

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 28, 2013

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

ESTHER KIA'AINA
DEPUTY DIRECTOR

WILLIAM TAM
DEPUTY DIRECTOR
WATER

AD AIR RESOURCES
BOARD AND REGULATIONS
HISTORIC PRESERVATION
COMMISSION ON WATER RESOURCES MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES (COURT AND
ENFORCEMENT)
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAIHUAHAWA STAMPS AND POSTAL COMMISSION
LAND
STATE PARKS

Director
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

FILE COPY

DEC 08 2013

REC'D OF ENVIRONMENTAL
QUALITY CONTROL
13 NOV 26 10:58
RECEIVED

Dear Director,

The Department of Land and Natural Resources hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the Kaupukea Orchards, LLC State of Hawaii Forest Stewardship Program Cost Sharing Grant for a Riparian Restoration and Timber Production Project situated at (3) 2-8-003:009 and (3) 2-8-003:010 portions, in the Hamakua District on the Island of Hawaii for publication in the next available edition of the Environmental Notice.

The Board of Land and Natural Resources approved the Final Environmental Assessment and accepted the Finding of No Significant Impact at their meeting on October 11, 2013 under item C-2. The Department of Land and Natural Resources has included copies of comments and responses that it received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact as an appendix to the FEA.

Enclosed is a completed OEQC Publication Form and two copies of the FEA-FONSI. An Adobe Acrobat PDF file of the same and an electronic copy of the publication form in MS Word has been submitted via email along with a summary of the action in a text file to your office.

If there are any questions, please contact Irene Sprecher at (808) 587-5167 or melissa.i.sprecher@hawaii.gov.

Sincerely,

William J. Aila, Jr.
Chairperson

me

**APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JANUARY 2013 REVISION)**

Project Name: Kaupakuea Orchards, LLC - State of Hawaii Forest Stewardship Program Cost Sharing Grant for a Riparian Restoration and Timber Production Project.

Island: Hawaii

District: Hamakua

TMK: (3) 2-8-003:009 and (3) 2-8-003:010 portions

Permits:

Approving Agency: Department of Land and Natural Resources

Post Office Box 621, Honolulu, Hawaii 96809, Attn: Irene Sprecher, (808) 587-4167
(Address, Contact Person, Telephone)

Applicant: Kaupakuea Orchards, LLC 4110 NE 27th Avenue, Lighthouse Point, Florida 33064, Attn: Christopher Trimarco, (954) 650-0967

(Address, Contact Person, Telephone)

Consultant: Forest Solutions, Inc. P.O. Box 2037, Kamuela, Hawaii 96743, Attn: Thomas Baribault
(808) 776-9900 x238

(Address, Contact Person, Telephone)

Status (check one only):

DEA-AFNSI

Submit the approving 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.

X_FEA-FONSI

Submit the approving 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 approving 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 approving 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 applicant simultaneously transmits to both the OEQC and the approving agency, 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 oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

FEIS

The applicant simultaneously transmits to both the OEQC and the approving agency, 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 oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

Section 11-200-23
Determination

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

Statutory hammer
Acceptance

The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.

Section 11-200-27
Determination

The approving agency simultaneously transmits its notice to both the applicant 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)

RECEIVED
13 NOV 26 AM 49
DEPT. OF ENVIRONMENT & NATURAL RESOURCES
QUALITY MANAGEMENT

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

The Kaupakuea Orchards, LLC Forest Stewardship project will be partially funded by a cost-sharing grant with the Hawaii Forest Stewardship Program of the Department of Land and Natural Resources. The main features of the project are the restoration of riparian areas along the Waia'ama Stream by removal of invasive species and planting of native species, and planting of high-value hardwood trees in abandoned pastureland. The total area in the project is 23.2 acres of which 4.4 acres will be dedicated to riparian restoration, and 18.8 acres to hardwood plantings. The environmental assessment covers the first decade of the project, which will involve planting native tree species in the riparian zone and establishing high-value hardwoods in the pasture area.

The proposed actions would replace invasive species with native species and high-value hardwood species. This improves natural resources of biodiversity, habitat, and forest cover. This project improves cultural resources by expanding the area on Hawaii Island dedicated to native forest preservation. All proposed forestry activities will also be consistent with the State's Best Management Practices. The proposed management actions will involve contracting with local forestry management entities and completing the project will yield a net positive economic result for the local community.

Final Environmental Assessment

for

State of Hawaii

Forest Stewardship Program

Cost Sharing Grant

for a

Riparian Restoration

and

Timber Production Project

Pepeekeo, Hawai'i

TMK (3) 2-8-003:009

TMK (3) 2-8-003:010

Released for public review:

July 22, 2013

Prepared by:

Thomas Baribault

Research Forester

Forest Solutions, Inc.

P.O. Box 2037

Kamuela, HI 96743

On behalf of:

Kaupakuea Orchards, LLC

Christopher Trimarco

Table of Contents

1. PROJECT SUMMARY	2
2. PROJECT DESCRIPTION	3
2.1. Overview.....	3
2.2. Project size	3
2.3. Project duration	3
2.4. Environmental Assessment	3
2.5. Cost Sharing Grant	4
2.6. Forest management plan.....	4
3. Description of site environment.....	4
3.1. Historical land use	5
3.2. Current Forest Condition.....	5
3.3. Existing vegetation and land use	5
3.4. Historical or cultural resources	7
3.5. Fauna	8
4. Anticipated environmental impacts and mitigation measures.....	8
4.1. Soil conservation.....	8
4.2. Water quality	9
4.3. Impacts on biological resources	9
4.4. Access	10
4.5. Feral ungulate management.....	10
4.6. Impacts on cultural resources.....	11
5. Alternatives to proposed management	11
5.1. No alternative management.....	11
5.2. Alternative agricultural management.....	11
6. Determination	12
7. Appendix	13

1. PROJECT SUMMARY

Project Name:	Riparian Restoration and Timber Production Project
Applicant:	Kaupakuea Orchards, LLC (KOL)
Approving agency:	Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW)
Requirement for EA:	Seeking cost sharing funds from the State of Hawaii in the form of a Forest Stewardship Grant for restoring native trees in riparian areas and for planting high-value hardwood timber trees to be harvested no earlier than 30 years after planting.
Anticipated determination:	Anticipated Finding of No Significant Impact (AFONSI)
Project Location:	Pepeekeo, Hawaii. The project is located on Kaupakuea Homestead Road, approximately 10 miles north of Hilo, and 1.9 miles mauka from the turnoff from Hawaii Belt Road.
Acreage:	Project proposed for 23.3 acres of a total parcel area of 41.5 acres.
Tax Map Keys:	(3) 2-8-003: 009 and 010
Land Use District:	Agriculture (State, County)
Pre-Consultation:	Nicholas Koch (project consultant, FSI) Thomas Baribault (project consultant, FSI) Office of Hawaiian Affairs DLNR Historic Preservation Division DLNR Division of Forestry and Wildlife County of Hawaii Planning Department Adjacent neighbors

2. PROJECT DESCRIPTION

2.1. Overview

The proposed Forest Management Plan (FMP) would be funded by a cost sharing grant (CSG) with the State of Hawaii (SoH) Forest Stewardship Program (FSP), to be provided by the SoH Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW). The management plan, which is available for public review at the Hilo Public Library, and by request at (808) 776-9900 x 238, conforms to requirements of the Forest Stewardship Program as outlined in the Forest Stewardship Handbook (see **Appendix A**). The main features of this FMP are (1) restoration of riparian areas along the Waia'ama Stream by removal of invasive species and planting of native species and (2) planting of high-value hardwood trees in abandoned pasture land. The CSG covered by this environmental assessment (EA) covers strictly the first decade of this project, which will involve planting native tree species in the riparian zone and establishing high-value hardwoods in the pasture area. Harvesting of the hardwood trees would not occur within the timeframe of the CSG, and is therefore not the subject of this EA or this FMP. For all restoration, planting, and silvicultural operations, KOL is committed to using best management practices (BMP, see **Appendix B**) endorsed by SoH.

2.2. Project size

The total area encompassed by the two TMK is 41.5 acres, of which 4.4 acres would be dedicated to riparian restoration, and 18.8 acres to hardwood plantings. The remaining acreage encompassed by the two TMKs will be dedicated to a single family home(s), farm buildings, and various agricultural activities. Small scale, non-commercial, fruit orchards, vegetable growing, and ornamental horticulture are anticipated. This area, and the described activities, are not involved with the FMP, are not an element of the CSG request, and do not fall under the scope of this EA.

2.3. Project duration

Although the high value timber element is at least a 30-year project, a CSG is sought only for the first ten years of the project. During this time, timber plantings would be completed within the first three years, with cost sharing for maintenance through the fifth year of the project. Native forest restoration in the riparian areas along Waia'ama Stream would continue for the duration of the project, through the tenth year.

2.4. Environmental Assessment

According to the Forest Stewardship Handbook and rules of the FSP, an EA is required for projects in which SoH CSG funding is sought. In particular, "Plans that include the establishment of timber with the intent of eventual harvest [regardless whether harvest occurs during the cost sharing phase of the plan] and projects involving fencing an area over 10 acres must be accompanied by an Environmental Assessment (EA), HRS §343." This FMP involves both eventual harvest as well as more than 10 acres of area to be fenced, thus triggering the EA requirement under FSP rules. Elements of the Forest Management Plan that concern riparian restoration are not described in detail in this document. The riparian buffer restoration activities are covered under the DLNR Department of Forestry and Wildlife's allowed exemption classes dated June 12, 2008. Particularly, Exemption Class 1 number 8 and 9, and

Exemption Class 4 number 6 and 7. Only the 18.8 acres that are to be planted with hardwood trees fall under the scope of this EA.

2.5. Cost Sharing Grant

The duration of the project for which SoH funding is sought is ten (10) years. During this period, KOL seeks a 50% cost sharing for all restoration, establishment, and maintenance operations. Cost sharing for native forest restoration in the riparian areas does not require treatment in this EA; only cost sharing requests for the hardwood plantings are under review in this document.

2.6. Forest management plan

Chief elements of this FMP include restoration and hardwood timber plantings:

- Restore forest cover to the upper elevations of each TMK by establishing plantations of several high value hardwood species (see map, **Appendix C**).
- Protect and expand the existing native forest cover in streamside management zones (SMZ) by controlling invasive weed species (see map, **Appendix C**).
- Restore portions of the SMZ where invasive species have dominated the ecosystem (see map, **Appendix C**).

The long term goals for this FMP are twofold. First, the project will convert more than 18 acres of marginal pasture land to high value hardwood plantations that can be selection harvested on a 45-year rotation. Hardwood tree species are selected on a combination of criteria. These include, viability of establishment and likelihood of thriving (considering local conditions, like soils, rainfall, elevation, amount of sunshine, etc.). Another criteria is economic viability (seedling availability and costs, market demand for timber, etc.) Trees that meet these criteria must also have acceptable ratings from the State of Hawaii Weed Risk Assessment. There will be positive environmental benefits from the outset of the project that will continue well beyond the harvest period. Due to weed mitigation during the establishment period, ongoing maintenance, and the shade cover created by well established hardwood trees, invasive species will be kept at bay. Also, the chosen selective harvesting method plans for forest cover to remain on the landscape beyond the 45 year rotation period. Per the approved FMP, harvesting will follow the best management practices in place at that time. Second, invasive species in the SMZ, particularly adjacent to Waia'ama Stream, will be removed and the area restored to a native forest state dominated by 'ōhi'a (*Metrosideros polymorpha*) in the canopy and native ferns such as uluhe (*Dicranopteris linearis*) and hapu'u (*Cibotium glaucum*) in the understory. **The project owner, KOL, intends to support this important work in part with a SoH FSP CSG.**

3. Description of site environment

Access to the property from the main highway is via the Kaupakuea Homestead Road. To reach this road when driving North from Hilo, one should pass the 10 mile marker and then turn mauka (left) across from Sugar Mill Road (an important landmark is the large metal gear prominently displayed at this intersection). At the 0.8 mile distance after the left turn is a fork in the road—the left option should be taken, which is a one-lane paved road. On this road, one should travel 1.9 miles, at which

point there is a two-panel farm gate to the left, which is adjacent to utility pole #67. The property access route continues through this gate to the South (toward Hilo), shortly arriving at the concrete box culvert. Project location is also provided in map form (see **Appendix C**).

3.1. Historical land use

The property was owned by various sugar producing companies from 1900 through 1994; conventional sugar cultivation methods were practiced, including subsoil ripping, irrigation, heavy fertilizer and agrochemical use, and controlled burning. These practices implemented over 95 years led to substantial net losses in soil depth and organic matter, and increased compaction. Thereafter, ownership transferred to a private individual, who leased small portions of the property to rotating ginger producers, alternating with ranching, which continues to the present. The larger original property has been subdivided into the Tax Map Key (TMK) featured in this Forest Management Plan (FMP), and the current owner plans to transition from a largely herbaceous vegetation type to a mixture of tree species within the project area.

3.2. Current Forest Condition

The property is typical of abandoned cane land in the Hilo-Honomu area, with only a small minority of the property (2.8 acres, or 7%) currently forested. The forest area is restricted to less than four acres within the larger Streamside Management Zone (SMZ) adjacent to Waia'ama Stream, with less than an acre of tree cover elsewhere. Native overstory tree species are a minor component of the SMZ, and the only Hawaiian species present is 'ōhi'a. Several native understory species, chiefly ferns, appear in low numbers among the dominant invasive weed species, which is strawberry guava (*Psidium cattleianum*). An assortment of other weed species are represented to varying degrees, and the pasture area should be considered a completely alien ecosystem dominated by African grasses and assorted broadleaf species. In its current condition, the parcel cannot serve as habitat for any native Hawaiian bird species, or for the Hawaiian bat, all of which require closed canopy forest.

3.3. Existing vegetation and land use

3.3.1. Vegetation cover

The vast majority (37.2 acres, 93%) of the area on the property is currently active pasture land. In the future, intensive pasture will be discontinued on at least 17 acres and likely across the entirety of both parcels. Although the current vegetation cover consists of almost exclusively grasses, without grazing pressure, a suite of non-native woody species would begin to invade. The most likely invaders include common guava (*Psidium guajava*), strawberry guava (*Psidium cattleianum*), faya tree (*Morella faya*), African olive (*Olea europaea subsp. Cuspidate*), tropical ash (*Fraxinus uhdei*), Albizia (*Albizia lebbek* and *Falcataria moluccana*), and ginger (*Hedychium spp*).

The property supports very limited canopy cover in the SMZ, comprising almost exclusively guava (*Psidium guajava* and *P. cattleianum*) that reach a maximum height of less than 10 m. A few specimens of 'ōhi'a (*Metrosideros polymorpha*) are present in the Southern SMZ, with several individuals approximately 15 m tall. Also in the Southern SMZ are several areas that contain dead rose apple (*Syzygium jambos*) that was killed after infection with the Myrtaceae generalist rust *Puccinia psidii*. Counter-intuitively, *Psidium spp* are unaffected by

P. psidii, and are the chief species that appear to be replacing *S. jambos* in the canopy. Some seedlings of *F. uhdei* have also escaped from the adjacent State land; these individuals are still juveniles, yet will need to be removed to ensure taxonomic integrity of the SMZ.

The understory of the SMZ property is invaded with smaller strawberry guava almost to the exclusion of native species. Several species of ginger (*Hedychium spp.*) and raspberry (*Rubus spp.*) are also present, but grazing has controlled these species to a large extent. In limited sections of the Southern SMZ, dense mats of the Hawaiian native uluhe fern have managed to suppress strawberry guava; unfortunately, this dynamic is a losing battle for the uluhe. The native hapu'u fern (*C. glaucum*) is in the process of being out competed by the guavas.

3.3.2. Adjacent land use

3.3.2.1. Agriculture

Areas directly down slope (makai) from the two TMKs under consideration in this EA are used for agricultural production, including ginger cultivation and pasture. Land use in these adjacent areas can be positively affected by management actions proposed for this project. All site preparation, which will involve machinery, will be conducted according to SoH BMP, and under correct and proper permitting. As such, erosion and runoff will not be encountered. The hardwood forest can serve as a windbreak to the adjacent makai properties as well as reducing the amount of invasive species in the immediate vicinity. The riparian restoration will provide benefits to the adjacent makai properties by improving their upstream water quality.

3.3.2.2. Abandoned land

Areas directly up slope (mauka) from the two project parcels are currently unoccupied and unused for any purpose, whether agricultural, residential, or environmental. Proposed project actions will not affect adjacent mauka parcels.

3.3.2.3. Neighboring land owners

Parcels actively occupied by neighbors, defined as parcels with houses in which persons currently reside, are located only on the Northern side of Kaupakuea Homestead Road, and separated from the property by Ālia Stream and by a belt of tall trees. Planting operations, restoration activities, and the eventual stand of trees on the parcels will not affect neighboring land owners.

3.3.2.4. Fire risk

The property is moist year round, with rainfall in excess of 150 inches evenly distributed throughout the year. Consequently, fire risk is low, and is not expected to pose a threat to the forest investment or to the restoration effort. Furthermore, the streams that define the North and South boundaries provide sources of fire fighting water, while the road at the Eastern edge of the timber compartments serves as a fire break. At the Western edge of the property, open pasture is unlikely to carry any significant fire risk. Thickets of uluhe fern may carry fire in the event of extremely dry and windy conditions that prevail for extended periods, however the total area occupied by uluhe is negligible, and all of this area is adjacent to Waia'ama Stream. Easy access to stream water should allow for any fire to be extinguished quickly.

3.3.3. Soils

A single main soil class, the Kaiwiki hydrous silty clay loam, is represented across the property. A precise description of this soil is derived verbatim from the USDA NRCS Soils Data Viewer, 2011:

The Kaiwiki hydrous silty clay loam component makes up 90 percent of the map unit. Slopes are 5 to 15 percent. This component is on ash fields on lava flows on shield volcanoes on islands. The parent material consists of volcanic ash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very high. Shrink-swell potential is very high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 12 percent. This component is in the F159AY500HI Acacia koa-Metrosideros polymorpha-cibotium Menziesii/freycinetia Arborea ecological site. Non irrigated land capability classification is 4e. Irrigated land capability classification is 43. This soil does not meet hydric criteria.

The Kaiwiki soils are on windward mountain slopes with an Eastern aspect. Elevations range from 1,300 to 1,400 feet, and slopes are 0 to 10 percent. The soils formed in volcanic ash. The average January temperature is 66 degrees F.; the average July temperature is 75 degrees F.; and the mean annual soil temperature is 62 degrees F.

Due to a prolonged history of heavy land use by sugar cultivation and rotational ginger production, and continued issues with soil compaction and erosion as a consequence of cattle grazing activities, the soil on the property is marginally productive. There has been some surface erosion due to slope, high rainfall and cattle activity, though this is concentrated along pathways and access roads, and the minor SMZ on the Northern drainage.

3.3.4. Streams and wetlands

One continuous stream (the Waia'ama Stream) defines the Southern boundary of the property, while an intermittent stream (the Ālia Stream) is located at the Northern boundary. In the center of the Northern parcel is an intermittent drainage bridged by a large concrete box culvert constructed in 1925. Portions of each TMK contain low areas in which water may collect during heavy rains, but these areas do not qualify as streams or wetlands. Technically and functionally there are no wetlands on the property. The slope of the property and steep banks on streams and intermittent drainages prevent water accumulation.

3.4. Historical or cultural resources

Aside from the 1925 historical yet still functional culvert, no unusual or suspect items have been found during comprehensive reconnaissance of the property. A long history of sugar cultivation most likely erased any potentially important historical, cultural, or archaeological signatures; a full archaeological survey has not occurred. However, if during the project, any items are uncovered that are suspected to be of archeological or historical significance, work will be halted and DLNR's State Historic Preservation Department will be contacted as soon as possible.

3.5. Fauna

3.5.1. Non-native fauna

Ground birds, including kalij pheasant (*Lophura leucomelanos*) and wild turkeys (*Meleagris gallopavo*), are frequently observed on the property though their direct impacts on the forest are small; they do carry invasive weed seeds around. Also potentially present are Pueo (*Asio flammeus*) and Io (*Buteo solitarius*). The Hawaiian hoary bat (*Lasiurus cinereus*) is almost certainly not present. The bat may live in the nearby forest, however, and therefore may be encountered in the vicinity. No 'alalā (Hawaiian crow) sightings have occurred, though the area may have been part of its original habitat. Other native birds common to the area can be found in the ecological site description prepared by the USDA NRCS. Feral pigs (*Sus scrofa*) and escaped domestic cattle (*Bos taurus*) are the largest wildlife threats to establishing forest plantings; a proposed hog-wire fence and gate system should eliminate both cattle and pig disturbance. Cattle are devastating to young trees of all species, as they preferentially browse meristem tissues and occasionally strip bark off saplings. The other major damage caused by cattle is erosion, particularly in the SMZ where the animals disturb soils as they walk to the water to drink.

3.5.2. Endangered species

Although a biological assessment has not been completed and is not anticipated, endangered species have not been sighted in the area. The purpose of this plan is to establish productive forestry operations on 18.82 acres, and to restore native riparian habitat on 4.45 acres. Endangered plant species will not be used for this restoration effort because their survival rates are not optimal, and the most important objective is to establish robust native species. It is anticipated that endangered animal species may use the riparian zones as corridors, though the total area is likely too limited to serve as residential habitat. Please refer to the full ecological site description prepared by the NRCS for additional details on flora and fauna associations.

4. Anticipated environmental impacts and mitigation measures

4.1. Soil conservation

The proposed project is expected to impact soils solely in a positive way. A century of sugar cultivation by various companies, and two decades of cattle grazing thereafter, has left the parcel with highly compacted soils, a nearly totally alien plant species assemblage, and significant erosion issues due to cattle actively grazing within SMZ. Proposed management actions will improve soils in several ways. First, site preparation in the abandoned pasture areas for hardwood plantings will reverse compaction that occurred during the two decades of grazing. Second, established trees will improve soil retention because their root systems are more extensive than alien grasses, and because cattle will no longer be present in the planted areas. Third, establishment procedures will maintain grass cover in areas between tree rows to stabilize soils while trees are in the juvenile phase; trees will also be mulched, potentially with material derived from invasive species removal in the SMZ, to further protect soils from erosion. Moreover, both native restoration plantings and hardwood trees will be fertilized with formulas appropriate for their respective areas. Native plantings will be fertilized with controlled-release compounds to eliminate risk of eutrophication in the adjacent streams, while nitrogen, phosphorus, and potassium addition to soils for timber plantings will improve overall nutrient balance in this degraded

landscape. College of Tropical Agriculture and Human Resources (CTAHR) fertilization guidelines will be consulted. Please refer to the full Forest Management Plan for further details.

4.2. Water quality

4.2.1. Erosion mitigation

Water quality in the Waia'ama Stream is currently being negatively impacted by cattle grazing immediately adjacent to the stream. Cattle walk from the pasture to the stream, causing severe erosion along stream banks and continuous input of silt and fecal matter to the aquatic ecosystem. The proposed project will eliminate cattle from the landscape, both stopping SMZ erosion as well as improving water quality and purity. The cattle will be fenced from stream access. In the timber plantings, tree cover will further retain soils such that makai reaches of both Waia'ama Stream and Ālia stream will experience reduced sedimentation. To reduce erosion, so as to maintain or improve water quality during the site preparation related to the restoration activity, the roots of the cut trees will be left in place. This will stabilize the soil on the stream bank while the root systems of the newly planted native species take hold and replace the non-natives.

4.2.2. Restoration activities

The current density of *P. cattleianum* cover in many sections of the riparian zone is extreme. Following cut stump treatment, debris would be assembled into linear piles (windrows) along contour, providing at once some measure of erosion control and defining the restoration planting beds. In extremely steep areas, killing the current cover and leaving it in place is acceptable—roots of the dead trees will stabilize the steep banks of the Waia'ama Stream, and will prevent immediate re-colonization. These areas can be occupied over the long term with uluhe fern. Certain herbicide agents must be avoided due to their toxicity to aquatic organisms either in fresh or salt water. Substantial restoration work next to the Waia'ama Stream will require the use of herbicides to eliminate strawberry guava and other plants, but the particular chemical and dose selected must be safe for use near streams. For example, the chemical triclopyr is not labeled for use where it may contaminate water systems, while the chemical aminopyralid is so labeled. In areas with relatively shallow slopes less than 50%, which is approximately the upper limit where crews can realistically work without highly specialized equipment, invasive tree cover will be controlled using a **cut stump treatment**. In this approach, trees are severed at the base using either a blade or a chainsaw; herbicides are then immediately applied to the exposed vascular tissue. To prepare for planting native tree species, further management of woody debris will be required.

4.3. Impacts on biological resources

Proposed management activities, including restoration and reforestation of degraded SMZ (4.4 acres) and replacement of alien grasses on degraded pasture land by high value hardwood trees (18.8 acres) will yield positive benefits for the land in terms of biodiversity, erosion control, animal habitat, and aesthetics. In SMZ, the vast majority of extant plants are non-natives, principally strawberry guava and ginger. These pernicious invasive species will be replaced by native trees ('ōhi'a, pilo, lama) and ferns (hapu'u, uluhe). Pasture areas of both TMK are currently occupied by alien grasses, which serve no positive purpose for native bird or bat habitat. In contrast, the proposed high-value timber plantings will drastically improve habitat for both groups. Although timber harvesting is not covered in the scope of

this EA or FMP (since no CSG is sought for that activity), harvesting would occur on a selection basis (uneven aged management), which conforms to SoH BMP and would maintain tree cover on the land.

Many of the high value hardwood species proposed for this project rank between 1 and 6 on the University of Hawai'i weed risk assessment scale. These risk values suggest limited potential for invasiveness, and three factors further neutralize this threat. First, the project area is completely surrounded by non-native ecosystems that contain species with far higher weed risk values—these areas act as a containment buffer. Second, the weed risk values 1 – 6 are minimal compared with the species that this project replaces (e.g. strawberry guava (WRA 18) or tropical ash (WRA 11)). Third, the land management prescription calls for aggressive brush control in the hardwood plantings; although this prescription targets primarily species that are truly weeds, it would also address any regeneration of the timber species.

4.4. Access

Significant access infrastructure exists on the property. A road constructed by Hāmākua Sugar Company bisects the property, and a concrete box culvert constructed in 1925 allows easy crossing of the drainage in the Northern parcel. Some access improvement will need to occur, chiefly removing organic debris from the existing road bed. All access improvements will be conducted within the confines of the existing road alignment following the SoH BMP. Maintenance to the culvert appears to be unnecessary at this juncture, although the structure should be monitored for deterioration, particularly spalling of the concrete due to corrosion of steel reinforcements. The main access road will provide operational access during the planting and maintenance phases of the project, as well as serving as the routine access for the landowner. The road is passable by heavy equipment for site preparation as well as ATV and tractor traffic for intermediate maintenance. Ultimately, harvesting equipment would also access the site through this point. Portions of the access road are in ideal condition, with a gravel base and a capped and crowned construction. Numerous sections have been covered by organic debris, however. Access improvement activities will primarily involve removing organic matter from the existing road, and the final condition of the access will conform to road construction BMP.

4.5. Feral ungulate management

The Northern boundary of the property is effectively fenced with barbed wire, but the Eastern boundary is only partially fenced, and is unfenced at the culvert. The Waia'ama Stream acts as a partial natural fence, with the waterfall and steep banks preventing cows from escaping to or entering from the State parcel to the South. The mauka (West) boundary of both parcels is unfenced, however; and cattle and feral pig access must be restricted before planting can begin. **Hunting and trapping will also be employed to control ungulates if necessary.** Fencing will be needed to protect both the restored native forest and the new hardwood plantings primarily from cattle, although the mauka hog-wire fence will also restrict feral pig incursions. Improvements should be made to existing North fence to also restrict pig access; fencing shallow portions adjacent to the Waia'ama Stream is also advised in order to completely enclose the planting area. Fence material will be 4' hog-wire with a barbed skirt to prevent undermining. Fences will need periodic inspection for integrity, and will be repaired as needed every 6 months while the seedlings are young (to year 2), and annually thereafter.

4.6. Impacts on cultural resources

4.6.1. Cultural and historical resources

Just as the century of sugar cultivation and two decades of intensive pasture use have obliterated native ecosystems and resulted in an impoverished flora and fauna across the project area, cultural, archaeological, and historical resources have similarly been erased. Consequently, no negative impacts to historical or archaeological resources are anticipated. The only nominally historical element present on the property is the box culvert from ca. 1925; this feature would be improved and maintained in conjunction with the project, although not using FSP or SoH funding and therefore irrelevant to this EA.

4.6.2. Social issues

The chief social issues involved with forestry projects tend to be (1) aesthetic impacts (trees blocking views) and (2) noise associated with establishment and / or harvesting. First, this project holds zero potential for aesthetic impacts because there are no neighbors at higher elevations and therefore no views to be blocked. Second, establishment activities for this project will involve machinery comparable to that which was in use for decades during sugar cultivation, and similar to machinery currently used in agricultural production on adjacent parcels, translating to minimal impact on neighboring landowners. Finally, harvesting activities are approximately 45 years distant, and since these are not an element of the FMP, should not be considered during review of this EA.

5. Alternatives to proposed management

5.1. No alternative management

The primary alternative to the proposed management is an absence of management. Both parcels are owned outright by KOL, which does not entertain plan for management scenarios other than the FMP under consideration in this EA. Therefore, if the actions proposed here were not undertaken, no management would occur on the property. In an absence of active land management, both pasture areas and SMZ would be rapidly colonized by aggressive invasive plant species, increasing the presence of these unwanted plants as well as the feral ungulates that live in such plant communities. Habitat for native birds and for the Hawaiian bat cannot be regenerated adequately in stands of strawberry guava, which is the primary species that would colonize this land. Overall, the option of no alternative management would yield a landscape in even worse condition than the current pasture cover. In contrast, the proposed action will improve native species biodiversity in SMZ, and improve native fauna habitat in the high-value timber planting areas.

5.2. Alternative agricultural management

Although KOL has no plans to implement alternative agricultural management options, it should be emphasized that these alternatives are also less desirable—from a conservation perspective—than the proposed actions. The two real alternative agriculture options are (1) cultivation of annual row crops and (2) grazing. Regarding (1), repeated tilling of the soil, especially in areas such as Pepeekeo mauka with its high rainfall, leads to significant soil erosion, runoff, siltation, and loss of soil fertility. The proposed management would avoid all of these negative consequences. Regarding (2), grazing is

responsible for soil compaction in pasture areas and severe erosion in SMZ. Forestry projects avoid both of these outcomes, with superior results for ecosystem health, conservation, biodiversity, habitat, etc.

6. Determination

Natural and cultural resource enhancement

The proposed action would replace invasive species with (1) native species in SMZ and (2) high-value hardwood species in degraded pasture areas. This improves natural resources in terms of biodiversity, habitat, and forest cover. This project improves cultural resources by expanding the area on Hawaii Island dedicated to native forest preservation.

Beneficial environmental use

All proposed forestry activities will be consistent with State of Hawaii Best Management Practices. In contrast, current land use (pasture, annual agricultural) is antithetical to forestry BMP; the proposed project therefore replaces a detrimental environmental use with a positive one.

Enhancement of environmental quality

The proposed project is consistent with HRS §344, regarding the policy that projects seeking funding from the SoH, in this case as a CSG, will not conflict with long-term goals of the State environmental policies or guidelines. Moreover, the FMP for which this EA is relevant has been approved by DLNR DOFAW FSP, and is therefore in accord with the FSP guidelines (**Appendix A**).

Cumulative adverse effects

This project will result in no cumulative adverse effects.

Rare, threatened, or endangered species

The parcels involved with this FMP and this EA currently contain virtually no native Hawaiian plants of any type, and support no native fauna. The SMZ restoration elements of this project will restore native Hawaiian plant species along important riparian habitat corridors, thus improving representation of important common Hawaiian tree species as well as providing potential habitat for native fauna.

Economic outcomes

The proposed management actions will involve contracting with local forestry management entities, including foresters, nursery owners, machine operators, forest technicians, and forest laborers. Completing this project will thus yield a net positive economic result for the local community during the establishment and maintenance phases of both the timber planting and the native forest restoration.

Public health outcomes

There are no public health concerns associated with the proposed project.

Secondary outcomes

Not applicable.

Energy consumption

This project consumes no municipal energy, as it features no powered infrastructure.

Aesthetic consequences

Because this project is located mauka from all residential neighbors, the growth of trees can have no negative aesthetic impact.

Overall determination**Anticipated Finding of No Significant Impact.****7. Appendix****Responses to pre-consultation communications:**

County of Hawaii Planning Department letter dated August 2, 2013

William P. Kenoi
Mayor



Duane Kanuha
Director

Bobby Command
Deputy Director

West Hawai'i Office
74-5044 Ane Keohokalole Hwy
Kailua-Kona, Hawai'i 96740
Phone (808) 323-4770
Fax (808) 327-3563

County of Hawai'i
PLANNING DEPARTMENT

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
Phone (808) 961-11288
Fax (808) 961-8742

August 2, 2013

Mr. Christopher Trimarco
4110 NE 27th Avenue
Lighthouse Point, FL 33064

Dear Mr. Trimarco:

Subject: Pre-Consultation on Environmental Assessment
Applicant: Kaupakuea Orchards, LLC
Project: Riparian Restoration and Hardwood Timber Project
Tax Map Key: 2-8-3:9 and 10.South Hilo.Hawai'i

This is in response to your June 29, 2013 letter regarding the riparian restoration and hardwood timber project that was approved by the State of Hawai'i Forest Stewardship Advisory Committee on May 10, 2013. 4.4 acres will be dedicated to riparian restoration and 18.8 acres to hardwood planting.

The proposed Forest Management Plan would be funded by a cost sharing grant with the State of Hawai'i Forest Stewardship Program to be provided by the Department of Land and Natural Resources, Division of Forestry and Wildlife. The main features of this plan are (1) restoration of riparian areas along Waia'ama Stream by removing invasive species and planting of native species and, (2) planting of high-value hardwood trees in abandoned pasture land. The grant covered by the Environmental Assessment is only for the first 10 years of the 30-year project. Harvesting of the hardwood trees would not occur within the timeframe of this grant.

We have the following to offer:

1. Parcel 9, consisting of 20 acres, and Parcel 10, consisting of 20.44 acres are both zoned Agricultural (A-20a) by the County. Forestry is a permitted use on both parcels.
2. Both parcels are designated Agricultural by the State Land Use Commission.
3. The General Plan designation for both parcels is Important Agricultural Land.

Mr. Christopher Trimarco
August 5, 2013
Page2

4. Based on the information provided at this time, no Planning Department permits are required.
5. The subject parcels are not located within the County's Special Management Area.

Should you have questions, please contact Esther Imamura at (808) 961-8139.

Sincerely,


DUANE KANUHA
Planning Director

ETI:cs
P:\Wpwin60\ETI\Eadraftpre-Consul\Trimarco Kaupakuea Orchards LIC.Rtf

cc: Planning Department - Kona