification of contact persons, and indication of the landowner/applicant intent for preservation in place of the unmarked graves within Sites 24123 and 24124. Copies of each Affidavit of Publication and Public Notice are attached to this plan (Appendix B). Notices were published as follows:

Ka Wai Ola o OHA—Malaki (March) 2005, Vol. 22, No. 03.

West Hawaii Today— February 4 (Friday), 6 (Sunday), 9 (Wednesday) 2005.

Hawaii Tribune Herald—February 4 (Friday), 6 (Sunday), 9 (Wednesday) 2005.

The Honolulu Advertiser—February 4 (Friday), 6 (Sunday), 9 (Wednesday) 2005.

The notices requested that person having any information concerning the unmarked graves within the project area should contact Dr. Robert Rechtman, Rechtman Consulting, LLC and/or Mr. Kana'i Kapeliela, Burial Site Program, State Historic Preservation Division (SHPD). Clarence A Medeiros Jr. responded to the public notices (Appendix C).

Consultation

On May 31, 2005, Robert Rechtman, Ph.D. and Rick Vidgen met with Clarence A Medeiros Jr. at his residence in South Kona. Mr. Medeiros described his genealogical relationship to the current project area and identified a direct ancestor (Kaumaumanui) who had been awarded a *kuleana* lot somewhere in the immediate vicinity of the subject parcel. Mr. Medeiros was uncertain of the exact location of the *kuleana* lot. Mr. Medeiros was presented with a map of the proposed subdivision showing the archaeological sites and offered his *mana'o* with respect to preservation treatment and access. The site treatments proposed below are consistent with the *mana'o* shared by Mr. Mederios.

PROPOSED TREATMENT OF SIHP SITES 24123 AND 24124

Permanent Preservation Measures

Preservation in place is the treatment proposed for the burials in SIHP Sites 24123 and 24124. In place preservation will be achieved through the establishment of a permanent preservation easement that includes Site 24123 and 24124 and a preservation buffer. The preservation buffer around the sites will be 20 feet measured from the edge of the collapse. The preservation buffer boundary will be delineated by vegetation planting to include either native or Polynesian introduced species. No development activities whatsoever will be permitted within the preservation easements. Invasive species (primarily Christmas-berry) will be removed from with the preservation easements; otherwise they will be left in their natural state. This work will be done under the supervision of a professional archaeologist with the assistance of any recognized descendants. Figure 8 shows the proposed subdivision/development plans, the burial sites and their preservation easements, and the proposed pedestrian access route for recognized descendants.

Several small signs of durable construction will be erected at key locations adjacent to the preservation area. Language for the sign could read:

> ***Wahi Kapu***
> This is a culturally significant place; access is restricted. Please show your respect by not entering this area.
>
> Historic sites are protected under state law. Violation could result in a $10,000 fine.
> (Chapter 6E-11, Hawai'i Revised Statutes)
> DLNR-SHPD (808) 692-0015

Access to the burial sites will be permitted to any lineal and/or cultural descendant who has been formally recognized by the HIBC in accordance with the administration procedures contained within 13§13-300-35: *Recognition of Lineal and Cultural Descendants*. The burial sites will be accessed using a 20 foot wide pedestrian access easement that will extend from Kamā'oa Road along the western and southern boundaries of the newly created Lot 9 (See Figure 8). This access easement, along with the access rights of recognized descendants, will be recorded with the property deed of Lot 9. The right to access the burial sites by formally recognized descendants will also be incorporated into the bylaws of the homeowners association by way of binding covenant.

The land upon which the burial site is situated is currently owned by the developer. Once the development is completed, the property, along with the management responsibilities associated with the burial site, will be transferred to the homeowners association.

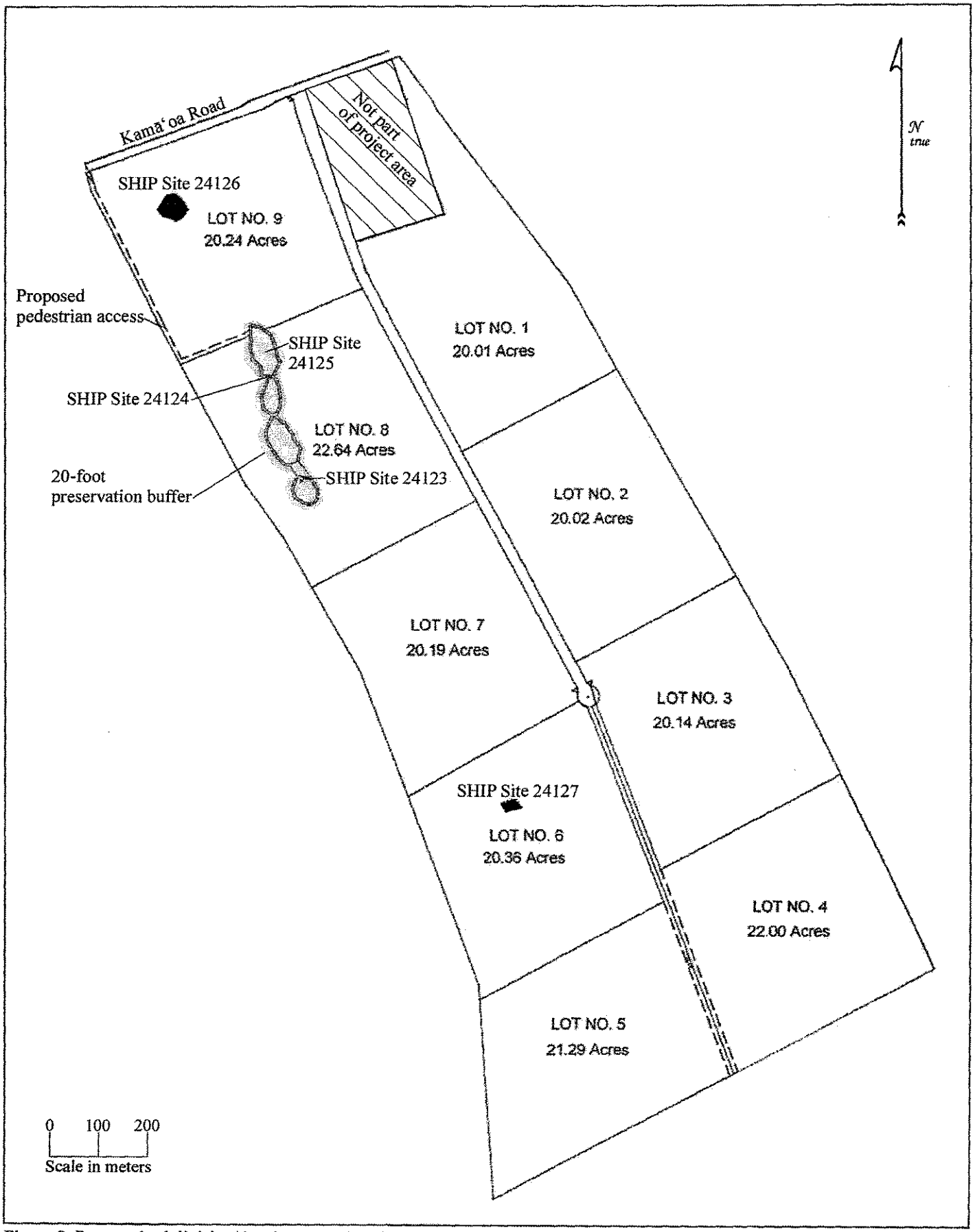


Figure 8. Proposed subdivision/development plan showing archaeological sites, preservation buffer, and access route.

Interim Protection Measures

Interim preservation measures will include erecting brightly colored construction fencing along the boundary of the permanent preservation easements. This fencing will be erected prior to the construction of the subdivision roadway, and will remain in place until all development activities on the newly created Lot 8 have been completed. No development activity will occur within the preservation easement areas. Proper placement of the fences will be checked by a qualified archaeologist and verified in writing to SHPD. The location of the preservation easements will be plotted on appropriate construction plans. Prior to any construction activities, a qualified archaeologist will meet on-site with construction supervisors to point out the preservation easements and to review all preservation requirements needed to ensure the protection of the burials.

IMPLEMENTATION OF THE BURIAL TREATMENT PLAN

The developer will implement the preservation measures described in this plan. Once the preservation measures have been established, and all requirements and restrictions associated with the perpetual easement are incorporated into the property deed, management of the preservation area will be assumed by the homeowners association. During the implementation of the permanent preservation measures, the interim protection measures described above will be implemented and govern the development activities.

REFERENCE CITED

Clark, M., J. Nelson, and R. Rechtman

2004 An Archaeological Inventory Survey of TMK:3-9-3-03:73, Pu'u'eo Ahupua'a, South Point, Ka'ū District, Island of Hawai'i. Rechtman Consulting Report RC-0202. Prepared for Rick Vidgen, Kamaoa Development Company, Kailua-Kona, Hawai'i.

APPENDIX A—LCAw. Information

LCAw. 9565 to Hukiku

N.R. 634v8
To the Land Commissioners at Honolulu: I have a claim for land /at/ Kukalainui, bounded on the east by Kawela, on the west by Kamaoa, makai, by the sea, and by Maheu on the mauka side. 1 kihapai of taro is on the mauka side and 1 mala of gourd is at Kawela.
HUKIKU

N.T. 462v8
Kaumaumanui and Kaea, sworn, they have seen Hikiku's land at Kukalainui ili of Puueo ahupuaa which was from Kaumaumanui in 1838. No objections. It is bounded by the land of the konohiki.

[Award 9565; R.P. 7076; Mohowae Kau; 1 ap.; 7.3 Acs]

LCAw. 7215 to Kaia

N.R. 301v5
Hear ye, ye Land Commissioners: I hereby explain my claim for land at Puueo in Kau, District 2, Island of Hawaii. I have an `ili, Kapuaiohiwa, and I also have a house lot at Nohoae [Mohowae], which is 20 fathoms long by 20 wide. I took occupancy of this land in 1847. Done on this 21st day of January, 1848
KAIA

N.T. 460v8
Kaumaumanui, sworn, he has seen Kaia's land.

Section 1 - Kapuaiohiwa ili in Puueo ahupuaa. Kaumaumanui had given his in 1846.
Section 2 - House lot ili of Koaie.
Section 3 - Banana field, ili of Kaumakani in Mohowae ahupuaa from Kakona in 1841.

The boundaries are:
Section 1: Bounded by the land of the konohiki.
Section 2: Bounded by the land of the konohiki.
Section 3: Bounded by the land of the konohiki.

[Award 7215, R.P. 7887; Puueo Kau; 2 ap.; 10.8 Acs]

LCAw. 7214 to Kaumaumanui

N.R. 301v5
Hear ye, ye Land Commissioners: I am a claimant for food from the landlords, who were under Kamehameha I. I, Kaumaumanui, hereby explain my land to you. I have an `ili, Alelolii, at Puueo, in Kau, District 2, Island of Hawaii.
Farewell to you all.
KAUMAUMANUI
January 21, 1848

N.T. 460v8
Kaia me Aea, sworn, they have seen Kaumaumanui's land.
Section 1 - Olelolilii ili at Puueo, Kalolou had given to him in 1817.
Section 2 - Banana field at Mohowae ahupuaa. Kakona had given him in 1840
Life has been continuous. No objections.
These sections are bounded by the land of the konohiki.

[Award 7214; Puueo Kau; 2 ap.; 10.1 Acs]

APPENDIX B

Affidavit of Publication and Public Notice: *West Hawaii Today*

Affidavit of Publication and Public Notice: *Hawaii Tribune Herald*

Affidavit of Publication and Public Notice: *The Honolulu Advertiser*

Public Notice: *Ka Wai Ola o OHA*

RC-0253

AFFIDAVIT OF PUBLICATION

State of Hawaii)
) SS:
County of Hawaii)

Lorelei Logan, being first duly sworn, deposes and says:

1. That she is the Advertising Administrative Assistant of WEST HAWAII TODAY, a newspaper published in the City of Kailua Kona, State of Hawaii.

2. That "PUBLIC NOTICE All persons having information concerning unmarked burials on a roughly 190-acre property " of which a clipping from the newspaper is attached hereto, was published in said newspaper on the following date(s) February 4,6 and 9, 2005 (etc.)

Subscribed and sworn to before me this 9th day of Feb. , 2005

Notary Public, Third Circuit,
State of Hawaii
Is
Lana L. Taira

LANA L. TAIRA NOTARY PUBLIC STATE OF HAWAII

My Commission expires: August 4, 2005

PUBLIC NOTICE

All persons having information concerning unmarked burials on a roughly 190-acre property (TMK: 3-9-3-03:73) at South Point in Pu'u'eo Ahupua'a, Ka'ū District, Island of Hawai'i are hereby requested to contact Dr. Bob Rechtman, Rechtman Consulting, LLC (808) 966-7636, HC1 Box 4149, Kea'au, HI 96749, and/or Mr. Kana'i Kapeliela, Burial Sites Program (808) 692-8037, 555 Kākuhihewa Building, 601 Kamokila Blvd., Kapolei, HI 96707. The subject property was awarded as a land grant (Grant 5041) to G. J. Campbell in 1907. Two *kuleana* lots (LCAw.) were awarded to native tenants during the *Māhele* in the immediate vicinity of the current project area: LCAw. 7215:2 to Kaia and LCAw. 9565 to Hukiku. The traditional *konohiki* of the area may have been Kaumaumanui.

Appropriate treatment of the remains will occur in accordance with HRS, Chapter 6E, respective to the burial site. The landowner intends to preserve all burials in place, following the preparation of a Burial Treatment Plan in consultation with any identified descendants and with the approval of the Hawai'i Island Burial Council. All interested parties should respond within thirty (30) days of this notice and provide information to DLNR-SHPD adequately demonstrating lineal descent from these specific Native Hawaiian remains, or cultural descent from ancestors buried in the same *ahupua'a*.

(No. 6257–West Hawaii Today: February 4, 6 and 9, 2005)

AFFIDAVIT OF PUBLICATION

State of Hawaii)
) SS:
County of Hawaii)

LEILANI K. R. HIGAKI, being first duly sworn, deposes and says:

1. That she is the BUSINESS MANAGER of HAWAII TRIBUNE HERALD, a newspaper published in the City of HILO, State of Hawaii.

2. That the "PUBLIC NOTICE All persons having information concerning unmarked burials...(TMK: 3-9-3-03:73) at South Point...etc.,".

of which a clipping from the newspaper as published is attached hereto, was published in said newspaper on the following date(s) February 4, 6, 9, 2005, (etc.).

221864

Leilani K R Higaki

Subscribed and sworn to before me
this 17th day of February, 2005.

SHARON H. P. OGATA
Notary Public, Third Circuit, State of Hawaii
My commission expires [illegible]

PUBLIC NOTICE

All persons having information concerning unmarked burials on a roughly 190-acre property (TMK: 3-9-3-03:73) at South Point in Pu'u'eo Ahupua'a, Ka'u District, Island of Hawai'i are heraby requested to contact Dr. Bob Rechtman, Rechtman Consulting, LLC (808) 966-7696, HC1 Box 4149, Kea'au, HI 96749, and/or Mr. Kana'i Kapeliela, Burial Sites Program (808) 692-8037, 555 Kakuhihewa Building, 601 Kamokila Blvd., Kapolei, HI 96707. The subject property was awarded as a land grant (Grant 5041) to G. J. Campbell in 1907. Two *kuleana* lots (LCAw.) were awarded to native tenants during the *Mahele* in the immediate vicinity of the current project area: LCAw. 7215:2 to Kala and LCAw. 9565 to Hukiku. The traditional *konohiki* of the area may have been Kaumaumanui.

Appropriate treatment of the remains will occur in accordance with HRS, Chapter 6E, respective to the burial site. The landowner intends to preserve all burials in place, following the preparation of a Burial Treatment Plan in consultation with any identified descendants and with the approval of the Hawai'i Island Burial Council. All interested parties should respond within thirty (30) days of this notice and provide information to DLNR-SHPD adequately demonstrating lineal descent from these specific Native Hawaiian remains, or cultural descent from ancestors buried in the same *ahupua'a*.

(221864 Hawaii Tribune-Herald: February 4, 6, 9, 2005)

RC-0253

IN THE MATTER OF

PUBLIC NOTICE

PUBLIC NOTICE

All persons having information concerning unmarked burials on roughly 190-acre property (TMK: 3-9-3-03:73) at South Point in Pu'u'eo Ahupua'a, Ka'ū District, Island of Hawai'i are hereby requested to contact Dr. Bob Rechtman, Rechtman Consulting, LLC (808) 966-7636, HC1 Box 4149, Kea'au, HI 96749, and/or Mr. Kana'i Kapeliela, Burial Sites Program (808) 692-8037, 555 Kākuhihewa Building, 601 Kamokila Blvd., Kapolei, HI 96707. The subject property was awarded as a land grant (Grant 5041) to G. J. Campbell in 1907. Two *kuleana* lots (LCAw.) were awarded to native tenants during the *Māhele* in the immediate vicinity of the current project area: LCAw. 7215:2 to Kaia and LCAw. 9565 to Hukiku. The traditional *konohiki* of the area may have been Kaumaumanui.

Appropriate treatment of the remains will occur in accordance with HRS, Chapter 6E, respective to the burial site. The landowner intends to preserve all burials in place, following the preparation of a Burial Treatment Plan in consultation with any identified descendants and with approval of the Hawai'i Island Burial Council. All interested parties should respond within thirty (30) days of this notice and provide information to DLNR-SHPD adequately demonstrating lineal descent from these specific Native Hawaiian remains, or cultural descent from ancestors buried in the same *ahupua'a*.

(Hon. Adv.: Feb. 4, 6, 9, 2005) (A-999858)

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII
City and County of Honolulu } *ss.*

Jane Kawasaki *being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of THE HONOLULU ADVERTISER, a division of GANNETT PACIFIC CORPORATION, that said newspaper is a newspaper of general circulation in the State of Hawaii, and that the attached notice is a true notice as was published in the aforereferenced newspaper as follows:*

The Honolulu Advertiser: 3 time(s), on
02/04/2005, 02/06/2005, 02/09/2005

and that affiant is not a party to or in any way interested in the above entitled matter.

Jane Kawasaki

Subscribed and sworn to before me this 9th day of February A.D. 2005.

Elsie A. Maruyama

ELSIE A. MARUYAMA *Notary Public of the First Judicial Circuit*
State of Hawaii
My commission expires March 7, 2008

ELSIE A. MARUYAMA NOTARY PUBLIC STATE OF HAWAII

Vol. 22, No. 03

Ka Wai Ola OHA

Ka Wai Ola o OHA – The Living Water of OHA

Malaki (March) 2006

Burial Notices

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APPENDIX C

February 25, 2005

Kana'i Kapeliela
Burial Sites Program
555 Kakuhihewa Bldg.
601 Kamokila Blvd.
Kapolei, Hawaii 96707

RE: Unmarked Burials on TMK 3-9-3-03:73 at South Point
in Pu'u'eo Ahupua'a, Ka'u District, Island of Hawaii

Dear Kana'i,

I am responding to the Public Notice of unmarked burials found within the Pu'u'eo Ahupua'a, at South Point, Ka'u District, Island of Hawai'i.

Attached please find my descendancy claims and supporting documents for the above-mentioned burials. Also attached is my genealogy from Kaumaumanui AKA Oi Umauma Kahaiokai. Please note that Kaia's wife, Kamahana Ipaapuka, is the sister of Kawahinealaau Ipaapuka, who is the wife of Kaumaumanui. I am a lineal descendant of Kaumaumanui, who was the konohiki of the project area. Also attached is my genealogy from Kaia. Both Kaumaumanui and Kaia owned lands in Kona and Ka'u, Hawaii Island and lands on Oahu.

My request for lineal descendancy also includes recognition for my following family members, Kareen K. Medeiros, Jacob L. Medeiros, Lincoln K. Medeiros, Jaimison K. Medeiros, and Jayla A. Medeiros.

HRS §13-300-35(e) states that the department shall have no longer than thirty days from receipt of a written claim to review and assess the information submitted and upon completion of review and assessment process, the department shall return all information. Please maintain the confidentiality of my records and I do not authorize the release of any information without my express consent.

Sincerely,

Clarence A. Medeiros, Jr.

CAM:njm
Attachments

cc: Keola Lindsey
Melanie Chinen
Dr. Bob Rechtman