



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
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AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

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OFC. OF ENVIRONMENTAL
QUALITY CONTROL

MAY 25 2000

File: OA-2973

MEMORANDUM

To: Genevieve Salmonson, Director
Office of Environmental Quality Control

From: Dean Y. Uchida, Administrator
Land Division *[Signature]*

Subject: Final Environmental Assessment (EA)/Finding of No
Significant Impact (FONSI) for Opaepala Watershed
Protection Project, TMK 1-6-3:01, Opaepala
Watershed, Koolau Mountains, Oahu

The Department of Land and Natural Resources has reviewed the comments received during the 30-day public comment period that began on February 8, 2000 for the subject project. We have determined that this project will not have significant environmental effects, and have therefore issued a FONSI. Please publish this notice in the June 8, 2000 OEQC Environmental Notice.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the Final EA for the project. The summary of this project has not changed from that noted for the draft EA.

Please contact Tom Eisen of our Planning Branch at 587-0439 if you have any questions on this matter.

Enclosures

cc: Manabu Tagomori
Brent Liesemeyer (DOFAW)

JUN - 8 2000
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2000-06-08-0A-FEA

**FINAL
ENVIRONMENTAL ASSESSMENT**

**(OPAEULA WATERSHED PROTECTION) PROJECT
OAHU, HAWAII**

in accordance with

CHAPTER 343, HAWAII REVISED STATUTES

Proposed by

**Kamehameha Schools
U. S. Army Garrison - Hawaii
U. S. Fish and Wildlife Service
Division of Forestry and Wildlife,
Hawaii Department of Land and Natural Resources**

May 15, 2000

I. SUMMARY

**CHAPTER 343, HAWAII REVISED STATUTES (HRS)
FINAL ENVIRONMENTAL ASSESSMENT**

Project Name: Opaeula Watershed Protection Project
Proposing Agency: Kamehameha Schools
Approving Agency: State Department of Land and Natural Resources
Project Location: Opaeula Stream Drainage, Koolau Mountains, Oahu
TMK Oahu 1-6-3-01
Property Owner: Kamehameha Schools

Anticipated Determination of Environmental Assessment:

Kamehameha Schools expects a Finding of No Significant Impact (FONSI) for the proposed project.

Agencies Consulted During EA Preparation:

Federal: U. S. Department of Agriculture
Natural Resources Conservation Service
U. S. Department of Interior
U. S. Fish and Wildlife Service
U. S. Department of Defense
U. S. Army Garrison, Hawaii

State: Department of Health
Department of Land and Natural Resources
Division of Forestry and Wildlife-Oahu
Division of Land Management-Oahu
Historic Preservation Division
University of Hawaii
Hawaii Tree Snail Laboratory-Dr. Michael Hadfield

City and County: Board of Water Supply
Department of Land Utilization
Neighborhood Boards:
North Shore Neighborhood Board
Wahiawa Neighborhood Board

Private: Audubon Society
Bishop Museum

Conservation Council of Hawaii
Hawaii Trail and Mountain Club
Pig Hunters Association-Oahu
The Nature Conservancy of Hawaii
Sierra Club

Projects Action Summary:

Kamehameha Schools, in a cooperative effort with the State of Hawaii, Division of Forestry and Wildlife, Natural Area Reserves program, the U.S. Army Garrison, Hawaii and the U.S. Fish and Wildlife Service propose constructing a pig enclosure fence in the uppermost portion of the Opaepala Drainage, Koolau Mountains, Oahu (See Map Appendix A). This project is part of ongoing efforts to protect native forest ecosystems, and rare, threatened and/or endangered flora and fauna found in the area. The fence route has been surveyed for impact on botanical, vertebrate, and invertebrate resources with a negative declaration.

The project involves clearing by hand a corridor no more than ten feet wide and erecting a fence line using: 7' beznal steel posts alternated with treated wood posts; 42" beznal coated hog wire with one strand beznal coated barb wire on bottom. The fence will be skirted along the bottom on the outside of the fence with a horizontal 24" hogwire apron (See appendix B). This fence will create a pig free habitat of approximately 150 acres. In conjunction with the fence project a 12' by 16' weather port shelter platform will be constructed (See Appendix C). The ultimate goal of the project is to remove feral pigs (*Sus scrofa*) from within the fence, to aide in securing the section as a natural ecosystem, provide habitat for rare plants, and as an ecosystem size site for outplanting rare plants.

The anticipated start date for the project is the first quarter of the year 2000 calendar year. Construction of the tent platform is anticipated to take approximately 2 weeks. Clearing common native and introduced vegetation for the entire length of the fence corridor will take approximately 3 months to complete. The actual installation of the fence will take an estimated 6 months, depending on the weather. The entire project will take approximately 9 ½ months.

The funding for this project comes from a variety of sources including private, state, and federal funds. An estimated budget for the project is found in Table 1. State of Hawaii contributions to the project come from funds given to the State by the U. S. Fish and Wildlife Service under Section 6 of the Endangered Species Act of 1973. These funds are for management of endangered species. The moneys are given on a 3 to 1, federal to state, dollar match. The State of Hawaii contribution is the monetary value of Division of Forestry and Wildlife employees' time contributed to the project. Kamehameha Schools and the U. S. Fish and Wildlife Service are sharing the cost of construction through a conservation partnership program.

The owner of the project site is Kamehameha Schools. The Army sub-leases the land for training purposes. The project is scheduled to begin in early calendar year 2000.

Table 1: OPAEULA WATERSHED PROTECTION PROJECT BUDGET

ITEM	ARMY	DLNR	FWS/KS	TOTALS
Supplies/Fencing Materials		\$19,000		\$19,000
Fence line clearing	\$6,000	\$6,000		\$12,000
Fence Construction			\$60,000	\$60,000
Helicopter Sling Loads	\$6,000			\$6,000
Helicopter- Clearing personnel	\$7,200	\$3,400		\$10,600
Helicopter-Construction personnel	\$7,200			\$7,200
Helicopter -Pig control & natural resource monitoring	\$12,000			\$12,000
Tent platform construction and Weathersport Tent.		\$4,200		\$4,200
TOTALS	\$38,400	\$32,600	\$60,000	\$131,000

Project purpose and need:

Installation of the proposed fence line will help to more effectively and efficiently control populations of feral pigs in the project area. Feral pigs pose a major threat to existing areas of native wet forest on the Koolau summit. Pigs consume and destroy understory plants, create conditions favoring non-native plant establishment and infestation, prevent the establishment of native plants, and disrupt soil nutrient cycling. The cumulative effect is the decline of native forest ecosystems which is habitat for threatened and endangered forest birds, plants, and invertebrates. The project area is essential habitat for eight species of listed, proposed, candidate or rare plant species and two endangered tree snail species (See Appendix D and E for lists of species found in project area).

This project is directed at the protection of ecosystems as well as rare and endangered species. If the long-term viability of rare and endangered organisms is to be achieved, large tracts of land need to be protected. This is in keeping with the USFWS policy of an "ecosystem approach" focusing on management of natural communities. It is also in line with the State of Hawaii's long-term environmental policies, goals and guidelines in Chapter 344 of Hawaii Revised Statutes.

Watershed protection is the major goal of this project. Degradation of native forest ecosystems has direct impact on the forest value as a watershed. Native forests are the highest value watershed types available. This project will help protect surface and ground water quality by eliminating the destructive impact of pigs in the project area. The protection of the watershed in the upper reaches of the Opaepala drainage will have a positive economic impact on the North Shore community on Oahu. This benefit is from protection of nearshore ocean habitats, which are impacted by Opaepala stream water quality.

In addition to the feral pig control to be conducted in the unit, a comprehensive threat management program will be implemented including control of rats, weeds, mongooses and human disturbance.

II. PROJECT DESCRIPTION

General:

The proposed fence line will utilize 42" high beznal coated hog wire fence fabric with a basal strand of beznal coated barbwire. The fence fabric will be supported by beznal coated steel fence posts and treated wood posts placed no more than 10' apart the entire length of the fence line. Shorter beznal steel pins will be used as anchors within the 10-foot span. The fence will have an apron of hogwire laid horizontally along the ground outside the fence to prevent pigs digging under. The fence alignment will be cleared by hand to a width of no more than 10 feet. In conjunction with the fence a weather port shelter platform will be built where fence construction and Natural Resources protection crews can stay while conducting work in the area. The tent platform will be constructed at a site located along the proposed fenceline (See Map Appendix A) and will have a 12 by 16 foot wooden foundation with built-in mounting points for a portable canvas tent.

Location: TMK Oahu 1-6-3-01

The project will be located in the Army's Kawaihoa Training Area, northern Koolau Mountain Range, Island of Oahu, which is leased from KSBE. The Army currently uses the area for helicopter over-flight training and occasionally used for foot maneuvers between other training areas. The proposed fence project would not conflict with the area's use for training. The elevation range is 2600' to 2800'. The fence will be approximately 3.5 kilometers long (See Map Appendix A).

Project progression:

The progression of this project is as follows. First, vegetation will be cleared to allow the construction of a 12 by 16 foot platform. Then the shelter platform will be constructed to house fence construction and maintenance crews.

Second, the fence corridor will be cleared with hand tools and small power tools. As stated above the width of the cleared area would be no more than ten feet wide. This portion of the project will take approximately three months to complete.

The third phase of the project will be the actual installation of the fence. Materials will be flown in by helicopter. Construction work will be done with hand tools. This construction involves driving steel and wood poles into the ground along the corridor no more than 10' apart, attaching one strand of galvanized barb wire along the post at ground level and stretching 42" beznal coated hog wire along the posts and clipping it on with wire clips. Where necessary, shorter anchor posts will be used along the fence, between the posts, to ensure the hog wire remains close to the ground. Then the 24" horizontal hogwire fence apron will be placed along the ground, attached to the upright fence and

secured to the ground. The construction of the fence will take place over a three-month period, construction schedule being dependent on weather conditions.

The fourth and final phase of the project is feral pig control and natural resource monitoring and management. The goal for the project is to eliminate feral pigs and their impacts from the area within the fence. Pig populations will be monitored during the clearing and construction phases to determine population level. Upon completion of the fence, Resource Management staff from the U. S. Army Garrison-Hawaii will employ a combination of methods to eliminate feral pigs from the fenced area. These methods may include staff hunting, use of volunteer hunters, or selective snaring within the fenced area. The method that will be used has not been determined yet and will depend on the numbers of pigs left in the fenced area following fence construction. The activities of the fence construction crew may drive pigs from the area and no control may be necessary. Following the initial control, Resource Management staff will regularly monitor pig activity transects to detect feral pig ingress, and assess the integrity of the fence. Vegetation will be monitored within the enclosure through a series of plots. Plots will be read before completion of the fence to obtain a baseline. Plots will be monitored annually following completion of the fence. Plots will be specifically designed to measure changes in native and non-native cover before and after fencing. This will help demonstrate the impacts of feral pigs and help to guide future management. Rare plants have been individually monitored for three years within the project area and will continue to be monitored at least annually once the fence is complete. Funds budgeted for pig control and natural resource monitoring are primarily for helicopter time to support these activities.

III. DESCRIPTION OF AFFECTED ENVIRONMENT

Flora:

The Upper Opaepala portion of the Kawaihoa Training Area is characterized by gradually graded high summit ridges and gulches. These gradually sloped areas grade into very deep ravines, dense vegetation, high cliffs, and precipices as elevation decreases. The training area harbors large tracts of native Koolau wet forest with remarkable biological diversity. Four endangered plant species, one candidate and three species of concern are present within the proposed fence area (See Appendix D).

Fauna:

Animal life in the area consists of native and non-native bird species, invertebrates such as snails and insects, and both large and small mammals such as feral pigs, mongooses, and rats. Two species of endangered tree snail can be found within the proposed fence area (See Appendix E).

Sensitive habitats:

The entire project area should be considered sensitive habitat, particularly with regard to listed endangered plants and the resident *Achatinella* tree snails. The long term management goal for the area is protection of the intact native plant and animal communities. To ensure that this long-term goal is carried out, the agencies involved in this project are entering into a Cooperative Agreement under which long-term protection of this area is a goal. While construction of the fence line will entail a certain level of ground and noise disturbance, the overall benefits resulting from the eventual complete removal of feral pigs, which is impossible without fencing to restrict animal movement, far outweighs the limited effects of fence construction within the ten-foot corridor.

Cultural Resources:

The history of the project area and use by native Hawaiians is not well documented. Although the project area has not been surveyed for archeological sites, few features are known to exist in the area. The area may have been used for activities such as bird hunting and gathering forest plants for medicinal uses. Surveys will be conducted by a qualified archaeologist along the proposed fence route and at the platform site and if cultural sites are found they will be avoided.

Other Uses:

The project is located on private property. Entry to the property requires permits from the U.S. Army and Kamehameha Schools. Fence crossovers are provided where the fence intersects the Koolau Summit Trail.

IV. ENVIRONMENTAL IMPACTS/MITIGATION MEASURES

1. Construction of fence affecting unknown cultural sites.

Mitigation. Conduct a cultural survey along fence line and if cultural sites are found, avoid all impacts to any sites by re-routing fence line to avoid impacts.

2. Shelter attracting rodents and having negative secondary effects on native snail and plant populations.

Mitigation. Field crews shall always remove all trash so that rodents are not attracted to the area. Maintain poison bait stations in the vicinity of the shelter to eliminate rodents.

3. Construction of a continuous fence enclosing the proposed site in the upper Opaepa drainage would entail clearing a corridor wide enough to permit the efficient installation of the fence and remove hazards to work crews. Some harm to native vegetation is unavoidable.

Mitigation. A survey of the ridges in the upper Opaepala drainage has yielded a route based on the ease of installation and maintenance, long-term survival of the fence from vegetative encroachment, erosion and slides; and the need to limit the impact of construction on native plant communities. Soil disturbance is expected to be short-term and no changes in the normal runoff or percolation are expected. Botanists will search for rare and endangered plants along the proposed route. Only common native vegetation will be cut if necessary for fence line construction and the fence will be routed along existing trails to minimize damage. If necessary, the alignment will be shifted to avoid individual rare plants.

4. Construction of the fence line along the Koolau summit trail will restrict travel along the trail and will disrupt the integrity of the Koolau summit trail for recreational hiking.

Mitigation. The integrity of the Koolau summit trail will be kept intact. The fence construction will not restrict travel on the trails. We have routed the proposed fence off the trails where feasible and we are planning crossings wherever the fence crosses the trail. Where the fence does run along the trail we will preserve the existing route. In areas where the fence and trail run side by side the 24"hogwire apron portion of the fence will improve traction for hikers. The portion of the Koolau summit trail affected by this project is on private land owned by Kamehameha Schools Bishop Estate and is not currently open to the general public for hiking without the landowners permission.

5. Fence line clearing and construction will affect vegetation that harbors endangered Oahu tree snails, causing the snails to leave their preferred location and become more susceptible to predators such as rats and introduced predatory snails.

Mitigation. The chosen fence line corridor has been chosen to minimize impacts to native species by following the existing corridors of disturbance. We will enlist the support of recognized tree snail experts and have them survey the proposed fence line corridor for tree snail populations prior to any doing any clearing work. No large Ohia trees will be removed. Any trimming or cutting of trees or shrubs will be done only after vegetation has been inspected carefully for snails. Resource management staff from the U. S. Army knowledgeable about tree snails will be doing the clearing of the fence line corridor. Finally, vegetation that is cleared will be placed upon other native vegetation so that if native snails were present and not detected by personnel doing the clearing, the snails would have the opportunity to reach another host without having to cross the ground.

6. Initially after completion, any pigs residing in the fence would be penned, egress from the area being closed. This could result in a period of amplified pig damage from animals that might otherwise be transiting out of the area.

Mitigation. Following the completion of the fence, intensive control efforts will immediately be implemented to eliminate those pigs remaining in the enclosed area. Control will be conducted using ground-based technique and will be carried out by Army and Kamehameha Schools Bishop Estate contractors. These control techniques will not

have a negative effect on rare species. No further recruitment of feral pigs into the area is anticipated. Intensive monitoring will be performed to ensure all pigs are removed.

7. Workers could be agents for the unintentional introduction and/or spread of weedy or invasive plants along the corridor.

*Mitigation. Gear cleaning procedures to reduce the introduction of noxious plant seeds and propagules will be strongly enforced. Species such as *Juncus planifolius* and *Andropogon virginicus* found to pre-exist along the proposed route and considered susceptible to spread from human activity will be removed prior to fence construction. The Army contracted Natural Resource staff will ensure that these gear cleaning procedures are followed by contractor.*

V. ALTERNATIVES CONSIDERED

Alternative 1: Build proposed fence around upper portion of Opaepala drainage.

This approach is recommended because constructing a large-scale fence will minimize the ratio of area impacted by the fence line clearing to the area protected by the fence. It will be more cost effective to build one large fence rather than many small exclosures. In order to effectively control pig impacts to natural resources on the Koolau Summit, large-scale fencing is needed in conjunction with feral pig control.

Alternative 2: Build small exclosures around existing rare plants.

This is impractical, as most of the rare plants exist on very steep slopes due partly to selective pressure from pigs. These fences are very difficult to build and damaging to the sensitive slopes which we are striving to protect.

Alternative 3: No action

This alternative effectively accepts the deterioration over time of this unique resource by allowing feral animals to remain. Without physical barriers to use as tools in achieving a pig free unit and to limit the movement of these destructive animals, it is doubtful animal numbers can remain low enough to allow these native natural communities to remain viable. This alternative goes against the participating parties' goals and mandates.

VI. DETERMINATION

Based on the assessment above we conclude that the Opaepala Watershed Protection Project will not have any significant adverse impacts on the environment. Therefore, we feel preparation of an environmental impact statement is not required.

VII. FINDINGS, AND REASONS SUPPORTING THE DETERMINATION

The impacts of the Opaepala Watershed Protection Project will have on the environment have been evaluated in regard to thirteen categories described in the Guidebook for the

State Environmental Review Process. The criteria and the effects this project will have are listed below.

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

The purpose of this project is to protect watershed values and benefit native ecosystems and rare and endangered species. The project intends to better manage endangered ecosystems. Therefore, it will not destroy or cause the loss of natural or cultural resources and will improve environmental quality.

2. Curtails the range of beneficial uses of the environment

The project will increase the range of beneficial uses of the environment by increasing water quality in a portion of the Koolau Mountains. The project will increase public awareness in the importance of watershed protection as well as protecting native Hawaiian ecosystems for future generations.

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 aim of this project is to protect watershed values by protecting native ecosystems, or plant and animal communities as opposed to a particular species. If long-term viability of rare and endangered native organisms is to be achieved, protection of large tracts of land is essential. This is in keeping with the USFWS "ecosystem approach" policy which focuses on management of natural communities, and with the Hawaii Natural Area Reserve Law, which states a system of reserves be established to "...preserve in perpetuity specific land and water areas which support communities, as unmodified as possible, of the natural flora and fauna..." (Chapter 195D, Hawaii Revised Statutes). Protection and enhancement of endangered species is also mandated by both Federal and State Endangered Species Acts (16 U.S.C. 1531-1543, as amended; Chapter 195, Hawaii Revised Statutes).

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

The project has a positive impact on the economic welfare of the community and state by protecting a valuable watershed and insuring high quality water from this drainage for the future. The project will probably not have a significant effect on the social welfare of the community or state.

5. Substantially affects public health.

The project may have a small positive impact on public health. Controlling the population of feral mammals will likely reduce the input of leptospirosis and other diseases carried by these animals into the Opaoula drainage.

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

The project focuses on watershed enhancement and protection of native forest habitats in a remote area of the Koolau Mountains. Therefore, the project will not have any impact on population increase in North shore communities or elsewhere on Oahu.

7. Involves a substantial degradation of environmental quality.

The purpose of this project is to protect watershed values and benefit native ecosystems and rare and endangered species. The project intends to better manage endangered ecosystems. Therefore, the project will provide a long-term improvement in the environmental quality of the upper Opaoula watershed. The fence will curtail the environmental degradation caused by pigs in the sensitive area enclosed by the fence.

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

The project will not involve a commitment for a larger action. The effects of the project are limited to the fence area and the immediate surroundings. The shelter that will be placed on the 12' by 16' tent pad will be temporary. The tent structure will be erected for natural resource management crews during the fence line clearing stage and for fence construction crews during fence installation. After the fence is constructed, the tent shelter will only be erected when a natural resource monitoring trip is scheduled for the project area. The cumulative effect of the fence and the tent platform will be positive for the environment by protecting about 150 acres of native Koolau wet forest from the destructive effects of feral pigs.

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

This project will positively affect four endangered plant species, a candidate plant specie, and three plant species of concern. In addition, this project will positively affect two endangered tree snail species. The central goal of this project is the protection of these species and the native ecosystem they are a part of from the long-term consequences of the detrimental activities of feral pigs. Exclusion of feral pigs with fencing has been shown to be the most important resource management activity that can be done to protect rare, threatened, or endangered plant species in Hawaii.

10. Detrimently affects air or water quality or ambient noise levels.

Helicopter and fence construction noise will be minor and short-term. Air quality will not be affected significantly. Water quality will be improved in the long-term by reducing erosion and limiting the input of disease causing organisms into stream water by feral animals.

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 in an upland area and will not detrimentally affect any coastal areas or bodies of water. The project is not located in any sensitive flood plain areas. The project is likely to have a positive effect on coastal areas by reducing the erosion of soil into the ocean. No geological hazards are present in the project area.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The fence will be located in a remote area not be visible from any public viewing sites, and therefore will not affect any scenic vistas or viewplanes identified in county or state plans or studies.

13. Requires substantial energy consumption

The project will consume only a small amount of energy and only during the construction of the project.

In conclusion, the long-term benefits of fencing and complete feral pig (*Sus scrofa*) removal inside the fenced area far outweigh the limited short-term effects of fence construction. Installation of the proposed fence will help to more efficiently and effectively control feral pigs in the project area. Feral pigs pose the greatest threat to existing intact native wet forest areas. Pigs consume and trample native plants, create conditions for non-native plant infestation and establishment, prevent the establishment of ground-rooting native plants, serve as distributors of non-native plants, and disrupt soil nutrient cycling. Their wallows create breeding areas for mosquitoes, which transmit avian malaria and pox virus to native forest birds. The cumulative effects of feral pigs are the deterioration of intact native forest ecosystems, including the decline of threatened and endangered plants and invertebrates. Removal of feral pigs has been demonstrated to result in the recovery of native vegetation. Feral pig removal also controls or significantly reduces the spread of alien plants.

The possibility for introduction of new weed species as a result of human activity exists. Ensuring that the equipment, tools, and construction materials are clean and free of weed seeds can minimize this. Natural resource management and fence construction crews will

be instructed in protocol to prevent weed distribution involving their personal gear and movements. This protocol will be strictly enforced.

VIII. PERMITS REQUIRED

This project will require a board permit from the Board of Land and Natural Resources (Section 13-5-22 Hawaii Administrative Rules) because the project falls in a Protective (P) subzone. This permit will be requested in December 1999. A management plan (Section 13-5-22 Hawaii Administrative Rules) and a public hearing (Section 13-5-40 Hawaii Administrative Rules) are also required.

IX. EA PREPARATION INFORMATION

This Environmental Assessment was prepared for Kamehameha Schools Bishop Estate in coordination with U.S. Army Garrison, Hawaii by:

Kapua Kawelo
Directorate of Public Works, Environmental Division
U.S. Army Garrison, Hawaii
Schofield Barracks, Hawaii 96857-5000
TEL. (808) 656-7641, FAX 656-7471

X. LIST OF APPENDICES

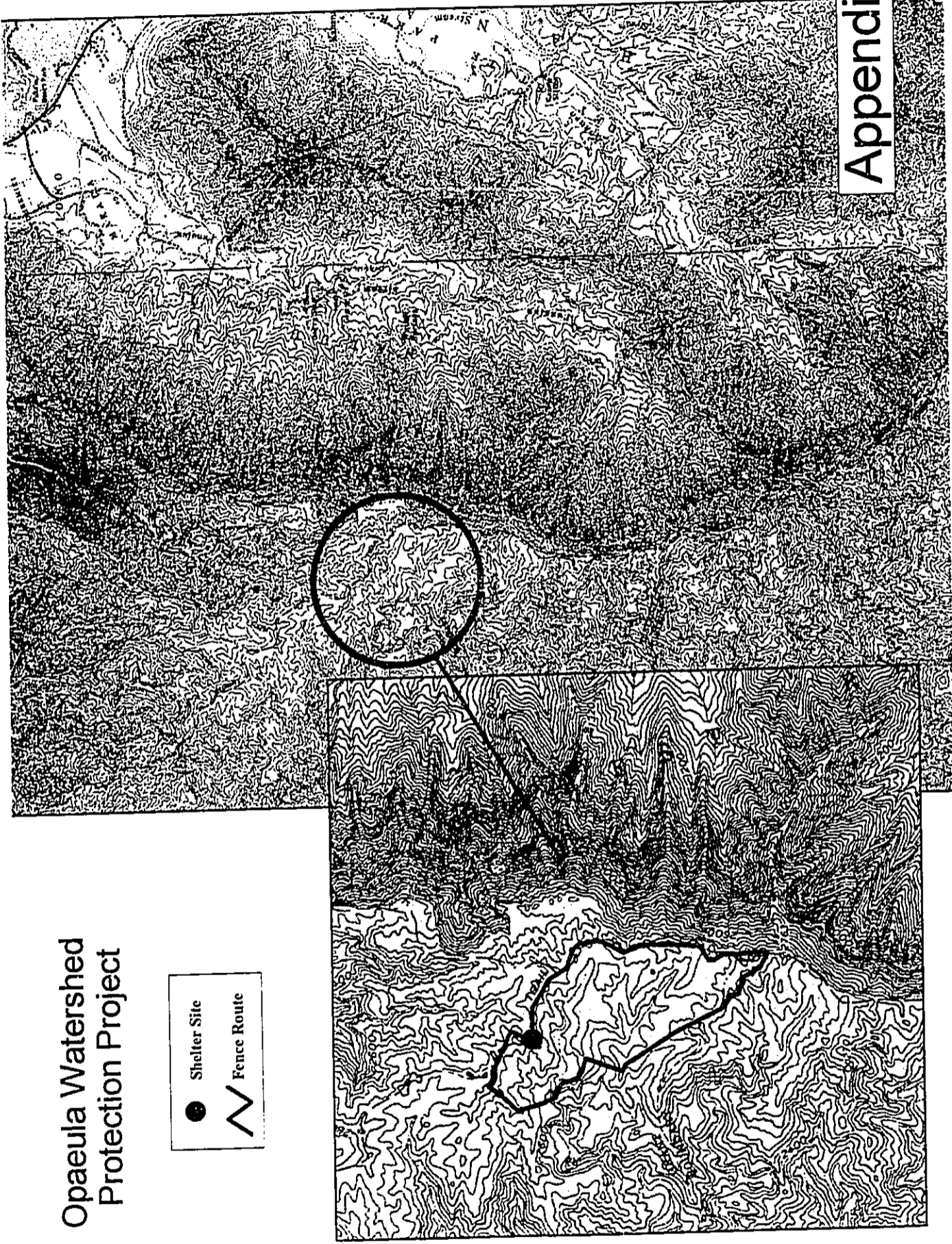
- APPENDIX A. MAP OF PROPOSED FENCE ROUTE
- APPENDIX B. FENCE DESIGN DETAILS
- APPENDIX C. TENT PLATFORM DESIGN DETAILS
- APPENDIX D. ENDANGERED, CANDIDATE AND SPECIES OF CONCERN KNOWN TO EXIST IN THE PROJECT AREA
- APPENDIX E. NATIVE VERTEBRATES AND INVERTEBRATES KNOWN TO EXIST IN THE PROJECT AREA
- APPENDIX F. OPAEULA WATERSHED COOPERATIVE AGREEMENT
- APPENDIX G. DRAFT EA COMMENTS AND RESPONSES

APPENDIX A.

MAP OF PROPOSED FENCE ROUTE

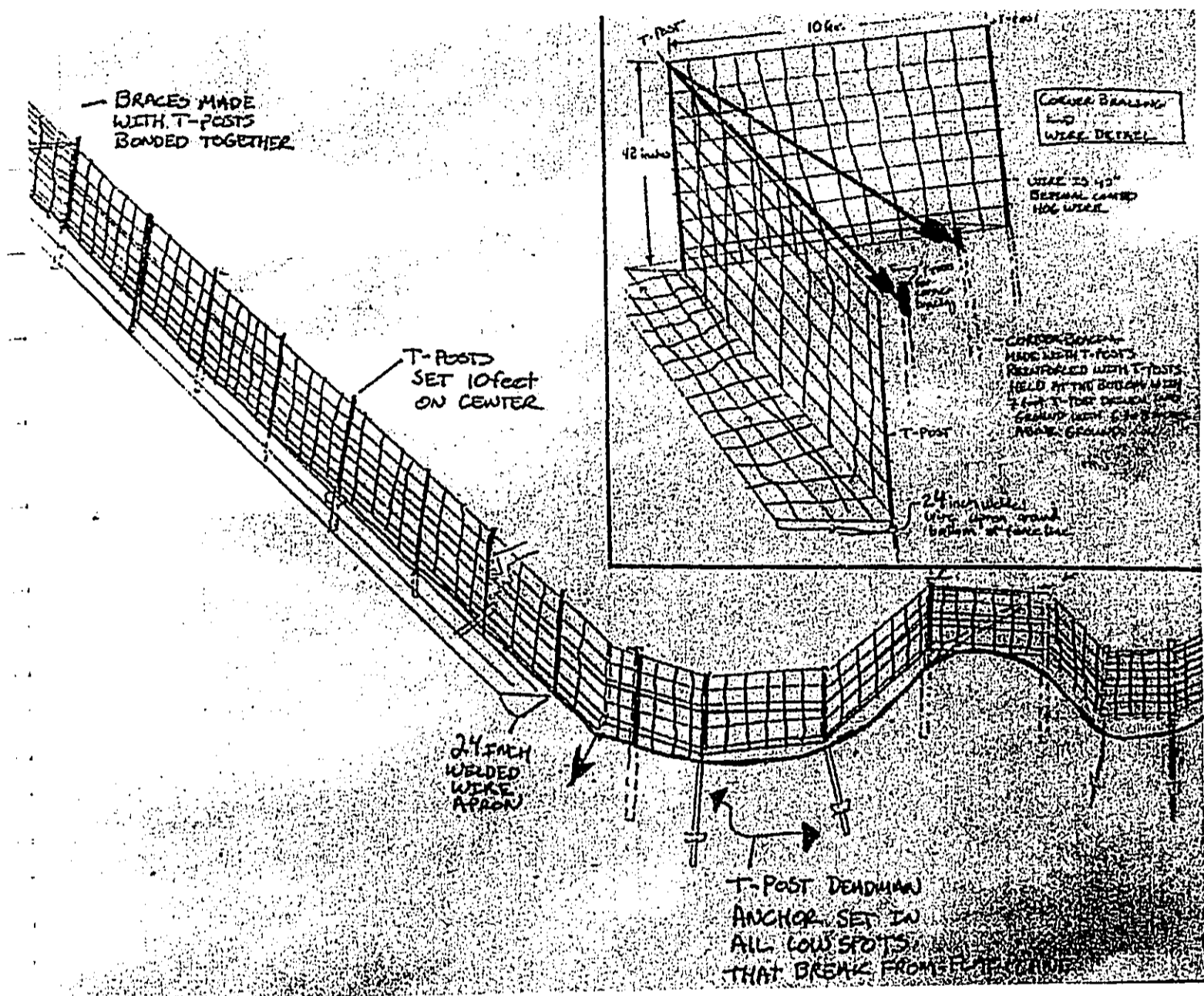
Opaeula Watershed Protection Project

● Shelter Site
∩ Fence Route

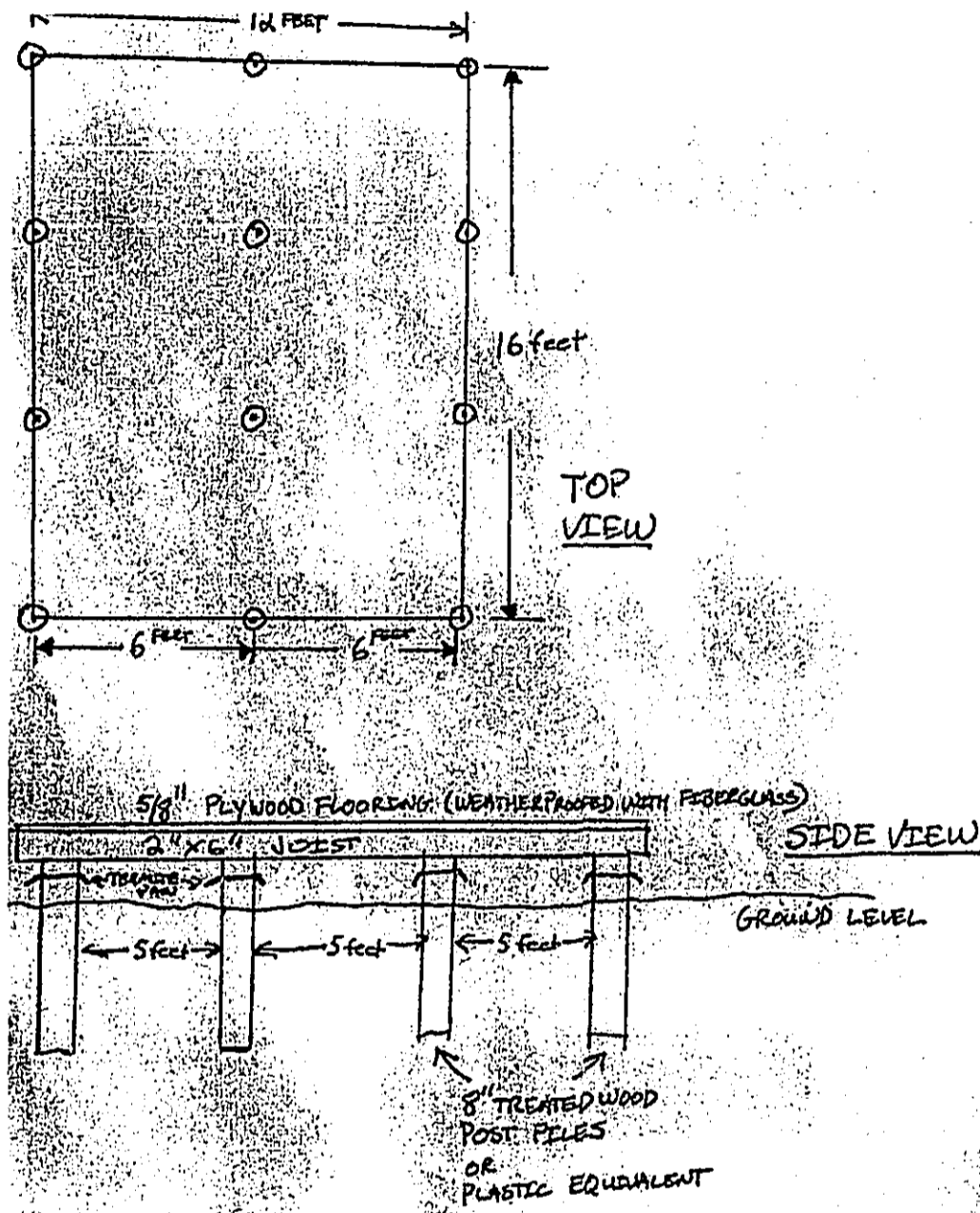


Appendix A

APPENDIX B. FENCE DESIGN DETAILS



APPENDIX C. TENT PLATFORM DESIGN DETAILS



Tent platform will be constructed on northern side of fence project (See Map Appendix A). Tent platform will serve as a platform for a Weathersport tent to serve as crew quarters during fence construction. Pad size to be approximately 16' by 12'. Materials include 8" diameter wood posts (or plastic equivalent), 4" x 6" treated wood stringers, 5/8" plywood deck, and fiberglass. The deck of the tent pad will be treated with a fiberglass sealant to seal it against the elements.

APPENDIX D.

**ENDANGERED, CANDIDATE AND SPECIES
OF CONCERN PLANTS KNOWN TO EXIST
IN PROJECT AREA. (APRIL 1999)**

ENDANGERED SPECIES

Cyrtandra viridiflora

Chamaesyce rockii

Viola oahuensis

Myrsine judii

Common Name

Ha'iwale

Akoko

None known

Kolea

CANDIDATE

Zanthoxylum oahuense

None known

SPECIES OF CONCERN

Joinvillea ascendens

Myrsine fosbergii

Cyanea lanceolata calycina

None known

Kolea

Haha

APPENDIX E.

NATIVE VERTEBRATES AND INVERTEBRATES
KNOWN TO EXIST IN THE PROJECT AREA.
(APRIL 1999)

<u>VERTEBRATES</u>	<u>Common Name</u>	<u>Federal Status</u>
<i>Himatione sanguinea</i>	Apapane	
<i>Hemignathus virens</i>	Amakihi	
<i>Pluvialis fulva</i>	Golden Plover	
<i>Awaous guamensis</i>	'O'opu nakea	
<u>INVERTEBRATES</u>	<u>Common Name</u>	
<i>Achatinella sowerbayana</i>	Kahuli tree snail/Oahu tree snail	Endangered
<i>Achatinella pulcherima</i>	Kahuli tree snail/Oahu tree snail	Endangered
Tomatellides	None known	
Succinides	None known	
Auricullelides	None known	
<i>Atyoida bisulcata</i>	'Opae kala'ole	

APPENDIX F.

OPAEULA WATERSHED COOPERATIVE AGREEMENT



COOPERATIVE AGREEMENT # 1448-12200-99-J017
 Charge Code : 12200-1121-01HR
 Amount Obligated: \$30,000.00

TITLE: Opae'ula Watershed Protection Project, 'Oahu, Hawai'i

TYPE OF AGREEMENT:

TYPE OF ORGANIZATION(RECIPIENT)

- Grant
- Cooperative Agreement
- Private Lands
- Challenge Cost-Share
- Inter-Agency
- Intra-Agency

- State, Local or Indian Gov.
- Non-Profit Organization
- Education Inst.
- Private Individual
- Business Organization
- Federal Agency

PARTICIPANTS

<p>Kamehameha Schools Bernice Pauahi Bishop Estate 567 South Street, Suite 200 Honolulu, HI 96813</p> <p>Project Officer: Manabu Tagomori Water Resource Manager ph.:(808)534-3866, fax:(808)524-2069</p>	<p>Department of Land and Natural Resources Division of Forestry and Wildlife 1151 Punchbowl Street Honolulu, HI 96813</p> <p>Project Officer: Brent Liesemeyer Natural Area Reserve System Manager (acting), Oahu Branch ph.:(808)973-9783 fax:(808) 973-9781</p>
<p>U.S. Army Garrison Hawaii Directorate of Public Works Environmental Division Schofield Barracks, Hawaii 96857-5013</p> <p>Project Officer: Kapua Kawelo Biologist ph.:(808) 656-7641, fax:(808) 656-7471</p>	<p>U.S. Fish and Wildlife Service Pacific Islands Ecoregion 300 Ala Moana Blvd., Rm. 3-122 Honolulu, HI 96850</p> <p>Project Officer: Craig Rowland Conservation Partnerships Coordinator ph.: (808) 541-3441, fax: (808) 541-3470</p>

PURPOSE/OBJECTIVE:

The goal of this project is to protect and restore native shrub and forest ecosystems of the upper portion of the Opae'ula Watershed, in the Kawaihoa Training Area on the island of Oahu, Hawaii. The project entails building an ungulate exclusion fence and removing ungulates from within the enclosure. More details can be found in the attached Scope of Work.

The land comprising the Kawaihoa watershed is located in the highest rainfall area on the island of 'Oahu's Ko'olau Mountains which provide the primary water resource for the island of 'Oahu. 'Oahu supports 80 percent of Hawaii's population and the center of Hawaii's economic activity. The Kawaihoa watershed has a variety of native watershed vegetation and invertebrates, and is the home of the only montane bog found on the island of 'Oahu. The native plants, birds, snails and insects are vital to the overall health of the watershed for continued term-long production of water resources.

The Kawaihoa watershed is being threatened by the destructive effects of non-native animals, particularly by feral pigs. These animals damage the basic structure of the watershed by browsing, rooting and trampling native vegetation, accelerating erosion, polluting streams with silt, feces and disease and creating open areas for weeds to establish and spread. The need for urgent and active management of the Kawaihoa watershed land has been recognized by the above parties and in the spirit of cooperation and with the long-term interest to protect this vital watershed, this Opae'ula Watershed Protection Project is proposed for implementation.

The U.S. Army (Army) as the lessee of the Kawaihoa watershed lands also known as the Kawaihoa Training Area, has an active management program to protect the environment and preserve the Army's training mission which includes the protection of natural resources (threatened and endangered species) and cultural resources (archaeological sites/historic buildings).

The U.S. Fish & Wildlife Service (USFWS) is an active natural resources management agency in Hawai'i with programs in endangered species protection and habitat conservation. The USFWS is interested in the protection of the Kawaihoa watershed land for its rich ecological values.

The Hawaii Department of Land and Natural Resources' Division of Forestry and Wildlife (DOFAW), is interested in protecting and preserving the significant values of the Kawaihoa watershed. The Opae'ula Watershed Protection Project is consistent with the Department's goal to establish the Ko'olau Mountains Watershed Partnership consisting of the major landowners of the Ko'olau Mountains.

The Kamehameha Schools Bishop Estate (KSBE), owner of the Kawaihoa watershed land is committed to the long-term well being of highly valuable natural and cultural resources, is actively pursuing cooperative approaches to managing watershed lands throughout the State. The Opae'ula Watershed Protection Project is consistent with the mission of the Estate.

The above parties agree that partnering in a cooperative management project will bring the technical and financial resources of each organization to efficiently and effectively address the destructive threats to the watershed.

AUTHORITY:

The USFWS and the Army enter into this agreement pursuant to the authority provided by the Endangered Species Act of 1973, as amended. Additionally, the USFWS enters into this agreement pursuant to the authority provided in section 1 of the Fish and Wildlife Coordination Act, 16 USC 661 and section 7 of the Fish and Wildlife Act of 1956, 16 USC 742f(a)(4). DOFAW enters into this agreement pursuant to the authority provided by the Hawaii Endangered Species Law (HRS 195D).

FUNDING INFORMATION:

See "Specific Obligations of Each Party" below.

TERM OF AGREEMENT:

This Cooperative Agreement will become effective upon being executed by all parties, and will continue until December 31, 2010. The work identified in the attached Scope of Work will be completed by July 30, 2001.

SPECIFIC OBLIGATIONS OF EACH PARTY:

A. Army's obligations during the term of this agreement:

The Army shall provide field assistance in project implementation as described in the attached Scope of Work.

B. DOFAW's obligations during the term of this agreement:

1. DOFAW shall purchase fencing materials and supplies in the amount of \$30,000 in order to complete the project.
2. DOFAW shall provide field assistance for fenceline clearing and fence maintenance as described in the attached Scope of Work.

C. KSBE's obligations during the term of this agreement:

1. KSBE shall provide overall coordination for the construction of an enclosure fence and removal of feral ungulates as described in the attached Scope of Work.
2. KSBE shall provide funds in an amount not to exceed \$30,000 for accomplishment of the tasks identified in the attached Scope of Work.
3. KSBE will secure any permits needed to carry out this project.
4. KSBE agrees to allow the fence as described in the attached Scope of Work to remain in place without interference for the term of this

agreement. KSBE agrees not to knowingly or intentionally allow any agricultural use of the tract such as livestock grazing or harvesting of native trees, unless included as part of this or an amended agreement.

D. USFWS's obligations during the term of this agreement:

1. The USFWS shall provide funds in the amount of \$30,000 to KSBE for accomplishment of the tasks identified in the attached Scope of Work.
2. The USFWS shall provide periodic assistance with rare species management and vegetation monitoring.

REPORTING REQUIREMENTS

The Army will provide annual progress reports to all cooperators describing the status of restoration efforts.

INVOICING/ACCEPTANCE PROCEDURES:

Billings from KSBE should be submitted to the USFWS as follows:

U.S. Fish and Wildlife Service
Attn: Susan Lifa
Pacific Islands Ecoregion
Ecological Services
P.O. Box 50167
Honolulu, Hawaii 96850

Each invoice must reference Agreement Number _____ .

MODIFICATION PROCEDURES:

This agreement may be modified at any time by mutual written consent and shall become effective upon being reduced to a written instrument executed by all parties.

CERTIFICATIONS:

The Grantee/Cooperator, as a recipient of federal assistance funds, certifies compliance with the following, as applicable, regarding the Opae'ula Watershed Protection Project:

1. The Equal Protection Clause of the 14th Amendment, which guarantees equal treatment for all groups.
2. Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, and national origin in any program receiving federal funding.

3. The Rehabilitation Act of 1973, as amended in 1978, which prohibits discrimination against the handicapped.

4. The Age Discrimination Act of 1975, which prohibits discrimination on the basis of age.

SPECIAL PROVISIONS:

The USFWS does not assume jurisdiction over the premises by this agreement. The landowner and lessee retain all rights to control trespass and retains all responsibility for taxes, assessments, and damage claims.

A change of ownership or lessee shall not change the terms of this agreement. This agreement and terms shall be in effect on the described land for the period of the agreement. The cooperater will notify the USFWS of planned or pending changes in ownership.

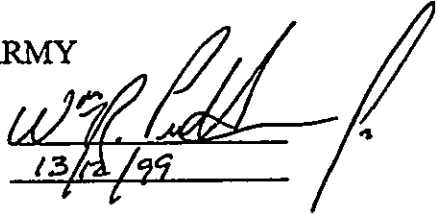
RELATED ATTACHMENTS:

The project Scope of Work entitled "Opae'ula Watershed Protection Project, 'Oahu, Hawai'i" is attached.

SIGNATURE BLOCKS:

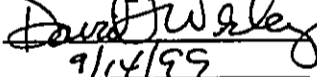
In witness whereof, each party hereto has caused this Cooperative Agreement to be executed by an authorized official on the day and year set forth opposite their signature.

U.S. ARMY

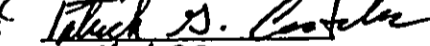
By: 
Date: 13/12/99

U.S. FISH & WILDLIFE SERVICE

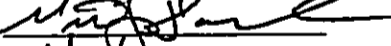
David J. Wesley, GARD Pacific Isl Ecoregion

By: 
Date: 9/14/99

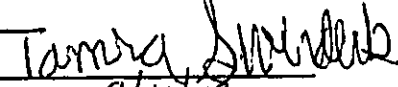
DEPARTMENT OF LAND AND
NATURAL RESOURCES

By: 
Date: 4/10/00

KAMEHAMEHA SCHOOLS
BISHOP ESTATE

By: 
Date: 4/13/00

USFWS CONTRACT SUFFICIENCY REVIEW:

By: 
Date: 8/10/99

Contracting Officer
U.S. Fish and Wildlife Service

APPENDIX G. DRAFT EA COMMENTS AND RESPONSES

CONSULTATION REVIEW COMMENTS



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Ben Achohido, Chair
Wahiawa Neighborhood Board
c/o Neighborhood Board Commission
City Hall, Room 400
Honolulu, HI 96813

Dear Mr. Achohido:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".

Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education



KAMEHAMEHA SCHOOLS BERNICE PAUAI BISHOP ESTATE

October 25, 1999

City and County of Honolulu
Board of Water Supply
Long Range Planning Office
630 South Beretania St.
Honolulu, HI 96843

Dear Sir or Madam:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori", with a long horizontal stroke extending to the right.

Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843



November 19, 1999

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice-Chairman
JAN M.L.Y. AMII
HERBERT S.K. KAOPUA, SR.
BARBARA KIM STANTON

KAZU HAYASHIDA, Ex-Officio
ROSS S. SASAMURA, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

Mr. Manabu Tagomori, Water Resources Manager
Kamehameha Schools/Bernice Pauahi Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawaii 96813

*Barry - WR/WR
- Reg II*

NOV 23 11 29 AM '99

RECEIVED
KAMEHAMEHA SCHOOLS
B.P. BISHOP ESTATE

Dear Mr. Tagomori:

Subject: Your Transmittal of October 25, 1999 of the Draft Environmental Assessment for the Opaepa Watershed Protection Plan, TMK: 1-6-3: 01, Koolau Mountains, Oahu

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Opaepa Watershed Protection Plan.

We support the proposed efforts to protect the upper Opaepa watershed in the northern Koolau Mountains as it will help protect surface and groundwater resources by eliminating the destructive impact of feral animals in the project area. The Board of Water Supply is a part of the Koolau Watershed Partnership.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

FOR

CLIFFORD S. JAMILE
Manager and Chief Engineer



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Pascual Dabis
President
Oahu Pig Hunters Association
1929 Iwaho Place
Honolulu, HI 96819

Dear Mr. Dabis:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepa Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

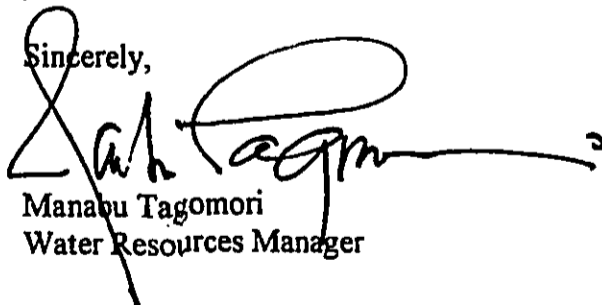
Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepa Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepa watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepa watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,



Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education

PIG HUNTERS ASSOCIATION OF OAHU

1929 Iwaho Place Honolulu, HI 96819



November 3, 1999

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St. Suite 200
Honolulu, HI 96813

Dear Mr. Tagomori:

This is in regards to the Draft Environmental Assessment on the Proposed Opaepa Watershed Protection Plan.

We understand the need for a national wildlife refuge in the area, and agree that feral pigs can be a threat to the ecosystem. However, we are adamantly opposed to your plans on how to remove those pigs, especially selective snaring within your fenced area. The Pig Hunters Association of Oahu is against snaring as a means of destroying feral pigs because it can mean a cruel and slow death to the animal, and it is dangerous to our own hunting dogs should they somehow get caught in a snare.

The area affected is accessed by private property belonging to KSBE. Our club has been in negotiations to gain access to the affected area, as many of our club members have been combing that part of the Koolau mountain for over 25 years. Turning this area into a refuge and making hunters off limits would directly affect our livelihood.

If a refuge, however, is indeed established, we would hope that our hunters would still be able to gain access to these mountains that they have been hunting in all their lives. As you are no doubt aware, there are already limited areas for pig hunters on Oahu because of landowners' reluctance to allow access due to liability.

Perhaps we can work together to protect the ecosystem. You mention volunteer hunters. We would certainly be able to help in the eradication process.

Please continue to forward us any new information on this proposed Opaepa Watershed Protection Plan.

Respectfully yours,

Pascual Dabis, President
Pig Hunters Association of Oahu



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

December 23, 1999

Mr. Pascual Dabis
President
Pig Hunters Association of Oahu
1929 Iwaho Place
Honolulu, HI 96819

Dear Mr. Dabis:

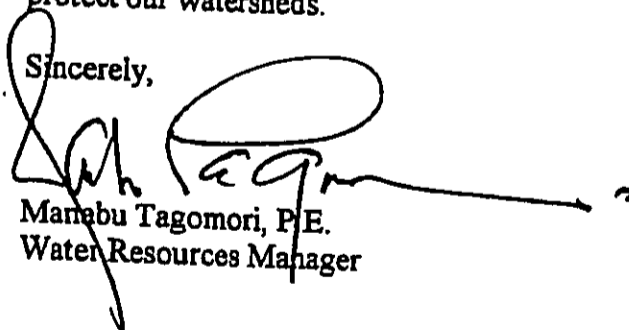
Thank you for your comments on the Draft Environmental Assessment for the Proposed Opaepala Watershed Protection Project. We appreciate your taking the time to express your concerns and interest in the project.

We are encouraged with your offer to assist us in protecting the ecosystem and to provide volunteer hunters in the eradication process. We also appreciate your noting that the private property belongs to KSBE. We recognize that your group has the field knowledge and experience with feral pigs and we look forward to working cooperatively with your Association to protect our environmentally sensitive areas.

The Opaepala Watershed Protection project does not involve the national wildlife refuge program. The U.S. Fish & Wildlife Service is involved in another project elsewhere in the Koolaus to establish such a refuge but not on KSBE's Opaepala lands. The Service is participating in the Opaepala project in partnership with other organizations to protect environmentally sensitive areas.

Mahalo for your comments and we look forward to working with your Association to protect our watersheds.

Sincerely,



Manabu Tagomori, P.E.
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE

October 25, 1999

Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Sir or Madam:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

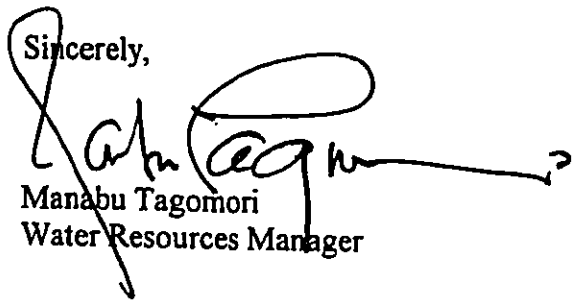
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Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,


Manabu Tagomori
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Pat Duarte
Vice President and Chief Operations Officer
Bishop Museum
1525 Bernice St.
Honolulu, HI 9681702704

Dear Mr. Duarte:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii


Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,



Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education



KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE

October 25, 1999

Environmental Planning Office
Department of Health
State of Hawaii
919 Ala Moana Blvd., 3rd Floor
Honolulu, HI 96814

Dear Sir or Madam:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepa Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepa Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepa watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepa watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".

Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Dr. Michael G. Hadfield
Professor of Zoology & Director-Kewalo Marine Laboratory
University of Hawaii
41 Ahi St.
Honolulu, HI 96813

Dear Dr. Hadfield:

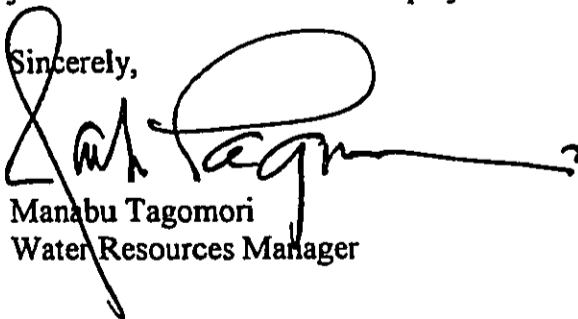
Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

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Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education

UNIVERSITY OF HAWAII

Pacific Biomedical Research Center

November 3, 1999

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

Dear Mr. Tagomori:

I write in response to your letter of October 25, 1999 inviting comment on the "Draft Environmental Assessment for the Opaepa Watershed Protection Plan." Thank you for providing me with the opportunity to review the DEA and comment upon it. I am quite familiar with the area to be enclosed by the proposed fence because of extensive surveys that I have led in the North Ko'olau summit area to determine the status of endangered Hawaiian tree snails of the genus *Achatinella*. Eliminating the continuing pig destruction from even 150 acres in this fragile area is a worthy goal.

This project is, in general, an excellent idea. It has been well thought out, and the conception for fence construction is generally sound. It appears that procedures to mitigate the worst potential negative impacts from fence construction have been implemented. I support the plan.

However, I have some misgivings about possible negative impacts on the endangered O'ahu tree snails which inhabit this area. The summit area of the North Ko'olau Mountains is the very last refuge for very small surviving populations of about 7 *Achatinella* species. As indicated in the DEA, populations of two species -- at least -- will be included in the project. The map provided in Appendix A shows mapped populations of *Achatinella* spp. almost directly upon the proposed fence line, and I am concerned that there may be others. It is nearly impossible to spot all of these rare snails in a given densely vegetated area like the one covered here. These snails do not have continuous distributions, but, rather, are found in small groups of 5 - 12 snails, often in a single small ohia or other native shrub separated by many meters from the next snail-inhabited bush. Why the snails persist in exactly the spots where we find them is not known. Often when we have moved native Hawaiian tree snails from one bush to another, their response has been to leave the new location. Thus there is a potential danger to these small, remaining snail populations.

Despite the mapped snail populations on the proposed fence line, Section IV. "Environmental Impacts/mitigation measures", on pages 6 and 7 of the DEA, does not address either potential

Kowalo Marine Laboratory • 41 Ahui Street • Honolulu, Hawaii 96813
Facsimile: (808) 599-4817

An Equal Opportunity/Affirmative Action Institution

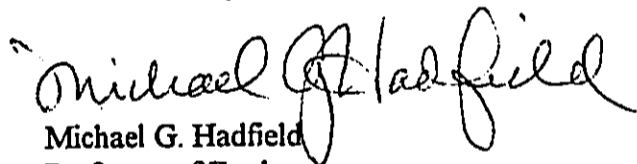
impacts upon them or proposals for mitigation of the impacts. I see this as a serious omission of the DEA. Is there a plan for protecting these rare and federally endangered snails from negative impacts of fence construction through their scattered "home bushes?"

While not on either state or federal endangered-species lists, I'm almost certain that species of the endemic genus *Auriculella* do occur in the area covered by the proposed project. We have photographed *Auriculella spp.* along nearly the entire North Ko'olau summit area where *Achatinella spp.* persist. The species list in Appendix D indicates that only *Achatinella spp.* occur in the area in question.

My other concern is the lack of description of how the fence terminates at its mauka ends. I presume it will extend to the cliff at the east end of the fence in the south. At the northern end of the fence, the slope of the area is more gradual and would appear to offer no barrier to pigs passing into the enclosure. How is this justified? Additionally, the summit trail is undoubtedly a major corridor for pig movement in the area of concern, yet no mention is made of the trail in the DEA. Will the fence simply cross the summit trail? How will people moving along the summit cross into and out of the enclosed area, if the fence runs to the pali, across the trail? Although it's reported that hikers and hunters can't enter the area because it is private property, scientists do enter this area many times per year for conservation purposes. Their transit should not be endangered or constrained by the fence.

Again, thank you for allowing me to comment on the DEA for Opaepala. I strongly support the concept, but I consider it most important that the reservations expressed above, especially impacts in endangered tree snails and mitigation plans for those impacts, be addressed before the DEA is given final approval.

Yours sincerely,


Michael G. Hadfield
Professor of Zoology



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

December 27, 1999

Dr. Michael Hadfield
Professor of Zoology
Kewalo Marine Laboratory
41 Ahui Street
Honolulu, HI 96813

Dear Dr. Hadfield:

Thank you for your thoughtful comments on our Draft Environmental Assessment regarding the Opae'ula Watershed Protection Project. We appreciate your taking the time to express your concerns and interest in the project.

We truly appreciate your support of our efforts to protect the watershed and unique natural resources of the Koolau Range and would like to address some of your concerns.


We feel that your concerns regarding impacts to both endangered and rare snails are well founded. It is possible that we did not fully present our approach to minimizing these impacts in our plan and would like to present it here for your consideration. First, our route has been designed to minimize impacts to native species by following existing corridors of disturbance. We will not remove any sizable ohia trees that represent "good" snail habitat. Any trimming of trees or cutting of shrubbery will be done only after vegetation have been inspected for snails. Our staff, not the contractor, will be performing the clearing so you can be assured that we will be extremely conservative. We would also like to request your support in these surveying efforts. Finally, vegetation that is cleared will be placed upon other native vegetation such that if snails were over looked they will have the opportunity to reach another host without having to cross the ground.

As for your questions concerning the fence route please review the improved map attached. The area will be completely enclosed. Even at stream crossings barriers will be constructed to prevent ingress. The fence construction however will not restrict travel on the trails, crossing will be erected and the trail preserved where the fence follows its path.

Dr. Hadfield
December 27, 1999
Page 2

Finally, we would like to extend an invitation for you to send a representative from your organization to accompany us on our next work trip to the project area in February. We will access via helicopter and spend three days and two nights camping and doing conservation work in the project area. By accompanying our biologists your representative will get a holistic view of our conservation work in the area as well as being able to see the proposed fence route. A warning for those considering the trip, this is the wettest place on Oahu and helicopter access is weather dependent. If you are interested in this trip please call Kapua Kawelo or Joby Rohrer at 656-7641 or 656-7741.

Sincerely,

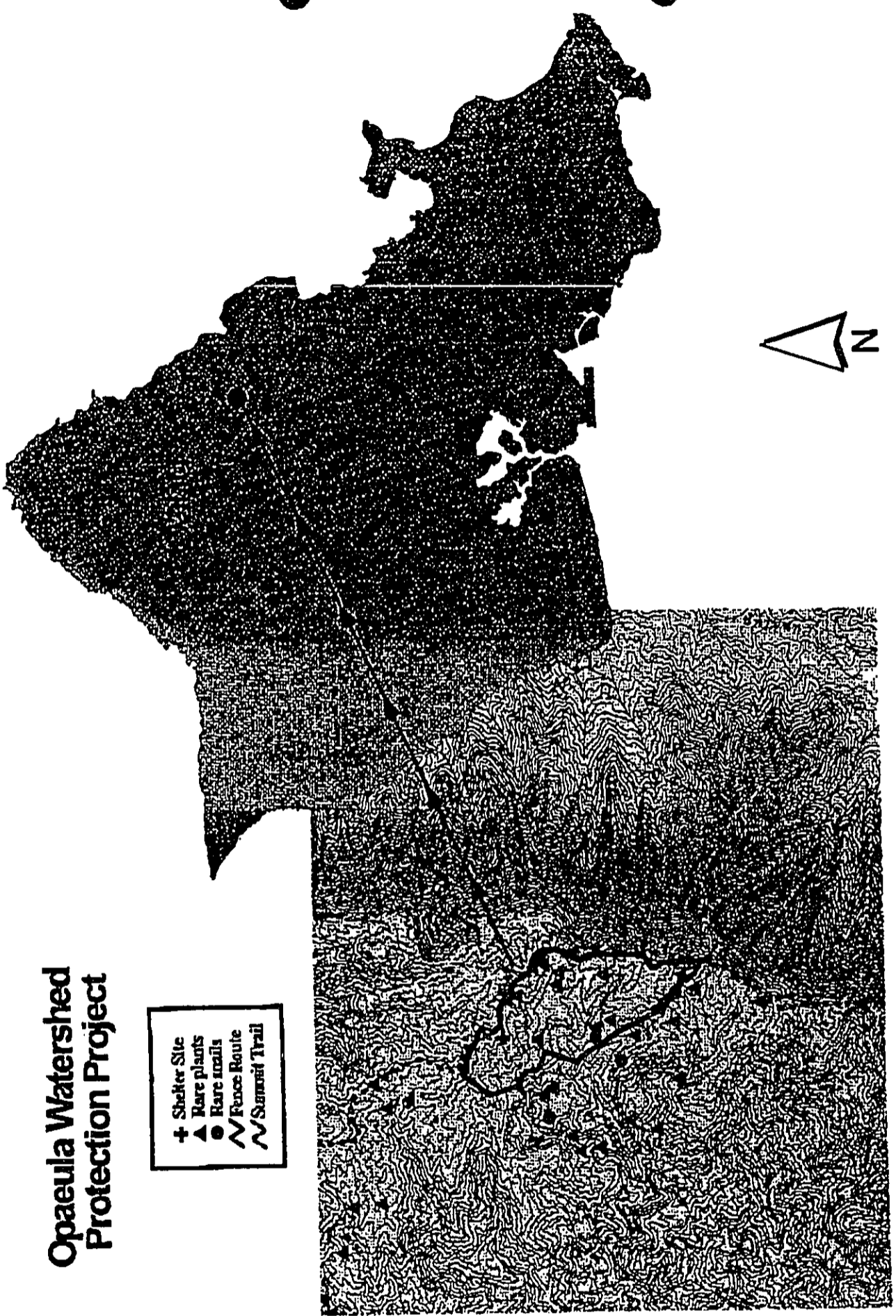
for 
Manabu Tagomori, P.E.
Water Resources Manager

enclosre

cc: Kapua Kawelo

Opaeula Watershed Protection Project

- + Shelter Site
- ▲ Rare plants
- Rare trails
- ∩ Fence Route
- ∞ Summit Trail



500 0 500 Meters



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Rex Johnson
Executive Director
The Nature Conservancy of Hawaii
1116 Smith Street, Suite 201
Honolulu, HI 96817

Dear Mr. Johnson:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".

Manabu Tagomori
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Ms. Wendy Johnson
President
Hawaii Audubon Society
850 Richards St., Suite 505
Honolulu, HI 96813

Dear Ms. Johnson:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepauna Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

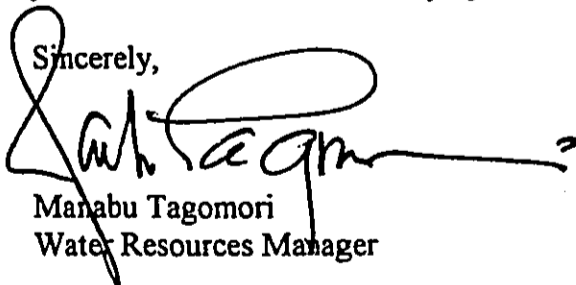
Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepauna Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepauna watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepauna watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,



Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Michael Magaoay, Chair
North Shore Neighborhood Board
P.O. Box 577
Haleiwa, HI 96813

Dear Mr. Magaoay:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepaepa Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepaepa Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepaepa watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepaepa watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".

Manabu Tagomori
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Jeff Mikulina
Sierra Club-Hawaii
P.O. Box 2577
Honolulu, HI 96803

Dear Mr. Mikulina :

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepala Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepala Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepala watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepala watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read 'Manabu Tagomori', written over a horizontal line.

Manabu Tagomori
Water Resources Manager



O'AHU GROUP
SIERRA CLUB, HAWAII CHAPTER
P.O. Box 2577, Honolulu, Hawaii 96803
Phone: (808) 538-6616

November 8, 1999

Mr. Manabu Tagamori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 S. King Street, Suite 200
Honolulu, Hawai'i 96813

Re: Consultation Review of Draft Environmental Assessment for the Opae'ula
Watershed Protection Plan, TMK 1-6-3-01, O'ahu, Hawai'i

Dear Mr. Tagamori:

The Sierra Club - O'ahu Group is an organization with nearly 3,000 members of this island. As we are dedicated to the preservation of natural resources for the benefit of the entire community, we are pleased that you have sought our input in this initial consultation phase of the Opae'ula Watershed Protection Plan ("project").

The official policy of the Hawai'i Chapter of the Sierra Club regarding preserving areas from ungulate damage is consistent with the basic framework provided in the Draft Environmental Assessment (DEA).

As the purpose of this project has been described as "part of ongoing efforts to protect native forest ecosystems, and rare, threatened and/or endangered flora and fauna," (p.2) we applaud and fully support the efforts of Kamehameha Schools, Bishop Estate ("KSBE") to "more effectively and efficiently control populations of feral pigs in the project area." (p.3)

For several years and throughout numerous communities, the Sierra Club has strongly advocated for fencing efforts, echoing the concerns of the scientific community that introduced animals have significant adverse impacts to native environments and protected species. Now that our voice has finally been heard, we are very pleased to have been invited to provide our input towards this project. We hope that our comments will be properly considered since our organization has had a long standing vested interest in balancing the values of conservation with our communities desire to access those very places of natural aesthetic beauty.



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Mr. Manabu Tagamori
November 8, 1999
Page 2

The project description, unfortunately, is not specific enough to determine whether the fencing will trace, cross, or mount the established trails. These trails, built in the 1930's, allowed escapes into one of the few remaining spectacular frontiers of nature here, on an island already overrun with, and constantly threatened by further sprawl.

The Koolau Summit Trail ("KST") was constructed in the 1930s at great expense of labor and time, with the plan of allowing the public of the State of Hawaii to enjoy and access the beauty of O'ahu's Koolau Mountains. The DEA states the project will protect "Native Hawaiian ecosystems for future generations." (p. 8) The trail was built so future generations could see these Native Hawaiian ecosystems.

Thus, while we wholeheartedly support the fencing efforts, we request that further consideration be given and clarification provided on certain aspects of this project.

Since our input has been sought, here is a list of our concerns:

Where practicable, fencing should stay off of the trail. Other fencing projects on mountainous regions have been built on the trail (e.g. Ohikilolo Trail in Waianae). Thus, this is a concern which we would like to be strongly considered.

We would like the map in appendix A to be more complete or fully annotated. It leaves doubt about the perimeter of the fence on the northeastern and southeastern portions on the enclosure.

We understand the fence line is to go over the ridge where it is built on the Koolau Summit Trail (KST) portion of the enclosure perimeter. We encourage this avoidance of the trail, with the understanding that the fence cross the KST, not run along it. We also request that gates be built for hikers to pass through where the crossing occur.

The map appears to show fence line built over Peahinaia Trail. We do not believe there is any scientific basis to preclude building off trails in this area. Soil arthropod impact from a single event shows recovery within a year. Certainly, Army Environmental can route fencing away from endangered and rare plants on the new fence line, as they appear to be doing where the fence is to be constructed elsewhere.

We request the least amount of esthetic impact to the area by use of materials that are non reflective and painted dull colors, like green and brown.

We are surprised that there are no references to recovery of rare and endangered birds. The area is the most remote ecosystem in the Koolaus and would logically seem to provide habitat for O'ahu subspecies of the Elepaio, *Chasiempis sandwichensis gayi*, the O'ahu

Mr. Manabu Tagamori
November 8, 1999
Page 3

Creeper, *Paroreomyza maculata* (if it still exists), the Akepa, *Loxups coccineus*, (if it still exists on O'ahu), and the I'iwi, *Vestiaria coccinea* (a very uncommon bird on O'ahu).

Moreover, as federal spending impacts the area in question, which is part of the U.S. Army's Kawaioloa Training Area, while this is only an initial draft of an environmental assessment, careful consideration should be given to ensure accordance with the National Environmental Protection Act (NEPA). Certainly, the impact of federal projects on any endangered species requires this at least this level of review. Thus, further counsel with U.S. Fish and Wildlife Services as a consulting agency in project design is crucial.

Finally, while we realize this project involves significant expense, we believe that any added expense to make the relatively minor changes requested are justified, since the project area is being leased to the U.S. Army by KSBE. As this is a revenue generating activity for the estate, and federal funds are being utilized to support this project, any additional expense which may be incurred by the above suggestions would be subsidized by the "three to one federal dollar match[.]" (p. 2), which in essence is a windfall to a private landowner to further support their preservation activities.

Therefore, we wholeheartedly support the current conservation efforts and encourage similar endeavors. However, we believe that a symbiotic relationship between ecosystem protection and access to a wilderness area can easily exist. Thus, the Sierra Club requests consideration of cultural resources of the Koolau Summit Trail and Peahinaia Trail be made in your efforts to secure this ecosystem.

Should you have any questions or require any additional information, please do not hesitate to contact us. Thank you for this opportunity to provide our input.

Sincerely,

O'AHU GROUP, SIERRA CLUB



Blake Oshiro, Chair
Keith R. Palmer, Conservation Chair
Arlene Bucholtz, Outings Leader



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

December 27, 1999

Blake Oshiro, Chair
Keith R. Palmer, Conservation Chair
Arlene Bucholtz, Outings Leader
Oahu Group, Sierra Club, Hawaii Chapter
P.O. Box 2577
Honolulu, HI 96803

Dear Respondents:

Thank you for your thoughtful comments on our Draft Environmental Assessment regarding the Opae'ula Watershed Protection Project. We appreciate your taking the time to express your concerns and interest in the project.

We truly appreciate your support of our efforts to protect the watershed and the unique natural resources of the Koolau Range and would like to address some of your concerns.

Selection of the fence route has been a long and arduous task balancing factors including cost of construction, impacts on the native ecosystem, and impacts on existing trails. The route we have agreed on strives to minimize the costs while maximizing the benefits to the ecosystem and preserving the existing trail network.

We are sensitive to your concerns regarding the Koolau summit and Peahinaea trails; however please note that the entire Peahinaea and about half of the summit trail (along the proposed fence route) are on private lands not open for public use at this time. In addition, neither of these trails are maintained or have ever been part of the State of Hawaii's maintained trail network. The fence construction will not restrict travel on the trails. We have routed the fence off the trails where feasible and are planning to construct crossings wherever the fence crosses the trail (gates will not be used because they require closure which we can not insure). Where the fence does run along the trail we will be sure to preserve the trail. A 26" sleeve to be installed along the ground next to the fence will help stabilize the substrate and significantly improve footing. Being that it is our goal to preserve the ecosystem and watershed through this project, we have sought to keep the amount of new disturbance to a minimum. Our experience has shown us that any area where native vegetation is clear for a trail or fence route the ungulates and weeds are sure to follow. The existing trails are corridors of disturbance and therefore a natural choice for the fence route. However, wherever possible we have routed the fence off the trail through areas that are already disturbed or sparse with native vegetation. In this way we have altered the existing trails to a minimum extent without increasing the level of disturbance

Sierra Club
December 27, 1999
Page 2

to the native ecosystem. We have included a new map that will better illustrate the fence route in proximity to the trails.

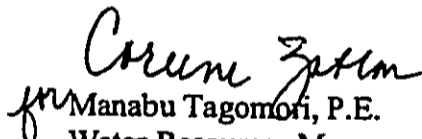
As for esthetics we are unaware of any vendors that can provide materials such as you describe. Because all materials must be galvanized for durability they come in the dull gray which this treatment produces.

As for potential benefits to rare birds, none of the species you list are known from the area of this project but if they do exist, they will also benefit from an ecosystem free of ungulates.

Regarding endangered species consultation, the U.S. Fish and Wildlife Service is a partner in this project and is aware of possible impacts. Formal Section 7 consultation for this project has been completed.

Finally, we would like to extend an invitation for you to send a representative from your organization to accompany us on our next work trip to the project area in February. We will access via helicopter and spend three days and two nights camping and doing conservation work in the project area. By accompanying our biologists your representative will get a holistic view of our conservation work in the area as well as being able to see the proposed fence route. A warning for those considering the trip, this is the wettest place on Oahu and helicopter access is weather dependent. There is a chance we will have to reschedule. If you are interested in this trip please contact Kapua Kawelo or Joby Rohrer at 656-7641 or 656-7741.

Sincerely,

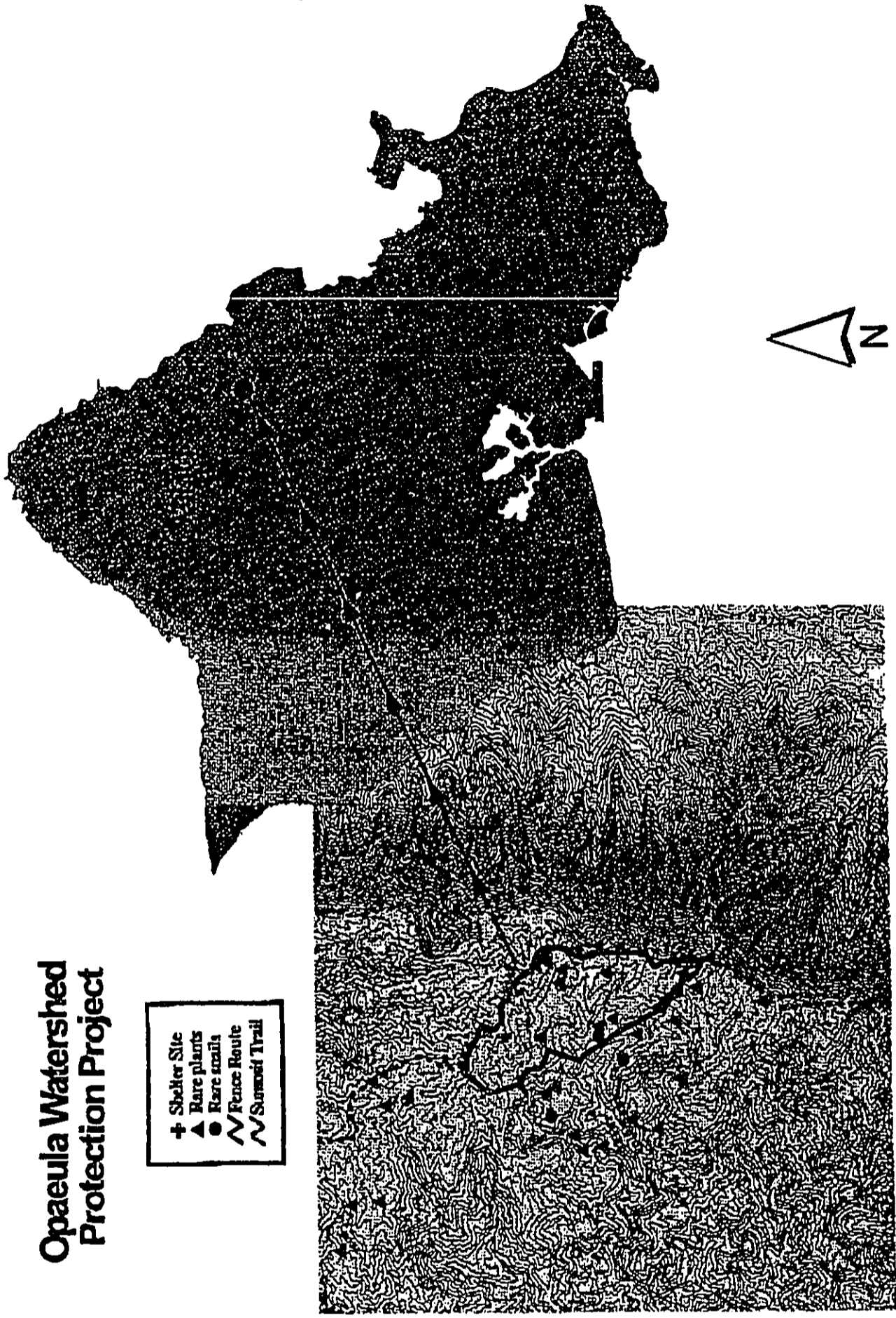

Manabu Tagomori, P.E.
Water Resources Manager

enclosure

cc: Kapua Kawelo

Opaeula Watershed Protection Project

- + Shelter Site
- ▲ Rare plants
- Rare animals
- ∨ Fence Route
- ∞ Summit Trail



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FROM : PUULOA

FAX NO. : 4225024

Nov. 16 1999 03:40AM P1

PO BOX 2577
Honolulu, HI 96803

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 S. King St., Suite 200
Honolulu, HI 96813

Ms. Kapua Kawelo
Environmental Division
Directorate of Public Works
U.S. Army Garrison, Hawaii
Schofield Barracks, HI 96857-5013

Dear Mr. Tagomori and Ms. Kawelo,

I called Kapua recently to request the opportunity of representatives from our two groups to walk the proposed fence line that would be built for the Opaepa Watershed Protection Plan. One of our interests is in seeing how impact on existing trails may be minimized.

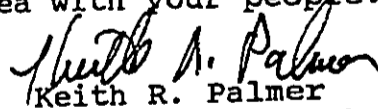
As per our conversation it looks like we would need to go up with your regular helicopter visit to the area, instead of hiking. Someone would need to accompany us on the walk through. We have three people who would like to go if you have room:

Sierra Club
PO BOX 2577
Honolulu HI 96803
Keith R Palmer ph: 668-7658
Blake Oshiro

Hawaiian Trail and Mountain Club
PO Box 2238
Honolulu, HI 96804
Patrick Rorie ph: 676-2748

We look forward to your reply so we can schedule our vacation time in order to accompany your personnel.

We hope to be able to review the scope of the project in this environmentally sensitive area with your people.


Keith R. Palmer
Sierra Club, 'Oahu Group



KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE

October 25, 1999

Mr. Grant Oka, President
Hawaiian Trail and Mountain Club
P.O. Box 2238
Honolulu, HI 96804

Dear Mr. Oka:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

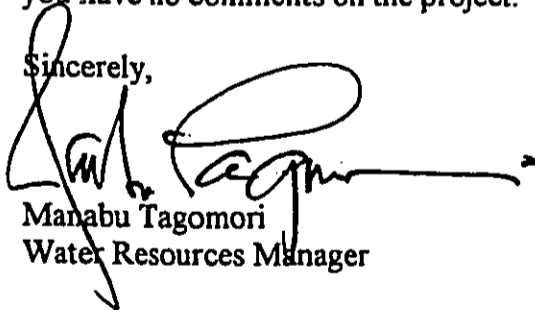
Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,



Manabu Tagomori
Water Resources Manager

November 8, 1999

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So, King St., Suite 200
Honolulu, HI 96813

Dear Mr. Tagomori:

Subject: Comments on Draft Environmental Assessment for the
Opaepa Watershed Protection Plan

The Hawaiian Trail and Mountain Club has been hiking Oahu's trails since 1910. While hiking and good fellowship in the outdoors is our focus, our members are also very concerned about and sensitive to our fragile native ecosystem. The Hawaiian Trail and Mountain Club has always taken our role as a steward of the Aina very seriously.

We applaud this initial cooperative effort in conservation. The Hawaiian Trail and Mountain Club considers conservation efforts vital to the continued quality hiking experience in the outdoors of Oahu.

Our concern is the disregard for the hiking public as the proposed bounds of the fencing project restricts travel on the Koolau Summit Trail. The Koolau Summit Trail has been used for recreational hiking since its inception in 1930's and is enjoyed by present day hikers for its wildness and beauty.

We respectfully ask that the fencing project not restrict travel on the Koolau Summit Trail and the Pe'ahinai'a Trail. Also, we ask consideration to keep the fencing project and the shelter platform to be as visibly non-intrusive from the Koolau Summit Trail as possible.

Sincerely,

Grant Oka

Grant Oka, President
Hawaiian Trail and Mountain Club
P.O. Box 2238
Honolulu, HI 96804



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

December 27, 1999

Grant Oka
Hawaii Trail and Mountain Club
P.O. Box 2238
Honolulu, HI 96804

Dear Mr. Oka:

Thank you for your thoughtful comments on our Draft Environmental Assessment regarding the Opae'ula Watershed Protection Project. We appreciate your taking the time to express your concerns and interest in the project.

We truly appreciate your support of our efforts to protect the watershed and unique natural resources of the Koolau Range and would like to address some of your concerns.

Selection of the fence route has been a long and arduous task balancing factors including cost of construction, impacts on the native ecosystem, and impacts on existing trails. The route we have agreed on strives to minimize the costs while maximizing the benefits to the ecosystem and preserve the existing trail network.

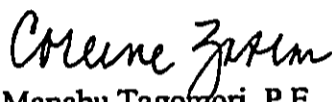
We are sensitive to your concerns regarding the Koolau summit and Peahinaea trails; however please note that the entire Peahinaea and about half of the summit trail (along the proposed fence route) are on private lands not open to for public use at this time. In addition, neither of these trails are maintained or have ever been part of the State of Hawaii's maintained trail network. The fence construction will not restrict travel on the trails. We have routed the fence off the trails where feasible and are planning to construct crossings wherever the fence crosses the trail (gates will not be used because they require closure which we can not insure). Where the fence does run along the trail we will be sure to preserve the trail. A 26" sleeve to be installed along the ground next to the fence will help stabilize the substrate and significantly improve footing. Being that it is our goal to preserve the ecosystem and watershed through this project, we have sought to keep the amount of new disturbance to a minimum. Our experience has shown us that any area where native vegetation is clear for a trail or fence route the ungulates and weeds are sure to follow. The existing trails are corridors of disturbance and therefore a natural choice for the fence route. However, wherever possible we have routed the fence of the trail through areas that are already disturbed or sparse with native vegetation. In this way we have altered the existing trails to a minimum extent without increasing the level of disturbance

Mr. Oka
December 27, 1999
Page 2

to the native ecosystem. We have included a new map that will better illustrate the fence route in proximity to the trails.

We would like to extend an invitation for you to send a representative from your organization to accompany us on our next work trip to the project area in February. We will access via helicopter and spend three days and two nights camping and doing conservation work in the project area. By accompanying our biologists your representative will get a holistic view of our conservation work in the area as well as being able to see the proposed fence route. A warning for those considering the trip, this is the wettest place on Oahu and helicopter access is weather dependent. If you are interested in this trip please contact Kapua Kawelo or Joby Rohrer at 656-7641 or 656-7741.

Sincerely,

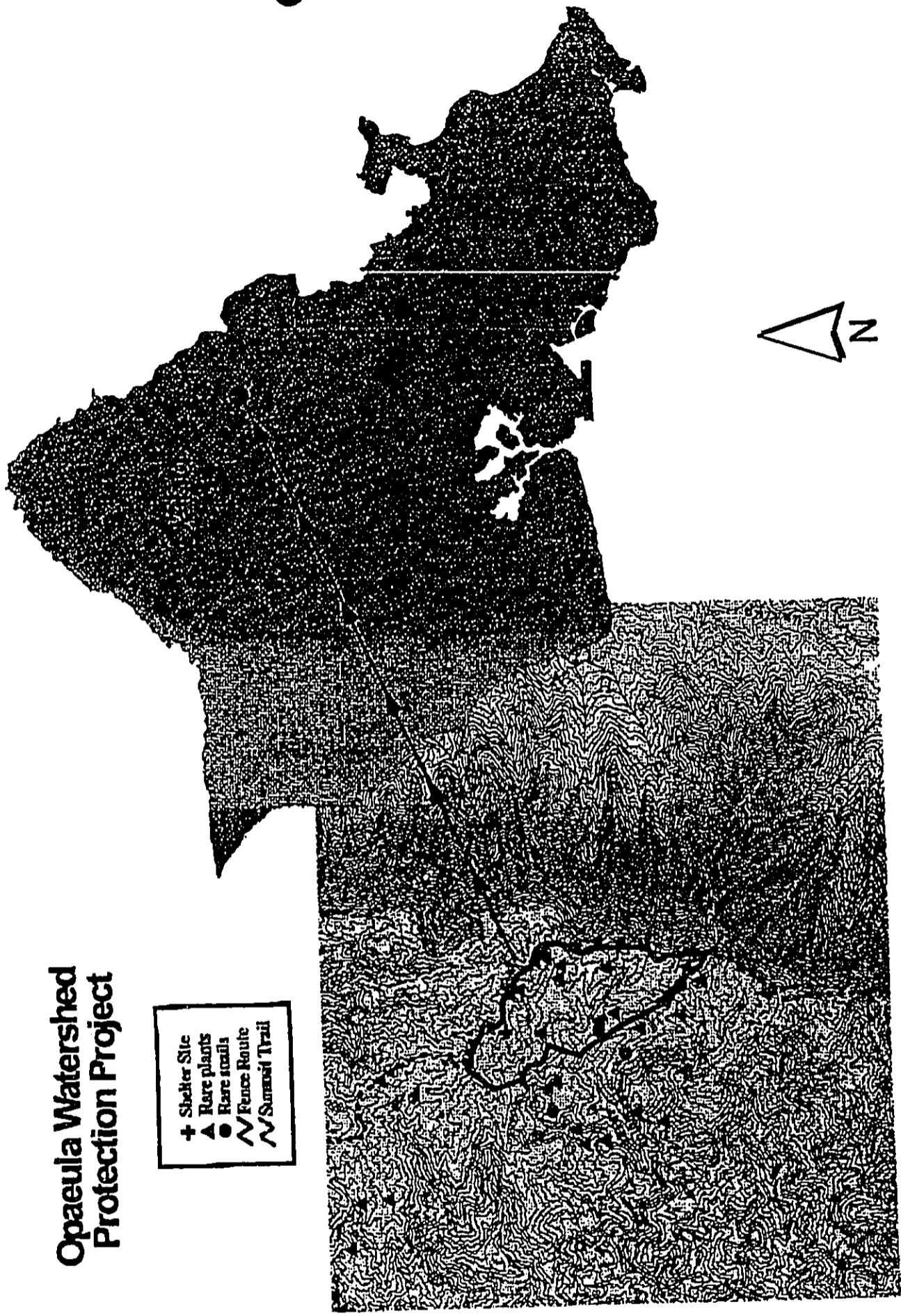
for 
Manabu Tagomori, P.E.
Water Resources Manager

Enclosure

cc: Kapua Kawelo

Opaeula Watershed Protection Project

- + Shelter Site
- ▲ Rare plants
- Rare stools
- ∩ Fence Route
- ∞ Summit Trail



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KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Mr. Bill Sager
President
Conservation Council of Hawaii
P.O. Box 2923
Honolulu, HI 96802

Dear Mr. Sager:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

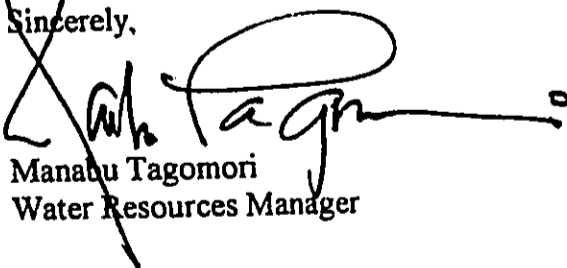
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Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,



Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 523-6200 FAX (808) 524-2069

Our Business is Education



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

Ms. Pauline Sato
Director – Oahu Program
The Nature Conservancy of Hawaii
P.O. Box 971665
Waipahu, HI 96797

Dear Ms. Sato:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaeula Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

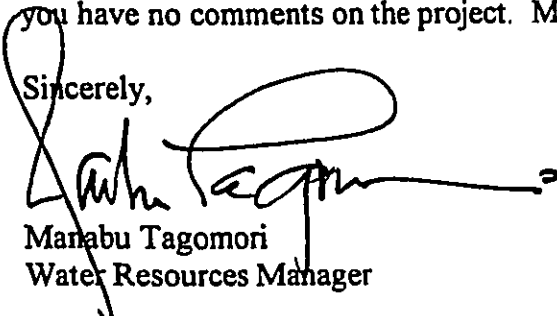
Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaeula Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaeula watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaeula watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,


Manabu Tagomori
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

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

Dear Sir or Madam:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepa Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

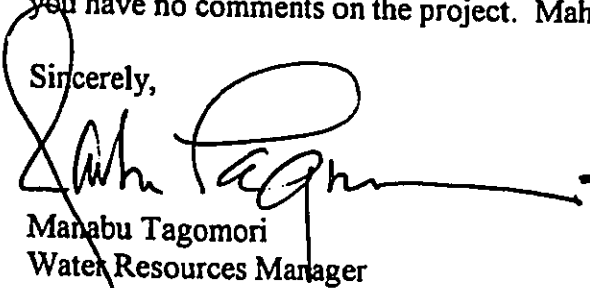
Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepa Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepa watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepa watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,


Manabu Tagomori
Water Resources Manager



KAMEHAMEHA SCHOOLS BERNICE PAUHI BISHOP ESTATE

October 25, 1999

State Conservationist
U.S. Department of Agriculture
Natural Resources Conservation Service
P.O. Box 50004
Honolulu, HI 96850

Dear Sir or Madam:

Subject: Consultation Review of Draft Environmental Assessment for the
Opaepa Watershed Protection Plan, TMK 1-6-3-01, Oahu,
Hawaii

Enclosed please find a copy of the Draft Environmental Assessment (DEA) for the Opaepa Watershed Protection Plan. We are submitting this copy of our Draft Environmental Assessment to consult with you concerning our efforts to protect the upper Opaepa watershed in the northern Koolau Mountains on Oahu. If you have any comments about our plan that you feel we should include in the Draft Environmental Assessment please send them to us by November 8, 1999. We will attempt to include them in the DEA we submit to the Office of Environmental Quality for the official 30-day review period. We feel this project is necessary to protect the unique Hawaiian ecosystem found in the upper Opaepa watershed. We welcome your input.

Please submit your comments to:

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 So. King St., Suite 200
Honolulu, HI 96813

If we don't receive comments from you by November 8, 1999, we will assume you have no comments on the project. Mahalo.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".

Manabu Tagomori
Water Resources Manager

567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE (808) 513-6200 FAX (808) 514-2069

Our Business is Education



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

November 24, 1999

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawaii 96813

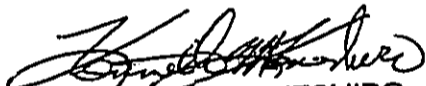
Dear Manabu:

Subject: Consultation Review of Draft Environmental Assessment (DEA) for the
Opaeula Watershed Protection Plan, Oahu, Hawaii

We have reviewed the above mentioned document and have no comments to offer at
this time.

Thank you for the opportunity to review this document.

Sincerely,


KENNETH M. KANESHIRO
State Conservationist

The Natural Resources Conservation Service works hand-in-hand with
the American people to conserve natural resources on private lands.

AN EQUAL OPPORTUNITY EMPLOYER

PUBLIC COMMENTS

**ON DRAFT EA PUBLISHED IN OEQC FEBRUARY 8, 2000
"THE ENVIRONMENTAL NOTICE"**



O'AHU GROUP
SIERRA CLUB, HAWAII CHAPTER
P.O. Box 2577, Honolulu, Hawaii 96803
Phone: (808) 538-6616

RECEIVED
SIERRA CLUB
MAR 10 3 24 PM '00

March 9, 2000

**RE: Environmental Assessment for Opa'ula Watershed Protection Project O'ahu,
Hawaii in accordance with Chapter 343, Hawaii Revised Statutes**

Proposed by: Kamehameha Schools Bishop Estate
In consultation with: U. S. Army Garrison - Hawaii, Hawaii Department of Land and
Natural Resources - Division of Forestry and Wildlife, and U. S. Fish and
Wildlife Service, Dated November, 1999

Opae'ula Watershed Protection Project,
TMK 1-6-3-01. Oahu, Hawaii'i

Applicant: Kamehameha Schools/Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawaii 96813
Contact: Mr. Manabu Tagomori

Approving Agency/Accepting Authority:
Department of Land and Natural Resources
1151 Punchbowl Stret, Room 220
Honolulu, Hawaii 96813
Contact: Sam Lemmo

To Whom This May Concern:

The Sierra Club - O'ahu Group is an organization with nearly 3,000 members of this island. As we are dedicated to the preservation of natural resources for the benefit of the entire community, we are pleased to provide input to the Opa'ula Watershed Protection Plan ("project").

Our organization previously provided comments on this project, and because the basic purposes of Chapter 343, Hawaii Revised Statutes, ("HRS") are to ensure public participation is integrated in agency decision-making, our comments below reflect our consistent desire to be included in the process as this project becomes formalized.

By letter dated November 8, 1999, our organization provided comments to the Consultation Review of Draft Environmental Assessment ("Consult EA") that had been circulated to interested parties. We were pleased to have been requested to provide our comments prior to the initiation of the processes mandated by Chapter 343, HRS. By letter dated December 27, 1999, a response was provided. As the instant Draft EA is primarily the same document as the Consult EA, we hereby incorporate our prior comments and additionally, provide our suggestions below.

The official policy of the Hawai'i Chapter of the Sierra Club regarding preserving areas from ungulate damage is consistent with the basic enclosure proposed in the Draft Environmental Assessment ("Draft EA"). As the purpose of the project has been described as "part of ongoing efforts to protect native forest ecosystems, and rare, threatened and/or endangered flora and fauna," (p.2) we applaud and support the efforts of Kamehameha School, Bishop Estate ("KSBE") to "more effectively and efficiently control populations of feral pigs in the project area." (p.3).

The Sierra Club has strongly advocated for fencing efforts, echoing concerns from the scientific community that introduced animals have significant adverse impacts to native environments and protected species. Now that our voice has finally been heard, we are glad to provide input towards this project. We hope our comments will be properly considered since our organization has had a long standing vested interest in balancing the values of conservation with our communities desire to access those very places of natural esthetic and beauty.

The Koolau Summit Trail ("KST") was constructed in the late 1930s at great expense of labor and time, with the plan of allowing the public of the State of Hawaii to enjoy and access the beauty of O'ahu's Koolau Mountains. The KST is a continuous trail that provides a unique chance to backpack in the mountains of one of the main Hawaiian Islands. Thus, we believe that continued access by hikers is a relevant consideration, to date, not properly addressed.

The KST does extend the distance from Pupukea to Kipapa Trails, and is a historical access exists, such that hikers should be allowed to pass through on their way to the rest of the trail system. Numerous examples of trails, much more heavily traveled than the KST, passing through ecologically sensitive areas, can be mentioned as examples where access by hikers is deemed as acceptable human contact, and not a significant impact to the environment.¹ These sensitive areas are being preserved for the public's access, so long as there are requirements that hikers stay on trails, thus preventing damage to the fragile ecosystems found there.

¹ Heleakala National Park on Maui has dryland and wetland trails that have heavy hiker use. The Presidential's in New Hampshire are considered unique alpine ecozones that have numerous trails passing through them, including the famous Appalachian Trail.

While there may be concern as to the additional impact of hikers perhaps bringing exotic seeds into the enclosure, this could be mitigated by regular maintenance for the enclosure. Additionally, the Sierra Club, O'ahu Group would be willing to provide up to four professionally produced small signs with two replacements, to inform or remind hikers to please stay on the trail in the area within the enclosure, and that it is an area of ecological recovery.

Also, it is important to note that it has taken fifty years for the existing damage of introduced plants to be done. And as the plants are not being spread by man alone, since birds spread Coster's Curse, and other edible berries, the monitoring of the area and removal of new introductions, which has to be done in any event, the passing through of a few hikers would probably make little difference.

As to the placing of the fencing, we would like to make two suggestions for maintaining the summit nature of the area the fence is proposed to pass through. Our primary suggestion is that wherever practicable, fencing should stay off the KST.

First, we suggest that the fence be built off the trail to windward, and that steps be built at the crossings. We do not anticipate any objection by the State of Hawaii, Department of Land and Natural Resources to such a route in Kaluanui, since there has been some consideration of a Natural Area Reserve ("NARS") being created there. This would entail a new track through existing vegetation, but the large fence construction to the south or leeward section of the enclosure is a longer fence of new route and can be built within the expertise of the environmental workers designing the route.

Secondly, we request that if practicable, the fence be built off the trail to leeward, steps as above. If there are clusters of endangered plants beside the KST, we would suggest that the fence line be extended out to enclose them since it is unlikely that significant rare plants would have grown directly on the trail.

One reason often cited for fencing the trail is that the trail provides a pathway for pigs to pass through. We suggest that if this is to be seriously addressed then fences perpendicular to the trails be built at strategic intervals which would then disadvantage the animals as it blocks the trail, and the perpendicular fences might even channel pigs to where they can be controlled more easily.

Moreover, the interest in reducing the impact of pigs, in the area should be extended to some kind of rat reduction. Predation of rats on the endemic snails, endemic plant seeds, and perhaps plants is probably nearly as significant as the pig damage.

Finally, existing man-made structures nearby this anticipated project, such as weather stations, helicopter pads, and radio towers, already impose on the natural beauty of this area. Thus, we request that further structures should consider esthetic impact to the extent it is economically feasible.

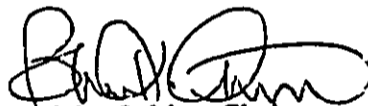
We feel that both interests as to continued access and movement of the fence can be effectively accommodated. By moving the fence, the hikers can retain access to the Summit Trail as it was meant to be enjoyed, and the area can be protected, which is finally being worked on. We, as part of the hiking community on O'ahu support these preservation efforts as it allows us to have a greater appreciation of the unique ecological flora and fauna to be seen here. However, these same hikers do not want to lose the special and wild places they helped protect if a compromise can be worked out.

Therefore, we wholeheartedly support the current conservation efforts and encourage similar endeavors. However, we believe that a symbiotic relationship between ecosystem protection and access to a wilderness area can easily exist. Thus, the O'ahu Group of the Sierra Club requests consideration of cultural resources of the KST be made in your efforts to secure this ecosystem.

Should you have any questions or require any additional information, please do not hesitate to contact us. Thank you for this opportunity to provide our input.

Sincerely,

O'AHU GROUP, SIERRA CLUB



Blake Oshiro, Chair

Keith R. Palmer, Conservation Chair

Arlene Bucholtz, Outings Leader



KAMEHAMEHA SCHOOLS

April 27, 2000

Blake Oshiro, Chair
Keith R. Palmer, Conservation Chair
Arlene Bucholtz, Outing Leader
Oahu Group, Sierra Club, Hawaii Chapter
P.O. Box 2577
Honolulu, HI 96803

Dear Sierra Club Respondents,

Thank you for your thoughtful comments on our Draft Environmental Assessment for the Opae'ula Watershed Protection Project. We appreciate your taking the time to express your concerns and interest in this project in the consultation review period and during the formal comment period for the Draft Environmental Assessment ("Draft EA").

We are grateful for your support of the basic mission of ungulate control that is the primary focus of this project. We would like to address some of your concerns about this project.

We are sensitive to the impacts that the ungulate fence will have on the Koolau Summit Trail. The selection of the fence route has been a difficult task, which required a balance between project cost, impacts to the ecosystem, and impacts to the existing hiking trail system.

The primary goal of the project is to minimize the impacts to native species while maximizing the protected area. First, we want to assure you that the Koolau Summit Trail will remain intact. The fence will run parallel to, not on, the Koolau Summit Trail along most of the enclosures eastern flank. Whenever possible we have routed the fence off the trail through areas that are already disturbed or sparse with native vegetation.

We will construct fence crossovers for hikers where the trail and fence must intersect. This route was chosen in order to keep the paths of ecosystem disturbance to a minimum.

567 South King Street, Honolulu, Hawaii 96813-3036 Telephone (808) 523-6200

Founded and Endowed by the Legacy of Princess Bernice Pauahi Bishop

Oahu Group, Sierra Club, Hawaii Chapter
Page 2
April 27, 2000

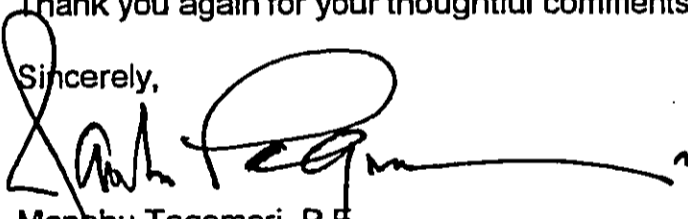
Your letter of March 9, 2000 suggests we move the fence to the windward side of the trail corridor. To do so would increase the disturbance to the forest because we would have to cut down native plants to form a new corridor. Native plants grow very slowly and thus tend to lose the battle with invasive weeds in disturbed areas. Further, pigs would likely use the newly cleared corridor and disperse more weeds making it nearly impossible for native plants to recover.

As for the issue of control of rat population, we are planning systematic placement and maintenance of rat bait stations as part of the long-term natural resource management of the project area.

Regarding the esthetic impact of structures associated with the Opae'ula Watershed Protection Project, we will attempt to minimize them as much as is practical. The visual effect of the fence itself will be difficult to change. Due to the expense of the fencing materials and fence construction we have chosen the materials that have the longest life span. These materials are wire and posts that are class III galvanized or bezenal coated. These coatings render the fence a dull gray color. Long lasting fence materials are not available in green or brown. The tent platform that is associated with this project will be painted a green color that will blend in with the environment.

Thank you again for your thoughtful comments on this project.

Sincerely,



Manabu Tagomori, P.E.
Water Resources Manager

cc: Kapua Kawelo, U.S. Army
Craig Rowland, U.S. Fish & Wildlife Service
Brent Liesemeyer, NARS. DLNR

bcc: CF

ID=8085413470
KAMEHAMEHA SCHOOLS
B.P. BISHOP ESTATE

BENJAMIN J. CAYETANO
GOVERNOR



MAR 13 2 05 PM '00

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

236 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

March 10, 2000

Mr. Manabu Tagomori
Kamehameha Schools Bishop Estate
567 South King Street, Suite 200
Honolulu, Hawai'i 96813

Dear Mr. Tagomori:

We have reviewed the draft environmental assessment for the "Opae'ula Watershed Protection Project" and offer the following comments for your response.

1. **Summit Fence:** Please clarify in the final environmental assessment whether the fence will traverse the Ko'olau Summit trail. The markings on the map in Appendix A do not clearly indicate whether this will occur.
2. **Plastic Lumber:** To minimize wood rot and to promote use of recycled materials, please consider the use of plastic lumber in the construction of the fence.

Thank you for the opportunity to comment. If you have any questions, please call Mr. Leslie Segundo of my staff at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Mr. Samuel Lemmo, DLNR.



KAMEHAMEHA SCHOOLS

April 27, 2000

Ms. Genevieve Salmonson
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson:

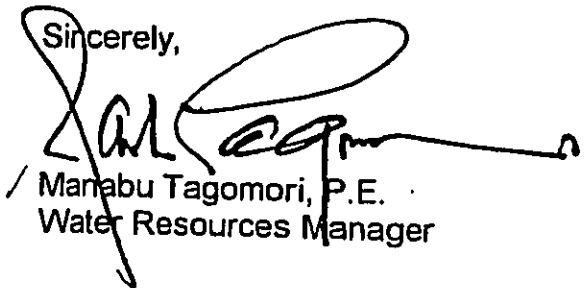
Thank you for the comments provided in your March 10, 2000 letter regarding the draft environmental assessment for the Opae'ula Watershed Protection Project.

Regarding your request for clarification of whether the fence will traverse the Ko'olau Summit Trail, as planned, the fence will cross the trail at a number of locations. Wooden fence crossings will be installed at these points where needed.

The use of plastic lumber was considered when planning this project. However, plastic lumber is cost prohibitive for two reasons. First of all, the materials themselves are more expensive than the metal posts currently planned for. Secondly, plastic posts are heavier, and thus, increase the cost of transporting materials to the project site.

Please feel free to contact me if you have any questions or additional comments regarding this project.

Sincerely,


Manabu Tagomori, P.E.
Water Resources Manager

bcc: CF

567 South King Street, Honolulu, Hawaii 96813-3036 Telephone (808) 521-6200

Founded and Endowed by the Legacy of Princess Bernice Pauahi Bishop

**United States Department of the Interior****FISH AND WILDLIFE SERVICE**

Pacific Islands Ecoregion
300 Ala Moana Blvd, Rm 3-122
Box 50088
Honolulu, HI 96850

In Reply Refer To: JAK

MAR 10 2000

Mr. Dean Y. Uchida
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Re: Conservation District Use Application (CDUA) No. OA-2973 and Draft Environmental Assessment (DEA) for the Opaepa Watershed Protection Project, Oahu, Hawaii


Dear Mr. Uchida:

The U.S. Fish and Wildlife Service (Service) received your February 18, 2000 letter requesting comments on the CDUA for the proposed Opaepa Watershed Protection Project, Oahu, Hawaii. The project sponsor is the Kamehameha Schools Bishop Estate. The proposed project involves vegetation clearing, construction of a shelter platform, installation of 3.5 kilometers of bezenal-coated wire fence fabric and barbed wire, feral pig control, and natural resource monitoring and management. The proposed project will create a 150-acre fenced enclosure that will protect watershed resources and enhance habitat for rare, threatened, and endangered species by eliminating feral pigs (*Sus scrofa*) and their impacts. We offer the following comments for your consideration.

Based on our review of the information provided with your letter, in the DEA, and in our own files, the Service does not anticipate any negative impacts to federally endangered, threatened, or candidate species, or other federal trust resources to result from the proposed project. Although the proposed project may require removal of native vegetation for fence construction, the Service believes that the exclusion and removal of pigs from the fenced enclosure will enhance the area's value as a watershed by protecting rare, threatened, and endangered flora and fauna and by eliminating the adverse change in vegetation that is a typical consequence of feral pig activity.

The Service appreciates the opportunity to offer our comments on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist James Kwon by telephone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,


for Paul Henson
Field Supervisor
Ecological Services

cc: DOFAW, Honolulu



KAMEHAMEHA SCHOOLS

April 27, 2000

Paul Henson, Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Office
300 Ala Moana Blvd., Room 3-122
Honolulu, HI 96850

Dear Mr. Henson:

Thank you for the comment provided in your March 10, 2000 letter regarding the draft environmental assessment for the Opae'ula Watershed Protection Project.

We are pleased that you foresee no negative impacts to federally listed species or other federal trust resources and that you view the control of feral pig activity as beneficial to native ecosystems.

Please feel free to contact me at the above address if you have any questions or additional comments regarding this project.

Sincerely,

Manabu Tagomori, P.E.
Water Resources Manager
Kamehameha Schools

bcc: CF

BENJAMIN J. CAYetano
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhikawa Building, Room 556
501 Kamehale Boulevard
Kapehu, Hawaii 96757

March 2, 2000

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

MEMORANDUM

LOG NO: 25003 ✓
DOC NO: 003EJ01

TO: Dean Uchida, Administrator
Land Division

FROM: Don Hibbard, Administrator
Historic Preservation Division *[Signature]*

SUBJECT: Chapter 6E-42 Historic Preservation Review -- CDUA
Application Opaepa Watershed, Plant Sanctuary (File No.
OA-2973)
Kawailoa, Waialua, O'ahu
TMK: 6-3-01

We commented to the Kamehameha Schools in December regarding the Draft EA for this project. Both the EA (November 1999) and the current CDUA state that archeological inventory survey of the project area will be conducted prior to fence construction. Our earlier comments stated although our records indicated that no historic sites are known for the project location, the results of the archaeological survey need to be submitted to the State Historic Preservation Division in order for us to provide further comments on the effect this project would have on historic sites.

Our earlier correspondence, reviewing the DEA, is attached (SHPD Log 24488).

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

EJ:jk

MAR 14 11 21 AM '00

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
JANET E. KAWILO

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kekuhihewa Building, Room 558
601 Kamehale Boulevard
Honolulu, Hawaii 96807

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

November 30, 1999

Mr. Manabu Tagomori
Water Resources Manager
Kamehameha Schools Bishop Estate
567 S. King Street, Suite 200
Honolulu, Hawaii 96813

LOG NO: 24488 ✓
DOC NO: 9911EJ10

Dear Mr. Tagomori:

SUBJECT: Chapter 6E-42 Historic Preservation Review -- Draft Environmental Assessment for
Opaeula Watershed Protection Project, O'ahu, Hawai'i, November 1999
Kawailoa, Ke'olu, O'ahu
TMK: 6-3-01 *Wai'alea*


Thank you for the opportunity to review the draft Environmental Assessment for this project. The project proposes to construct a pig enclosure fence in the uppermost part of the Opaeula Drainage in order to assist in efforts to protect native forest ecosystems and threatened and/or endangered flora and fauna. It is being proposed by the landowner Kamehameha Schools/Bishop Estate in a cooperative effort with the State of Hawaii, DLNR (DOFAW/NARS), the U. S. Army Garrison, Hawaii and U. S. Fish and Wildlife Service.

Ground disturbance includes hand clearing a corridor no more than five feet wide to erect a fence line using steel and wood posts and hog and barb wire as well as construction of a 20' X 30' weather port shelter platform. Clearing of the corridor and construction of the fence and platform will be done by hand with hand tools.

A review of our records shows that there are no known historic sites at the project location although only a portion of the area has undergone archaeological survey. Scientific Consultant Services during an archaeological inventory survey of the Kawailoa Training Area, surveyed a portion of the ridge line in the project area. No archaeological sites were seen along the ridge summit trail. The EA states that archeological inventory survey of the project area will be conducted prior to fence construction. It should also be noted that the summit trail may be considered historic. We look forward to reviewing the results of the survey in order to provide further comments on the effect this project would have on historic sites.

If you have any questions please call Sara Collins at 692-8026 or Elaine Jourdan at 692-8027.

Aloha


Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk



KAMEHAMEHA SCHOOLS

MAY 26 11 34 AM '00

May 26, 2000

Mr. Dean Uchida, Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Attention: Mr. Tom Eisen

Dear Mr. Uchida:

Final Environmental Assessment - Opaepa Stream Watershed Protection Project

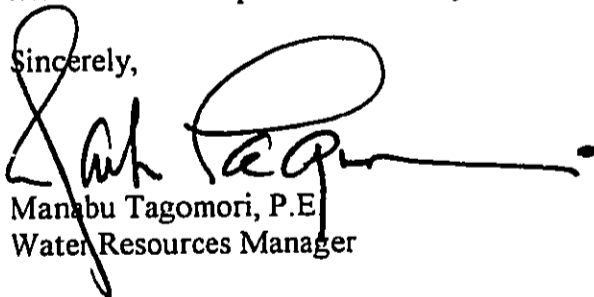
Your staff has called our attention to the comments provided by the office of State Historic Preservation Division of the Department of Land and Natural Resources concerning archeological survey of the project area. We reaffirm and clarify statements made in the EA in response to comments of the Historic Preservation Division.

On August 26, 1999, as part of the Environmental Assessment process, a cultural resources/archeological survey of the project site was conducted by David Cox and Loren Zulick, Cultural Resource Specialists, Environmental Department of the Directorate of Public Works, U.S. Army Garrison Hawaii. The Survey team was accompanied by personnel from the U.S. Fish and Wildlife Service, State Natural Reserve System, University of Hawaii at Manoa, the Nature Conservancy, and the U.S. Army Oahu Natural Resources Program.

The fence line along with the Koolau Summit Trail and the upper Peahinaia Trail and half a kilometer of the adjoining Opaepa Stream were surveyed. No cultural features or archeological sites were located.

Attached is the report of the survey.

Sincerely,



Manabu Tagomori, P.E.
Water Resources Manager

cc. Mr. Don Hibbard, Administrator
Historic Preservation Division
Department of Land and Natural Resources

APVG-GWV

26 August 1999

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report, Cultural Resources Reconnaissance (Archaeological Survey) of the Area Proposed for the Opa'e'ula Watershed Protection Fencing Project, in the Army's Kawai'oa Training Area, Island of O'ahu.

1. A Cultural Resources / Archaeological site inspection was performed in the Kawai'oa Training Area (KLOA) by David Cox and Loren Zulick, Cultural Resource Specialists, Environmental Department, Directorate of Public Works (DPW), USAGH. We accompanied personnel from the U. S. Fish and Wildlife Service; the State of Hawaii's Natural Areas Reserve System; the University of Hawaii at Manoa; the Nature Conservancy and the crew from DPW's Oahu Natural Resources Program. This group spent three days and two nights in the field surveying the area of the Opa'e'ula Watershed Protection Fencing Project. The two of us were along to establish the presence or absence of cultural resources in the general area, and to assess the potential for impacts to it if any. The field trip started Tuesday, 10 August, and continued through Thursday, 12 August 1999.
2. The proposed project calls for fencing in a section of the ridge top rain forest to protect it from continued damage by wild pigs. The planned enclosure is located at and to the north of the junction of the Koolau Summit and Pe'ahi-na-i'a Trails, specifically in the area to the west of the Summit Trail, at the headwaters of the Opa'e'ula Stream. This area is at elevations between 2600 and 2760 feet (or ca. 790 to 840 meters). The fence line route surveyed during this extended field trip will enclose roughly 100 acres (ca. 40 hectares) of primarily native vegetation that includes a number of listed endangered species. The only known possible archaeological or cultural sites in this section of KLOA are the Summit Trail and the upper end of the Pe'ahina'i'a Trail (see Fig 1, attached). These two trails are not Listed Historic Sites at either the State or Federal level, nor have they been given state site numbers according to the State Historic Preservation Office. The State Division of Forestry and Wildlife's Na Ala Hele (Trail Access Program) however at one time considered the Koolau Summit Trail as a potential Priority Trail in its 1989 Program Plan. This trail, constructed by the Civil Conservation Corps some time in the late 1930s, is at this time no longer a candidate for their Priority Trails - open access and maintenance program.
3. As presently envisaged the alignment of the fence line in the approximately 1-kilometer stretch along the ridge line would come in close proximity to, and in some sections cross portions of the existing Koolau Summit Trail. As a result of this planned fence alignment some clearing in the area of the new fence will be needed, and some minor realignments of the present trail may also be required. In its existing form this part of the Summit Trail ranges in condition from mostly poor to very bad. There are many very narrow and deeply worn sections, which are often filled with mud as deep as mid calf or more. With the installation of the proposed fence, the integrity of the existing trail will not be lost. The realignment of the route along the fence will not alter or damage the old trail; it will simply bypass parts of it. The installation of the fence in this section of the summit will serve to greatly improve safe access through this area.
4. No other previously identified, or any unknown cultural features or sites were noted in the immediate areas along any of the existing trails or the planned fence route. In the course of this fence line route survey we physically or visually investigated almost all of the interior sections of the proposed enclosure area. A 1.5 kilometer section of the upper Pe'ahina'i'a Trail and a half kilometer of the adjoining Opa'e'ula Stream was also checked. Again no other previously identified, or unknown cultural features or sites were located.


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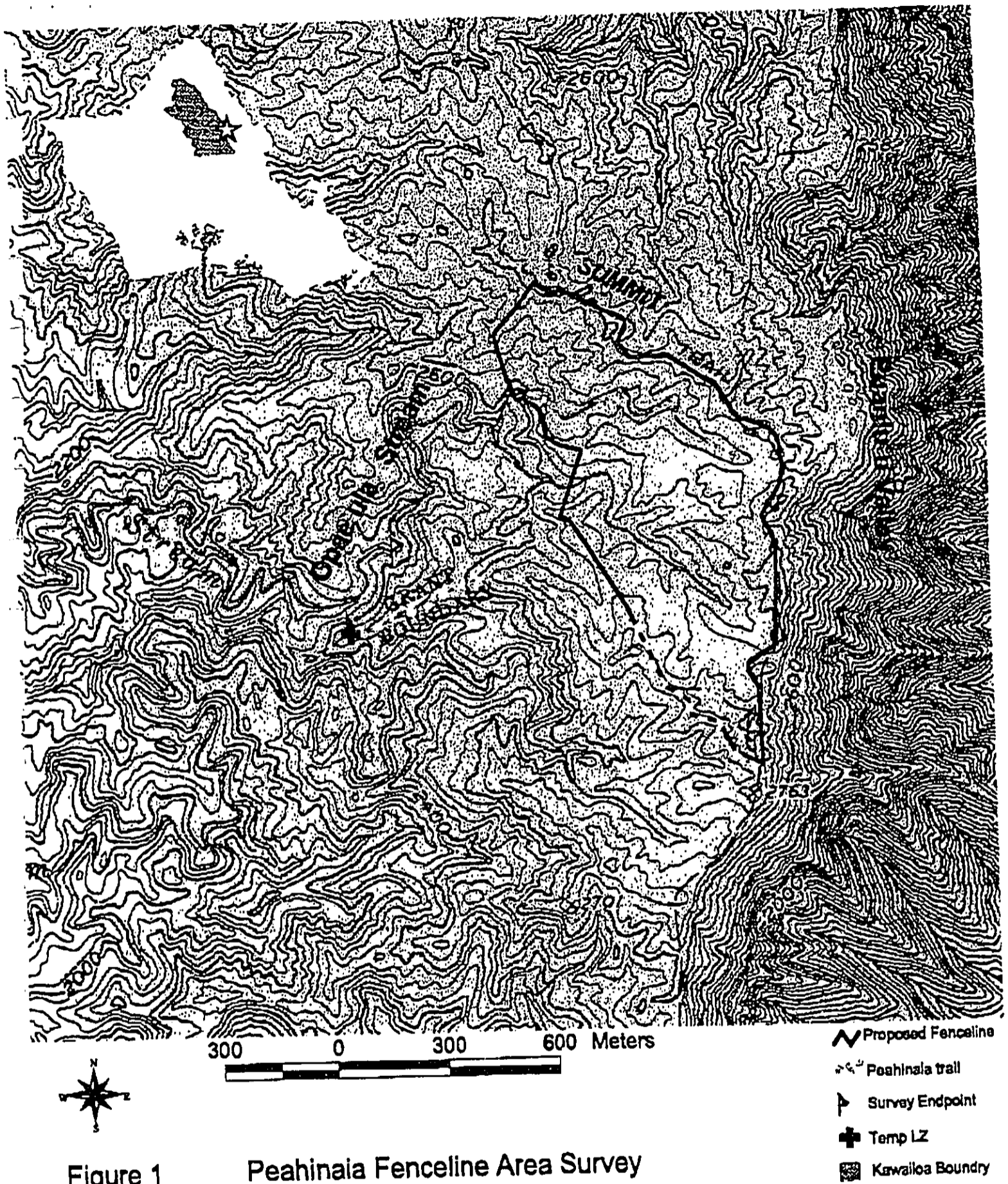


Figure 1 Peahinaia Fenceline Area Survey